Listed as intrinsically safe by Underwriters Laboratories. UL is a Nationally Recognized Testing Laboratory (NRTL).

CSA International, certification that a product meets applicable Canadian standards. CSA International is a Nationally Recognized Testing Laboratory (NRTL).

Intertek ETL SEMKO, certification that a product meets applicable U.S. standards. Intertek ETL SEMKO is a Nationally Recognized Testing Laboratory (NRTL).

Equipment and protective systems intended for use in potentially explosive atmospheres that are certified as meeting the essential health and safety requirements of the European ATEX Directive 2014/34/EU.

Equipment that meets the essential health and safety requirements of all applicable European Product Directives including:
ATEX – equipment safety in explosive atmospheres - 2014/34/EU
MD – machinery safety - 2006/42/EC
LVD – electrical safety - 2014/35/EU
EMC – electromagnetic compatibility - 2014/30/EU
RoHS – restriction of the use of certain hazardous substance in electrical and electronic equipment - 2011/65/EU.

Tested and certified by Mine Safety and Health Administration as intrinsically safe

IECEx

International Electrotechnical Commission, equipment that has been independently certified to conform to international standards covering Ex equipment and services for associated equipment and installations in explosive atmospheres

ISO 9001

An ISO 9001 registered company, SKC's management and production procedures adhere to this international quality standard.


SKCONNECT
skcinc.com
SKCairsampling
SKC
SKCSamplers
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Join our community,
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Company/skc-inc-
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New! from SKC

Pocket Pump® TOUCH *Sample Pump*
A whole new take on low flow sampling!
Get touch screen operation and more.
See pages 12-13.

SKC Diffusive TD Tubes
for BTEX/Other VOCs
See pages 48-49.

SKC All-in-One Low Flow Holder
One lightweight unit for simpler single-tube low flow sampling trains
See page 50.

chek-mate Calibrator
Check out this highly accurate calibrator for personal sample pumps!
See pages 32-33.

SKC Air Sample Pumps

The Professional's Choice for Quality and Durability

SKC is the **professional's choice** in air sample pumps for health and safety applications. SKC on the outside means over 50 years of innovation and reliability on the inside. SKC pumps are available with a choice of flow rates, features, interfaces, and accessories. All are built with quality and backed by service and support.

SKC Sample Pump Selection Guide

Choose the Features You Need, Get the Quality You Expect

Fast Find! Selection Guide

Choose by Flow Range	20 to 500 ml/min	5 to 3000 ml/min			5 to 5000 ml/min			5 to 15 L/min
Choose by Compensation Range	Up to 20 inches water BP at 500 ml	Up to 30 inches water BP at 2 liters	Up to 25 inches water BP at 2 liters	Up to 20 inches water BP at 2 liters	Up to 40 inches water BP at 2 liters	Up to 50 inches water BP at 2 liters	Up to 50 inches water BP at 2 liters	Up to 12 inches water BP at 10 liters
Choose by Feature								
Programmable/ PC Compatible	Keypad/PC	Keypad/PC	No	No	Keypad (PCXR8)	Keypad	Keypad/PC	Keypad/PC
Listed for Intrinsic Safety	UL	Ex	UL	No	UL	UL	UL	No
Compensates for Changes in Atmospheric Pressure	Yes	Yes	No	No	No	No	Yes	Yes
Compensates for Changes in Temperature	Yes	Yes	No	Yes	No	Yes	Yes	Yes
Battery Type	Li-Ion	NiMH	NiMH	Alkaline	NiMH	Li-Ion	Li-Ion	Li-Ion
Approximate Run Time	20+ hours at 200 ml/min	12+ hours at 2 L/min	12+ hours at 2 L/min	10+ hours at 2 L/min	12+ hours at 4 L/min	20 hours at 2 L/min	20 hours at 2 L/min	24+ hours at 10 L/min

Pocket Pump TOUCH
Pages 12-13

AirChek 3000
Pages 20-21

AirChek 52/ Sidekick
Pages 18-19

AirLite
Page 29

Universal XR
Pages 16-17

AirChek XR5000
Pages 14-15

AirChek TOUCH
Pages 8-10

Leland Legacy
Pages 22-23

Air Sampling Pump Kits from SKC Inc.

With Accessories for U.S. Methods

Don't Forget . . .

SKC Air Sampling Kits provide the pumps and accessories you need for your applications. Order the following items separately:

☑ **A calibration device** – Select a calibration device based on the accuracy requirements of your application. *See pages 32-34.*

☑ **Sampling Media** – Base your choice of sampling media on the application and the method used. Consult the SKC Comprehensive Air Sampling Guide for information on recommended sampling media for specific compounds. *See sampling media beginning on page 36.*

SKC Inc. carefully designs its air sampling pump kits to meet the unique sampling requirements of individual regions. When selecting a pump kit, consider the configuration that will best fit your application. Most of the SKC Inc. pumps are available in Starter Kits with pump, tubing, and charger; single kits (one of each kit component); and 5-pack kits (5 of each kit component except the charger and the case). Kits do **not** include sample media or a calibrator (unless otherwise noted). Kit content can vary depending on the pump model.

Starter Kits

- Pump
- Battery charger
- Tubing
- Collar clip with cable tie

High Flow Sampling Kits

- Pump
- Battery charger
- Filter cassette holder
- Tubing
- Screwdriver set
- Soft-side nylon carry case (single) or Pelican case (5 pack)

Low and High Flow Sampling Kits

- Pump
- Battery charger
- Filter cassette holder
- Tubing
- All-in-One low flow holder
- Type A tube cover
- Screwdriver set
- Soft-side nylon carry case (single) or Pelican case (5 pack)

Low Flow Sampling Kits

- Pump
- Battery charger
- Type A tube holder
- Tubing
- Soft-side nylon carry case (single) or Pelican case (5 pack)

See specific pump pages for ordering information.

Air Sampling Pump Kits from SKC Ltd.

With Accessories for Euro Methods

SKC Ltd. air sampling pump kits are designed to suit your applications without a lot of extra purchases. One durable carry case houses the equipment you need for gas/vapour sampling, dust/particulate sampling, or both. A basic kit is available to which you may add equipment for specific applications. Kits are available in single and 5-pack configurations. Kits do **not** include a calibrator or sample media. Contents of kits may vary with pump model.

Basic Air Sampling Kits

- Pump
- Battery charger
- Tubing
- Screwdriver set
- Step by Step Guide
- Durable carry case

Gas/Vapour Sampling Kits

- Pump
- Battery charger
- Tubing
- Tube breaker
- All-in-One low flow holder* New!
- Type A protective tube cover
- Screwdriver set
- Step by Step Guide
- Durable carry case

Dust/Particulate Sampling Kits

- Pump
- Battery charger
- Tubing
- IOM Sampler (plastic)
- IOM Cassettes (4, plastic)
- Calidaptor
- 25-mm Plastic Cyclone
- 25-mm Cyclone cassettes (4)
- Screwdriver set
- Step by Step Guide
- Durable carry case

Combined Dust and Vapour Sampling System

- Pump
- Battery charger
- Tubing
- Tube breaker
- All-in-One low flow holder
- Type A protective tube cover
- Calidaptor
- IOM Sampler (plastic)
- IOM Cassettes (4, plastic)
- 25-mm Plastic Cyclone
- 25-mm Cyclone cassettes (4)
- Screwdriver set
- Step by Step Guide
- Large, durable carry case

* *Not included in Pocket Pump TOUCH Kits*

See specific pump pages for ordering information.

New!

AirChek® TOUCH

Sample Pump

Intuitive

Powerful

Versatile

AirChek TOUCH

- **Extended flows from 5 to 5000 ml/min**
  - 5 to 500 ml/min with low flow holder, *see page 48*
  - Multi-tube sampling in low flow mode
- **Color touch screen navigation, easy programming**
- **Continuous, timed, and intermittent sampling**
- **High back pressure compensation**
  (50 inches water at 2 L/min)
- **Powerful Li-Ion battery for up to 20 hours at 2 L/min**
- **Corrects flow for changes in temperature and atmospheric pressure**
- **Screen protection and security**
  - Protective cover
  - Screen lock-out feature
- **Ultra quiet — average 51.7 dB at 3 feet (37-mm, 0.8 µm MCE filter at 2 L/min)**
- **New DataTrac Pro PC Software for easy pump and data management** *(see page 11)*
- **Small and lightweight**
  - 4.1 x 3.7 x 2.8 inches
  - 19.4 ounces

See Ordering on page 10.

AirChek TOUCH

Ordering

Description	Cat. No.
AirChek TOUCH Pump with Li-Ion battery pack and screwdriver set, *requires charging cradle and power supply; see below*	220-5000TC

AirChek TOUCH Pump Kits	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
Starter Kit includes pump as described above, Standard Charging Cradle, power supply with cord, 0.9 meter (3 feet) of Tygon tubing, and collar clip with cable tie	220-5000TC-S	220-5000TCK
Single High Flow Pump Kit includes pump as described above, Standard Charging Cradle, power supply with cord, and filter cassette holder, in a soft-side nylon carry case	220-5000TC-K	
Single Combined Kit includes pump as described above, Standard Charging Cradle, power supply with cord, plastic IOM MultiDust Sampler, 5 Multidust cassettes, plastic cyclone, 5 cyclone cassettes, All-In-One low flow holder, Type A protective tube cover, tube breaker, calidaptor and 1 meter of Tygon tubing, in a durable carry case		220-5000TCKC
Single High/Low Flow Pump Kit includes pump as described above, Standard Charging Cradle, power supply with cord, filter cassette holder, All-in-One low flow holder, and Type A protective tube cover, in a soft-side nylon carry case	220-5000TC-KD	
Single High/Low Flow Enhanced Pump Kit includes pump as described above, Enhanced Charging Cradle (e-Cradle), power supply with cord, USB cable, filter cassette holder, All-in-One low flow holder, and Type A protective tube cover, in a soft-side nylon carry case	220-5000TC-KDE	
Single Dust Kit includes pump as described above, Standard Charging Cradle, power supply with cord, plastic IOM MultiDust sampler, 5 Multidust cassettes, plastic cyclone, 5 cyclone cassettes, calidaptor, and 1 meter of Tygon tubing, in a durable carry case		220-5000TCKP
Single Pump Vapour Kit includes pumps as described above, Standard Charging Cradle, power supply with cord, All-In-One low flow holder, Type A protective tube cover, tube breaker, and 1 meter of Tygon tubing, in a durable carry case		220-5000TCKV
New **3-pack High/Low Flow Pump Kit** includes 3 pumps as described above, 2 Standard Charging Cradles, 1 e-Cradle, power supply with cord, and USB cable, 3 each: filter cassette holders, All-in-One low flow holders, and Type A protective tube covers, in a Pelican case	220-5000TC-K3D	
5-pack High Flow Pump Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord, USB cable, and 5 filter cassette holders, in a Pelican case	220-5000TC-K5	220-5000TCK5
5-pack High/Low Flow Pump Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord, and USB cable, 5 each: filter cassette holders, All-in-One low flow holders, and Type A protective tube covers, in a Pelican case	220-5000TC-K5D	
5-Pump Combined Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 Charging e-Cradle, power supply with cord, 5 plastic IOM MultiDust samplers, 10 Multidust cassettes, 5 plastic cyclones, 10 cyclone cassettes, calidaptor, 5 All-In-One low flow holders, 5 Type A protective tube covers, tube breaker, and 5 x 1 meter of Tygon tubing, in a durable carry case		220-5000TCK5C
5-Pump Dust Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 Charging e-Cradle, power supply with cord, 5 plastic IOM MultiDust samplers, 10 Multidust cassettes, 5 plastic cyclones, 10 cyclone cassettes, calidaptor, and 5 x 1 meter of Tygon tubing, in a durable carry case		220-5000TCK5P
5-Pump Vapour Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 Charging e-Cradle, power supply with cord, 5 All-In-One low flow holders, 5 Type A protective tube covers, tube breaker, and 5 x 1 meter of Tygon tubing, in a durable carry case		220-5000TCK5V

Accessories	Cat. No.
Standard Charging Cradle, *requires power supply, see below*	220-800
Enhanced Charging Cradle (e-Cradle) includes USB cable, *requires power supply, see below*	220-900
Single Cradle Power Supply, for use with one charging cradle	220-600
Multi Cradle Power Supply, for use with 2 to 5 charging cradles	220-700
DataTrac Pro for AirChek TOUCH Hardware Accessory Kit includes e-Cradle, USB cable, and single power supply	877-93
Low Flow (5 to 500 ml/min) Adapter Kit includes All-in-One low flow holder and Type A tube cover	210-500
CalChek Communication Cable, for use with Defender calibrator	210-502
Replacement Battery Pack, Li-Ion	P75718
Protective Pouch, nylon, with adjustable waist belt and shoulder strap, black	224-911

AirChek TOUCH requires 1/4-inch ID tubing; see page 35.

Certifications

CE

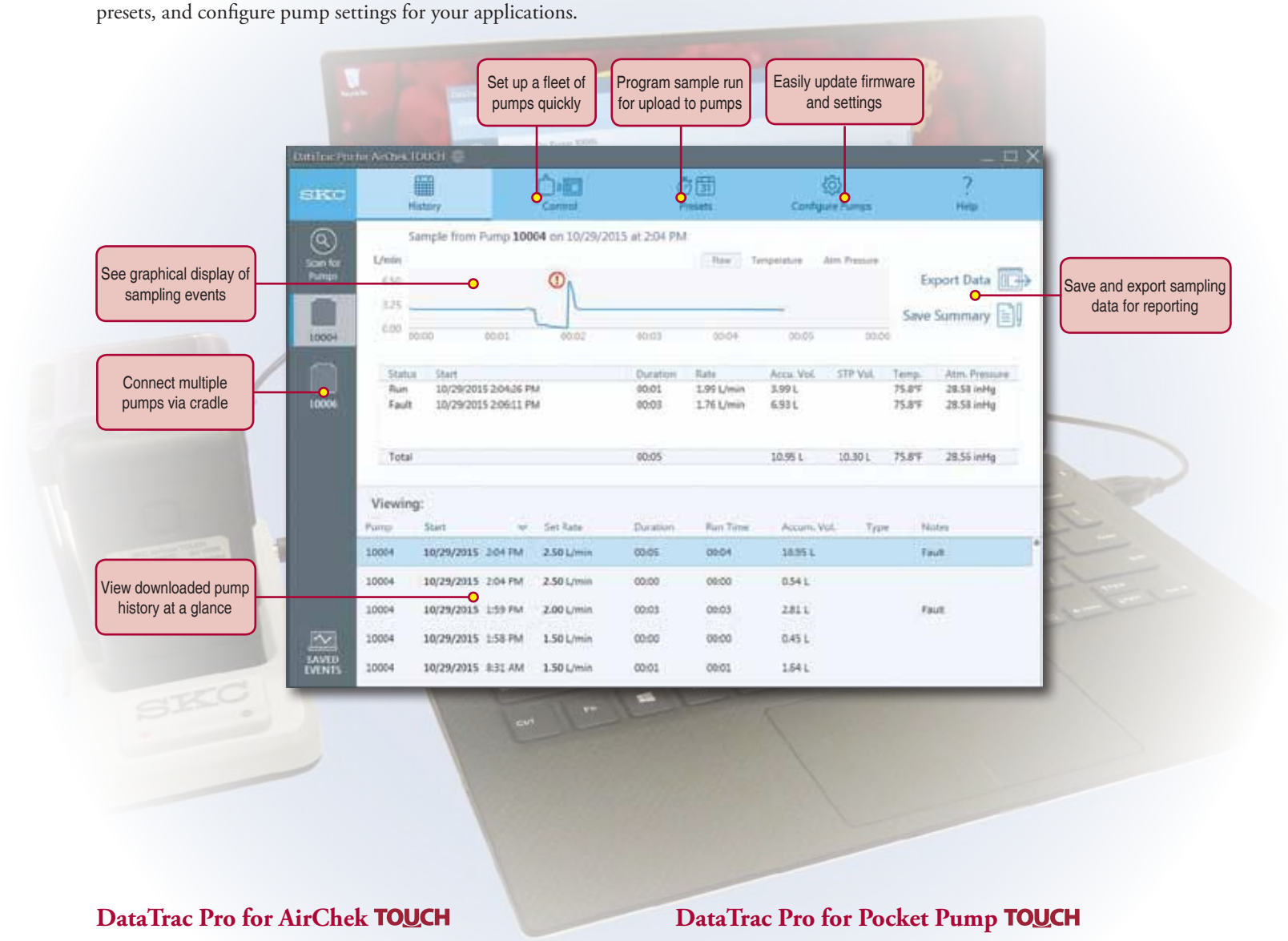
UL LISTED
intrinsically safe

VIDEO
www.skcinc.com

DataTrac Pro

Management Software for AirChek TOUCH and Pocket Pump TOUCH

DataTrac Pro Software is a time-saving pump and data management accessory for your AirChek **TOUCH** and Pocket Pump **TOUCH** sample pumps. Use DataTrac Pro's intuitive tabs to access/manage pump history, control/monitor pump operation, program sample run presets, and configure pump settings for your applications.



DataTrac Pro for AirChek TOUCH

DataTrac Pro-AirChek TOUCH Hardware Accessory Kit includes e-Cradle, single power supply, and USB cable. *DataTrac Pro software is available at no charge for download. AirChek TOUCH Pump, PC, and DataTrac Pro Software are required; see www.skcinc.com for system/hardware specifications.*

Cat. No. 877-93

Easy cradle and USB connection to PC

DataTrac Pro for Pocket Pump TOUCH

DataTrac Pro-Pocket Pump TOUCH USB Bluetooth Adapter fits in USB port on PC, *required when using DataTrac Pro for Pocket Pump TOUCH. DataTrac Pro software is available at no charge for download. Pocket Pump TOUCH, PC, and DataTrac Pro Software are required; see www.skcinc.com for system/hardware specifications.*

Cat. No. 877-94

Convenient Bluetooth connection to PC with adapter

New!

Pocket Pump® TOUCH

Get the Low Flow TOUCH in Air Sampling

- **Intuitive touch screen for easy programmability**
- **Constant flows from 20 to 500 ml/min**
  - Accommodates typical flow rates for sorbent tubes
  - Port and quick-connect accessory for bag sampling
- **Bluetooth communication with PC and DataTrac Pro Software (*see page 13 for details*)**
- **Magnetic charging connector**
- **Constant battery status display**
- **Time, date, battery status, flow rate, sample volume, temperature, atmospheric pressure, remaining run time (programmed run), and elapsed run time displayed on large backlit screen**
- **Rubber overmolding on case provides for quiet operation, impact protection, and a no-slip grip**
- **Compact and only 232 grams (8.2 ounces)**
- **> 20-hour run times at 200 ml/min with powerful Li-Ion battery**
  - Auto-dim feature conserves battery
  - Extended run times with AC adapter/charger
- **Multi-tube sampling**
  - Sample with up to 4 tubes simultaneously; saves time and uses fewer pumps
  - Constant flow mode with multiple-tube low flow holder and CPC (*see page 51*)
  - Constant pressure mode with multiple-tube low flow holder only (*see page 51*)
- **Automatic flow fault and restart**
- **Screen auto-lock provides for secure sampling**

Certifications

CE UL LISTED *intrinsically safe*

Magnetic charging connector with sure-connect indicator light

Large backlit screen

Bluetooth communication with PC and DataTrac Pro Software

Port with quick-connect accessory for easy bag sampling

Description	Cat. No.
Pocket Pump TOUCH only* with Li-Ion battery and screwdriver, *requires charger; see kits or chargers below*	**220-1000TC**
Pocket Pump TOUCH with Charger* includes pump as described above and single USB charger with magnetic connector and wall plug (U.S.)	**220-1000TC-C**
Pocket Pump TOUCH Starter Kit* includes pump, single charger, 0.9 meter (3 feet) of Tygon tubing, and collar clip with cable tie	**220-1000TC-S**
Single Pump Kit*† includes pump as described above, single charger, and Type A single tube holder, in a soft-sided nylon carry case†	**220-1000TC-K**
5-pack Pump Kit* includes 5 pumps as described above, 5 Type A single tube holders, and one 5-port USB charging hub with power cable (U.S. plug), in a Pelican case	**220-1000TC-K5D**

Accessories	Cat. No.
Single Charger, USB, with U.S. plug	**220-300**
5-port USB Charging HUB with power cable (U.S. plug)	**220-400**
Replacement Battery Pack*‡ Li-Ion	**P76303**
Quick-connect Bag Sampling Adapter, installs on pump exhaust port for quick connection to tubing for bag sampling	**220-200**
Single Kit Case, nylon, with shoulder strap	**224-903**
5-pack Kit Case, Pelican	**224-915**
DataTrac Pro for Pocket Pump TOUCH includes USB Bluetooth adapter	**877-94**

* *Pocket Pump TOUCH pumps with Li-Ion batteries may be subject to special shipping regulations.*
† *Single kits are also available in hard-sided Pelican case. Contact SKC.*
‡ *Replacing batteries with non-approved battery packs voids any warranty and UL Listing for intrinsic safety.*

Pocket Pump TOUCH requires 1/4-inch ID tubing; see page 35.

AirChek XR5000

High Power, Low Price

- **Extended flow range: 5 to 5000 ml/min†**
  - Suitable for low flow gas/vapor or high flow particulate sampling
  - Multi-tube sampling option allows up to four tube samples to be taken simultaneously, each at different flow rates if desired
- **Extended back pressure capabilities**
  - Up to 50 inches of water at 2 L/min
- **2 interchangeable battery options**
  - High-power Li-Ion for extended runs
  - Standard Li-Ion for lighter weight
- **Highly accurate electronic flow control system‡**
- **Automatic flow correction for changes in temperature provides accurate air volumes**
- **Extremely simple operation**
  - Large three-button keypad
  - Continuous run with the push of a button
  - Bright blue pump status LED
  - Easy-to-read LCD displays elapsed time and accumulated run time
- **Set-and-go timer**
  - Timed and delayed runs up to 9999 minutes
- **Sample integrity**
  - Lockable keypad
  - Automatic flow fault
  - Auto-restart attempted after 15 seconds in flow fault
- **Standard model weighs only 454 grams (16 ounces)**

Partner with the 4 L/min PPI for higher flow respirable dust sampling

see pages 112-113

† *5 to 500 ml/min with low flow adapter, see pages 50-51*
‡ *U.S. Patent No. 5,892,160*

Certifications

CE c UL us LISTED *intrinsically safe*

Enhanced Battery Power for Extended Runs!

XR5000 Model	2 L/min*	5 L/min*
High-power Li-Ion	40 hours	22 hours
Standard Li-Ion	20 hours	11 hours

* *Results of run time tests using 37-mm, 0.8-µm MCE filters with new pumps and batteries. Pump and battery performance may vary.*

Enhanced battery power for extended run times

2 Li-Ion battery options

Blue status LED

Small footprint and only 454 grams!

SKC Inc. AirChek® XR5000 Kits

Description	4-cell High-power Battery Pack SKC Inc. Cat. No.	2-cell Standard Battery Pack SKC Inc. Cat. No.
Pump with battery and screwdriver set, *requires charger; see kits below or chargers on pp. 30-31*	210-5001	210-5002
Starter Kit includes pump, charger,# 0.9 meter (3 feet) of Tygon tubing, and collar clip with cable tie	210-5001-S	210-5002-S
Single Pump Kit includes pump, charger, cassette holder, and soft-side nylon carry case (224-903)	210-5001K	210-5002K
5-pack High Flow Pump Kit includes 5 pumps and cassette holders and Take Charge 5 Multi-charger (100-240 V), in a Pelican case (224-914)	210-5001K5	210-5002K5
5-pack High/Low Flow Pump Kit includes 5 pumps, cassette holders, All-in-One low flow holders, and Type A protective tube covers and Take Charge 5 Multi-charger (100-240 V), in a Pelican case (224-914)	210-5001K5D	210-5002K5D
Replacement Li-Ion Battery Pack	P85004	P85002

 # 100-240 V

SKC Ltd. AirChek XR5000 Kits

Description	4-cell High-power Battery Pack SKC Ltd. Cat. No.	2-cell Standard Battery Pack SKC Ltd. Cat. No.
Pump with battery, *requires charger, see kits below or charger on pp. 30-31*	210-5001	210-5002
Single Pump Basic Kit includes pump, charger,# 1 meter (39 inches) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case (224-98)	210-5001K	210-5002K
Single Pump Kit-Gas/Vapour includes pump and battery, single charger (223-241#), 1 meter (39 inches) of Tygon tubing, All-in-One low flow holder (224-27), tube breaker (800-01200), Type A protective tube cover (224-29A), and 1 Step by Step Guide, in a durable carry case (224-98)	210-5001KV	210-5002KV
Single Pump Kit-Dust/Particulate includes pump and battery, single charger (223-241#), calidaptor (391-01), 1 meter (39 inches) of Tygon tubing, plastic IOM MultiDust Sampler (225-70A), 4 extra MultiDust cassettes (225-71A), Plastic Cyclone (225-69), 4 extra cyclone cassettes (225-62), and 1 Step by Step Guide, in a durable carry case (224-98)	210-5001KP	210-5002KP
Single Pump Kit-Combined includes pump and battery and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate kits, in one durable carry case (224-98)	210-5001KC	210-5002KC
5-pack Pump Basic Kit includes 5 each pumps and batteries, 5 one-meter (39-inch) lengths of Tygon tubing, 3 Step by Step Guides, and 5 single chargers, in a durable carry case (224-97B)	210-5001K5	210-5002K5
5-pack Pump Kit-Gas/Vapour includes 5 each pumps and batteries, All-in-One low flow holders (224-27), and Type A protective tube covers (224-29A), 5 one-meter (39-inch) lengths of Tygon tubing, tube breaker (800-01200), 3 Step by Step Guides, and 5 single chargers,# in a durable carry case (224-97B)	210-5001K5V	210-5002K5V
5-pack Pump Kit-Dust/Particulate includes 5 each pumps and batteries, plastic IOM MultiDust Samplers (225-70A), and Plastic Cyclones (225-69), and 5 one-meter (39-inch) lengths of Tygon tubing, 10 extra cyclone cassettes (225-62), calidaptor (391-01), 10 extra MultiDust cassettes (225-71A), 3 Step by Step Guides, and 5 single chargers,# in a durable carry case (224-97B)	210-5001K5P	210-5002K5P
5-pack Pump Kit-Combined includes 5 pumps and batteries and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case (224-97B)	210-5001K5C	210-5002K5C
Replacement Battery Pack	P85004	P85002

 # 100-240 V

AirChek XR5000 requires 1/4-inch ID tubing, see page 35.

Universal XR Series

Classic Workhorse from 5 ml/min to 5 L/min

- Constant flows from 1 to 5 L/min
- Low flows with holder from 5 to 500 ml/min
- Long 12+ hours run time (4 L/min at 20 inches water back pressure)
- Heavy duty and lightweight – only 964 grams (34 ounces)
- Compact size
- Choose the automatic features that meet your requirements

PCXR8 Universal Pump
Programmable Solution

- ✓ High-accuracy timer
- ✓ Automatic fault shutdown/ time retention
- ✓ Convenient HOLD feature
- ✓ Delayed start
- ✓ Timed shutdown
- ✓ Intermittent sampling
- ✓ Extended intermittent sampling up to 7 days

PCXR4 Universal Pump
Compliance Solution

- ✓ High-accuracy timer
- ✓ Automatic fault shutdown/ time retention
- ✓ Convenient HOLD feature

44XR Universal Pump
Economical Solution

- ✓ Turn on and go

See Ordering on page 17.

Universal XR Pumps, Kits, and Accessories

Description	Voltage	5 to 5000 ml/min SKC Inc. UL Listed	5 to 4000 ml/min SKC Ltd. ATEX approved
Universal Pump with NiMH battery pack and screwdriver set		224-PCXR8 224-PCXR4 224-44XR	224-PCMTX8 224-PCMTX4 224-44MTX
Starter Kit includes pump, single PowerFlex charger (223-2000) with cable (223-1002), 0.9 meter (3 feet) of Tygon tubing, and collar clip with cable tie	100-240 V	224-PCXR8-S 224-PCXR4-S 224-44XR-S	
Single Pump Kit-Basic includes pump as described above, single charger (223-203A), 1 meter (39 inches) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V		224-PCMTX8K 224-PCMTX4K 224-44MTXK
Single Pump Kit-High/Low Flow includes pump as described above, single PowerFlex charger (223-2000) with cable (223-1002), filter cassette holder (225-1), adjustable low flow holder (224-26-01), and Type A protective tube cover (224-29A), in a soft-side nylon carry case (224-903)	100-240 V	224-PCXR8KD 224-PCXR4KD 224-44XRKD	
Single Pump Kit-Dust/Particulate includes pump as described above, single charger (223-203A), calidaptor (391-01), 1 meter (39 inches) of Tygon tubing, plastic IOM MultiDust Sampler (225-70A), 4 extra MultiDust cassettes (225-71A), Plastic Cyclone (225-69), 4 extra cyclone cassettes (225-62), and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V		224-PCMTX8KP 224-PCMTX4KP 224-44MTXKP
Single Pump Kit-Gas/Vapour includes pump as described above, single charger (223-203A), 1 meter (39 inches) of Tygon tubing, single adjustable low flow holder (224-26-01), tube breaker (800-01200), Type A protective tube cover (224-29A), and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V		224-PCMTX8KV 224-PCMTX4KV 224-44MTXKV
Single Pump Kit-Combined includes pump as described above and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate kits, in one durable carry case (224-98)	110-240 V		224-PCMTX8KC 224-PCMTX4KC 224-44MTXKC
5-pack Pump Kit-Basic includes 5 pumps as described above, 5-station charger (223-103A), 5 one-meter (39-inch) lengths of Tygon tubing, and 3 Step by Step Guides, in a durable carry case (224-97A)	110-240 V		224-PCMTX8K5 224-PCMTX4K5 224-44MTXK5
5-pack Pump Kit-High/Low Flow includes 5 each pumps as described above, single adjustable low flow holders (224-26-01), Type A protective tube covers (224-29A), and filter cassette holders (225-1), and a 5-station PowerFlex charger (223-1000) with 5 cables (223-1002), in a Pelican carry case (224-908)	100-240 V	224-PCXR8K5D 224-PCXR4K5D 224-44XRK5D	
5-pack Pump Kit-Dust/Particulate includes 5 each pumps as described above, plastic IOM MultiDust Samplers (225-70A), and Plastic Cyclones (225-69), 5 one-meter (39-inch) lengths of Tygon tubing, 10 extra cyclone cassettes (225-62), 10 extra MultiDust cassettes (225-71A), calidaptor (391-01), and 3 Step by Step Guides, in a durable carry case (224-97A)	110-240 V		224-PCMTX8K5P 224-PCMTX4K5P 224-44MTXK5P
5-pack Pump Kit-Gas/Vapour includes 5 each pumps as described above, single adjustable low flow holders (224-26-01), and Type A protective tube covers (224-29A), 5 one-meter (39-inch) lengths of Tygon tubing, a 5-station charger (223-103A), tube breaker (800-01200), and 3 Step by Step Guides, in a durable carry case (224-97A)	110-240 V		224-PCMTX8K5V 224-PCMTX4K5V 224-44MTXK5V
5-pack Pump Kit-Combined includes 5 pumps as described above and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case (224-97A)	110-240 V		224-PCMTX8K5C 224-PCMTX4K5C 224-44MTXK5C

Universal Pumps require 1/4-inch ID tubing; see page 35.

Certifications

CE UL LISTED intrinsically safe Ex

See page 105 for the Personal Exposure Vest

Accessories

AirChek 52/Sidekick

Small, Simple, Sturdy

The small, lightweight, and economical AirChek® 52/Sidekick Sample Pump is designed for rugged industrial use at flows from 5 to 3000 ml/min. Ideal for on-worker applications, use the compact AirChek 52/Sidekick for short-term or full-shift sampling with sorbent tubes, impingers, size-selective samplers, or filter cassettes. Reliability, ease of use, and precision flow control make the AirChek 52/Sidekick one of the most popular personal air sample pumps in the industry.

ABOUT

Sidekick Sample Pump

The Sidekick is available in three models:

- 224-50MH
  - non-ATEX approved
- 224-51MTX
  - ATEX approved - no LCD
- 224-52MTX
  - ATEX approved with LCD indicator

Wide flow range

- Constant high flows from 1000 to 3000 ml/min
- Low flows from 5 to 500 ml/min with low flow holder *(see page 50)*
- Ideal for most personal sampling applications

Full-shift run times

- Provides 12+ hours run time at 2 L/min, 25 inches water back pressure

Simple design

- Impact-resistant case is easy to clean and decontaminate
- Easy on/off and flow control
- Quick change battery pack mounted on bottom of pump

Small, compact, and lightweight

- Weighs only 567 grams (20 ounces)

Highly accurate display

- Digital time display tracks sample run time in minutes up to 99,999
- Indicates low battery condition or flow fault without losing sample run time
- Attempts auto-restart up to 5 times from flow fault

Multi-tube sampling saves time and uses fewer pumps

- Multiple low flow tube holder and Constant Pressure Controller (CPC) accessories allow up to four tube samples to be taken simultaneously, each at different flow rates if desired. *See page 51.*

New! All-in-One Low Flow Holder

- Permits single sorbent tube sampling from 5 to 500 ml/min. *See page 50 for details.*

Top view: AirChek 52/Sidekick with LCD indicator

AirChek 52/Sidekick Pumps and Kits

Description	Voltage	AirChek 52 SKC Inc. Cat. No.	Sidekick SKC Ltd. Cat. No.
AirChek 52/Sidekick Pump with NiMH battery pack and screwdriver set		224-52	224-50MH 224-51MTX 224-52MTX
Starter Kit includes pump, PowerFlex charger (223-2000) with cable (223-1004), 0.9 meter (3 feet) of Tygon tubing, and collar clip with cable tie	100-240 V	224-52-S	
Single Pump Kit-Basic includes pump as described above, single charger (223-203A), 1 meter (39 inches) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V		224-50MHK 224-51MTXK 224-52MTXK
Single Pump Kit-High Flow includes pump as described above, single PowerFlex charger (223-2000) with cable (223-1004), and filter cassette holder (225-1), in a Pelican carry case (224-901)	100-240 V	224-52KH	
Single Pump Kit-Dust/Particulate includes pump as described above, single charger (223-203A), calidaptor (391-01), 1 meter (39 inches) of Tygon tubing, plastic IOM MultiDust Sampler (225-70A), 4 extra MultiDust cassettes (225-71A), Plastic Cyclone (225-69), 4 extra cyclone cassettes (225-62), and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V		224-50MHKP 224-51MTXKP 224-52MTXKP
Single Pump Kit-Gas/Vapour includes pump as described above, single charger (223-203A), 1 meter (39 inches) of Tygon tubing, All-in-One low flow holder (224-27), tube breaker (800-01200), Type A protective tube cover (224-29A), and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V		224-50MHKV 224-51MTXKV 224-52MTXKV
Single Pump Kit-Combined includes pump as described above and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate kits, in one durable carry case (224-98)	110-240 V		224-50MHKC 224-51MTXKC 224-52MTXKC
5-pack Pump Kit-Basic includes 5 pumps as described above, 5-station charger (223-103A), 5 one-meter (39-inch) lengths of Tygon tubing, and 3 Step by Step Guides, in a durable carry case (224-97)	110-240 V		224-50MHK5 224-51MTXK5 224-52MTXK5
5-pack Pump Kit-High Flow includes 5 each pumps as described above and filter cassette holders (225-1), 5-station PowerFlex charger (223-1000) with 5 cables (223-1004), in a Pelican carry case (224-907)	100-240 V	224-52K5	
5-pack Pump Kit-High/Low Flow includes 5 each pumps as described above, All-in-One low flow holders (224-27), Type A protective tube covers (224-29A), and filter cassette holders (225-1), and a 5-station PowerFlex charger (223-1000) with 5 cables (223-1004), in a Pelican carry case (224-907)	100-240 V	224-52K5D	
5-pack Pump Kit-Dust/Particulate includes 5 each pumps as described above, plastic IOM MultiDust Samplers (225-70A), and Plastic Cyclones (225-69), 5 one-meter (39-inch) lengths of Tygon tubing, calidaptor (391-01), 10 extra cyclone cassettes (225-62), 10 extra MultiDust cassettes (225-71A), 5-station charger (223-103A), and 3 Step by Step Guides, in a durable carry case (224-97)	110-240 V		224-50MHK5P 224-51MTXK5P 224-52MTXK5P
5-pack Pump Kit-Gas/Vapour includes 5 each pumps as described above, All-in-One low flow holders (224-27), and Type A protective tube covers (224-29A), 5 one-meter (39-inch) lengths of Tygon tubing, a 5-station charger (223-103A), tube breaker (800-01200), and 3 Step by Step Guides, in a durable carry case (224-97)	110-240 V		224-50MHK5V 224-51MTXK5V 224-52MTXK5V
5-pack Pump Kit-Combined includes 5 pumps as described above and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case (224-97)	110-240 V		224-50MHK5C 224-51MTXK5C 224-52MTXK5C

The AirChek 52/Sidekick Pump requires 1/4-inch ID tubing, see page 35.

Certifications

CE

UL LISTED
intrinsically safe (AirChek 52)

Ex
(Sidekick models 224-51MTX and 224-52MTX)

For Accessories

Tube Holders .....pages 50-51
Flowmeters.....pages 32-34
Battery Chargers.....pages 30-31
Filter Holders..... page 102

More Information
www.skcinc.com

AirChek 3000

PC Programmable

- **Longer run times with NiMH battery — 12+ hours at 2 L/min, 30 inches water back pressure**
- **Advanced flow control from 1000 to 3250 ml/min**
  - Accurate internal flow sensor measures flow directly and acts as a secondary standard to maintain set flow
  - Thermal and pressure sensors maintain flow calibration by compensating for differences between the temperature and atmospheric pressure at calibration and during sampling
- **Convenient Low Flow Adapter Kit available for 5 to 500 ml/min**
- **Continuous sample volume calculations**
  - Flow rate, run time, volume, and flow fault are continuously recorded for accurate sample reporting
- **Battery status display**
- **Multi-tube sampling feature**
  - Save valuable time with simultaneous 2, 3, or 4-tube sampling (*see page 51*)
- **Protective features**
  - Rugged, impact-resistant case with cover-protected ports
  - Automatic flow fault shutdown and restart
  - Auto shut-off at low battery

Schedule it on a PC!

Combine AirChek® 3000, your PC, and DataTrac Software to easily create single or multiple sampling schedules that include delayed start, timed shutdown, and sequential sampling. Alternatively, a single schedule can be set manually using the pump's large integral keypad.

Sample and record it!

Start sampling with the click of a mouse or the press of a button. A patented* internal flow sensor acts as a secondary standard to accurately maintain set flow. AirChek 3000 records flow rate, run time, sample volume, and flow fault throughout the sampling period. View values during sampling on the pump LCD or in pump history on a PC.

* *U.S. Patent No. 5,892,160*

Download and report it!

Use your PC and DataTrac Software to download pump history, import data into your favorite software for IH lab reporting, or create a worker exposure profile for complete reporting. *See page 11 for details.*

Schedule, Sample, Download, and Report from Your PC

Certifications

CE IECEx ANZEx

Description	Voltage	SKC Ltd. Cat. No.
AirChek 3000 Pump with NiMH battery pack and tool		210-3311
Single Pump Kit-Basic includes pump as described above, single charger (223-240A), 1 meter (39 inches) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V	210-3311K
Single Pump Kit-Dust/Particulate includes pump as described above, single charger (223-240A), calidaptor (391-01), 1 meter (39 inches) of Tygon tubing, plastic IOM MultiDust Sampler (225-70A), 4 extra MultiDust cassettes (225-71A), Plastic Cyclone (225-69), 4 extra cyclone cassettes (225-62), and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V	210-3311KP
Single Pump Kit-Gas/Vapour includes pump as described above, single charger (223-240A), 1 meter (39 inches) of Tygon tubing, All-in-One low flow holder (224-27), tube breaker (800-01200), Type A protective tube cover (224-29A), and 1 Step by Step Guide, in a durable carry case (224-98)	110-240 V	210-3311KV
Single Pump Kit-Combined includes pump as described above and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate Kits, in a durable carry case (224-98)	110-240 V	210-3311KC
5-pack Pump Kit-Basic includes 5 pumps as described above, 5-station charger (223-109A), 5 one-meter (39-inch) lengths of Tygon tubing, and 3 Step by Step Guides, in a durable carry case (224-97A)	110-240 V	210-3311K5
5-pack Pump Kit-Dust/Particulate includes 5 each pumps as described above, plastic IOM MultiDust Samplers (225-70A), and Plastic Cyclones (225-69), 5 one-meter (39-inch) lengths of Tygon tubing, 10 extra cyclone cassettes (225-62), 10 extra MultiDust cassettes (225-71A), calidaptor (391-01), 5-station charger (223-109A), and 3 Step by Step Guides, in a durable carry case (224-97A)	110-240 V	210-3311K5P
5-pack Pump Kit-Gas/Vapour includes 5 each pumps as described above, All-in-One low flow holders (224-27) and Type A protective tube covers (224-29A), 5 one-meter (39-inch) lengths of Tygon tubing, a 5-station charger (223-109A), tube breaker (800-01200), and 3 Step by Step Guides, in a durable carry case (224-97A)	110-240 V	210-3311K5V
5-pack Pump Kit-Combined includes 5 pumps as described above and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case (224-97A)	110-240 V	210-3311K5C
Accessories		
CalChek Communication Cable, for use with Defender calibrator		210-502
DataTrac Software for AirChek 3000		877-91

AirChek 3000 requires 1/4-inch ID tubing; see page 35.

Leland Legacy

Area or Personal High Flow Sampling

Applications and Typical Run Times§

- **24+ hours**
  - Sioutas Impactor at 9 L/min
  - IMPACT Sampler at 10 L/min
  - Low-volume PUF Tube at 5 L/min
  - DPS System (pages 24-25) at 10 L/min
  - 8 L/min Respirable PPI (pages 112-113) at 8 L/min
- **32 hours**
  - 37-mm, 0.8-µm MCE Filter Cassette at 5 L/min (approx. 14 inches water back pressure)
- **20 hours**
  - 37-mm, 0.8-µm MCE Filter Cassette at 8 L/min (approx. 22 inches water back pressure)
- **Other sampling applications**
  - Bioaerosols (spore traps/ cassettes)
  - Nanoparticles with 37-mm MCE filter at 7 L/min

§ Results obtained using a new pump and new fully charged battery. Pump and battery performance may vary.

High Flows — 5 to 15 L/min

Leland Legacy® provides the high flows and long run times of a vacuum-style pump in a compact, portable, and battery-operated sampler within specified back pressure range.*

24-Hour Run Times on One Battery Charge

The rechargeable lithium-ion (Li-Ion) battery pack provides 24-hour run times with impactors and other sampling devices with low back pressures.* Leland Legacy is ideal for unattended ambient air sampling. *See Deployable Sampler Systems on pages 24-25.*

The Ultimate in High Flow Sampling!

Advanced Flow Control

A patented# internal flow sensor measures flow directly and acts as a secondary standard to constantly maintain the set flow. Set flow is achieved immediately at start-up and flow calibration is automatically maintained by built-in sensors that compensate for differences in temperature and atmospheric pressure during sampling.

Flexible Programming

- **Manual three-button operation**
  No tools needed! Use the built-in keypad to set, calibrate, and sample! Real-time sampling parameters are available at the touch of a button.
- **PC programmability**
  Use Leland Legacy with your PC and DataTrac Software to create complete running sequences, download sampling history, and generate sampling reports for ISO 9000, Total Quality Management (TQM) programs, and occupational health and safety management systems. *DataTrac is sold separately or in 5-pack Leland Legacy Kits; see page 23.*

** Leland Legacy is not recommended for high back pressure applications such as asbestos clearance sampling.*
 # U.S. Patent No. 5,892,160

Partner with the 8 L/min PPI for respirable dust sampling
see pages 112-113

Leland Legacy — the power of the DPS and DCS Systems
see pages 24-25

Leland Legacy

24-hour PM Sampling with Impactors at Flows up to 10 L/min

Easy-access computer interface and battery charging jack (under protective cover)

Inlet port with removable protective filter

Bright flashing LED run indicator

Large Liquid Crystal Display (LCD)

Convenient battery status icon

Large, easy-to-use 3-button keypad

Tough rubber overmolding protects pump and provides a sure grip

Anti-static thermoplastic case

Certifications

CE ETV performance verified

DataTrac® Software for Leland Legacy®

Windows-based DataTrac Software for Leland Legacy sample pumps provides for maximum use of pump features and sample history download to PC for reporting.

- Program/operate your pump
- Download sampling history from pump to PC
- Set up easy chain of custody sample sheets
- Manage data and produce reports

DataTrac Software for Leland Legacy includes software on CD and DataTrac adapter cable, *requires Windows XP or higher and available USB port*
Cat. No. 877-92

Description		Cat. No.
Leland Legacy Pump† with Li-Ion battery pack and screwdriver set, *requires charger; see kits or chargers below*		100-3002
Single Pump Kit† includes pump as described above and single charger, in a Pelican carry case	100-240 V	100-3002K
5-pack Pump Kit† includes 5 Leland Legacy pumps, Take Charge 5 Multi-charger, and DataTrac Software, in a Pelican case	100-240 V	100-3002K5
Accessories		
Single Charger, for Li-Ion battery-powered pumps	100-240 V	223-241
Take Charge 5 Multi-charger, 5 stations, for Li-Ion battery-powered pumps	100-240 V	223-441
Battery Charging Adapter, for charging batteries outside the pump		223-248
CalChek Communication Cable, *for use with Defender calibrator*		210-502
Kit Cases		
Single, Pelican		224-912
5-pack, Pelican, on wheels for easy transport		224-905
Pump Pouch		
Noise-reducing, black nylon, reduces pump noise from 62.5 to 52 dBΔ		224-89
DataTrac Software for Leland Legacy		877-92
Replacement Battery Pack,† Li-Ion		P75692

† *Leland Legacy pumps contain Li-Ion batteries and may be subject to special shipping regulations.*
Δ *Measured 1 meter (39 inches) from pump operating at 10 L/min without media*

Noise-reducing nylon pouch
Cat. No. 224-89

Leland Legacy requires 3/8-inch ID tubing; see page 35.

Deployable Systems Performance Profile

Flow Rate
10 L/min

Run Time
> 24 hrs (one battery charge)

Power
Rechargeable Li-Ion battery,

Case Dimensions
47 x 36 x 18 cm (18.5 x 14.1 x 6.9 in)

System Weight
DPS: 5.9 kg (13 lbs)
DCS: 5.5 kg (12.2 lbs)

Certification

CE

For DataTrac Software
see page 25

ABOUT

SKC DCS/DPS Applications

- ARCADIS (New Jersey) used the SKC DCS for 8-hour remediation sampling of pesticides and PCBs (EPA Method TO-4A), PAHs (EPA TO-13A), and PM10. Comments on DCS performance included "reliable, well-designed for field use, and well-suited for perimeter air samples at hazardous waste sites." DCS sample media was found to be consistent with EPA TO methods and an improvement on traditional PUF cartridges.
- University of Wisconsin-Eau Claire completed a study using the SKC DPS to study PM2.5 levels in six 24-hour samples around frac sand mines and processing sites. See "PM2.5 Airborne Particulates Near Frac Sand Operations" abstract at www.neha.org/node/4407.

Deployable Sampler Systems

Ambient Air Kits for 24-hour Sampling

- **Compact, portable size — only one case!**
- **Fast setup with modular components and quick-connect tubing**
- **Ideal for remote locations or indoor air sampling**
  - Pre-program automatic start and stop
  - 24-hour Li-Ion battery operation
  - Secure operation from within a heavy-duty lockable case
  - Quick-mount bracket is easy to install
  - Quick-change battery packs
  - Rain cover protects sampling head
  - Compact for easy transport
  - Low noise for indoors
- **System pump provides constant, accurate airflows**
  - Simple 3-button keypad for setting a single unattended sample run
  - Program for multiple runs with a PC and DataTrac for Leland Legacy Software
- **Available for sampling PM10, PM2.5, or PAHs/PCBs/pesticides/associated particulate**

SKC Deployable Sampler Systems provide cost-effective ambient air sampling and are ideal for applications including fenceline, near-roadway, and eight-hour remediation monitoring and indoor air studies. Each system includes the fully programmable Leland Legacy Sample Pump, specially designed sampling head, and accessories for fast deployment and effective sampling. SKC offers two systems:

- **Deployable Particulate Sampler (DPS) System** for PM10 or PM2.5
- **Deployable Cartridge Sampler (DCS) System** for polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, and associated particulate

Unlike other ambient sampling systems, SKC Deployable Sampler Systems fit into one heavy-duty Pelican case that is easily carried or shipped. Partner the DPS or DCS System with DataTrac Software for advanced scheduling options and record keeping.

See Ordering Information on page 25.

Deployable Particulate Sampler (DPS) System

Ambient and Indoor PM10 or PM2.5 Sampling

Description		Cat. No.	Qty.
DPS System*# includes sample pump with connection case, charger (100-240 V), 2 external battery assemblies with adapters (packaged separately), IMPACT sampling head, 2 filter cassettes, calibration adapter, rain cover for sampling head, 25 disposable impaction discs *(limited shelf-life)*, filter cassette opener, tubing with quick-connect fitting, and mounting bracket, in a heavy-duty lockable carry case	**PM10 Kit** **PM2.5 Kit**	**100-3901** **100-3903**	**ea** **ea**
Collection Filters for DPS System (not supplied with system) *Select a filter based on your application; required for sampling*			
Quartz Filters, 47 mm, Tissuquartz, 432 µm thick		**225-1823**	**25**
PTFE Filters,§ 47 mm, 2.0-µm pore size, with PMP support ring		**225-1747**	**50**
Sampling Heads/Replacement Parts			
IMPACT Sampling Head includes filter cassette, calibration adapter, and rain cover for sampler; *requires collection media (see above) and impaction substrate (see below) sold separately*	**PM2.5** **PM10**	**225-392** **225-390**	**ea** **ea**
Impaction Discs, 37 mm, pre-oiled, ready to use, disposable, *required for sampling, limited shelf-life*		**225-395** **225-395A**	**25** **50**
Filter Cassette		**225-396**	**ea**
Accessories			
Petri Dish Slide, for filter transport		**225-2-01**	**100**
DataTrac for Leland Legacy Software includes software on CD and DataTrac adapter cable, *visit www.skcinc.com for details*		**877-92**	**ea**

* *Provides data similar to data from Federal Reference Method samplers. The DPS System is not a U.S. EPA reference or equivalent method for compliance sampling.*

\# *System contains Li-Ion batteries and may be subject to special shipping regulations.*

§ *Back pressure on PTFE filters may vary within the same lot.*

Patented‡ IMPACT sampling head for DPS. For more information on IMPACT, see page 116.

Sampling head holds media cartridge for DCS.

‡ *U.S. Patent No. 7,334,453*

Deployable Cartridge Sampler (DCS) System

Ambient Sampling of PAHs, PCBs, Pesticides, and Associated Particulates

Description	Cat. No.	Qty.
DCS System*# includes sample pump with connection case, charger (100-240 V), 2 external battery assemblies with adapters (packaged separately), sampling head, calibration adapter, rain cover for sampling head, sample tubing with quick-connect fitting, calibration tubing, and mounting bracket, in a heavy-duty lockable carry case	**100-3960**	**ea**
Media Cartridges, *required, select based on application* Stainless steel cartridges containing media as described below, stainless steel support screens, and gaskets. Each cartridge is wrapped in aluminum foil and shipped in an aluminum can with lid.		
Filter/PUF contains 41.3-mm length of PUF and a 47-mm quartz filter	**226-206**	**ea**
Filter/PUF/XAD-2/PUF contains a 47-mm quartz filter and 2 grams of XAD-2 sorbent sandwiched between two 20.6-mm lengths of PUF	**226-207**	**ea**
Accessories		
DataTrac for Leland Legacy Software includes software on CD and DataTrac adapter cable, *visit www.skcinc.com for details*	**877-92**	**ea**

* *Provides data similar to data from Federal Reference Method samplers. The DCS System is not a U.S. EPA reference or equivalent method for compliance sampling.*

\# *System contains Li-Ion batteries and may be subject to special shipping regulations.*

Leland Legacy Sample Pump
The Power of the DPS and DCS Systems
See pages 22-23 for more information.

QuickTake 30

Powered by Supercharged Lithium-Ion Battery

10 to 30 L/min constant flow...
for sampling with BioStage viable cascade impactors, spore trap cassettes, microvacuum cassettes, or other samplers that require flows up to 30 L/min

It's compact and portable!
QuickTake® 30 weighs only 2.2 kg (4.8 pounds) and features an easy-grip handle for portability.

Reliable long run times...
on a single battery charge with powerful Li-Ion battery *(see page 27)*

Easy operation...
with large keypad buttons, high-contrast digital display, front-mounted intake for fast media setup, and programmable timer

Versatility...
with the mounting bracket accessory to mount a BioStage impactor directly onto the pump

Programmable

True constant flow

Easy calibration

QuickTake 30

Sample Pump Solution for Mold

10 to 30 L/min constant flow sample pump
- Maintains set flow throughout a sampling period for complete sample integrity
- Ideal for use with BioStage viable cascade impactors, spore trap cassettes such as VersaTrap, microvacuum cassettes, or other samplers that require flows up to 30 L/min

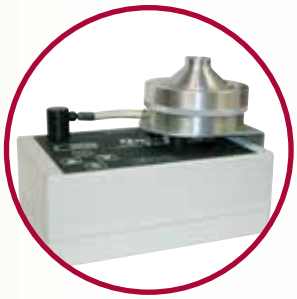
Long run times on a single battery charge
- AC charger/adapter for extended sampling
- Rechargeable Li-Ion battery pack

Compact and portable
- 23.6 x 21.3 x 8.9 cm (9.3 x 8.4 x 3.5 inches)
- Weighs only 2.2 kg (4.8 pounds)
- Handle for easy portability

Easy-to-use programmable timer for unattended sampling
- Select sample time presets or customize timer from 1 to 999 minutes
- Continuous run with manual shut-off
- Intermittent sampling
- Large, easy-to-use keypad

Easy to use
- Large keypad control
- End-of-cycle visible and audible alarms

High-contrast digital display



QuickTake 30 with BioStage on mounting bracket

QuickTake 30 with VersaTrap cassette mounted on pump inlet

the QuickTake 30 Advantage!

- ☑ Maintains true constant flow even when used with media that creates back pressure such as wall cavity samplers *(see page 101)* and microvacuum cassettes *(see page 142)*
- ☑ A low-noise, battery-powered alternative to vacuum pumps

QuickTake 30 Applications and Typical Run Times§

- **14+ hours**
  – 37-mm, 0.8-µm MCE filter at 10 L/min
- **9+ hours — asbestos clearance**
  For maximum air volumes during asbestos clearance sampling, use QuickTake 30 with a 25-mm, 1.2-µm MCE filter at 10 L/min with fully charged battery and AC power to achieve 9+ hours of run time — a total air volume of 5400 liters
- **5 hours**
  – Spore trap cassettes at 15 L/min
- **4 hours**
  – Viable cascade impactors at 28.3 L/min

§ *Results obtained using a new pump and new, fully charged battery. Pump and battery performance may vary.*

Description		Cat. No.
QuickTake 30 Sample Pump*# and Charger	100-240 V	228-9530
QuickTake 30 Sample Pump,*# Rotameter, and Charger	100-240 V	228-9530A
QuickTake 30 BioStage Pump*# Kit includes pump, charger, rotameter, Standard BioStage, mounting bracket with inlet adapter, and calibration adapter, in a deluxe carry case	100-240 V	228-9530K
Accessories		
Charger/Adapter	100-240 V	223-245
Mounting Bracket for BioStage includes inlet adapter		228-9531
Rotameter, 3 to 30 L/min		320-100
Replacement Battery Pack,* Li-Ion		P75689
Replacement Filter/O-ring Set includes 5 filters and 1 O-ring		P40021

* *QuickTake sample pumps contain Li-Ion batteries and may be subject to special shipping regulations.*
\# *Not CE marked*

QuickTake 30 requires 3/8-inch ID tubing; see page 35.

BioStage Impactors
see page 120

Flite 3

Programmable High Flow Pump for Asbestos and More

Flite 3 Performance Profile

Flow Range
2 to 20 L/min

Operating Temperature
-5 to 50 C (23 to 122 F)

Battery
Lead-acid, available with 3.2 or 7-Ah capacity

Dimensions
11 x 20 x 18 cm (4.3 x 7.9 x 7 in)

Weight (pump only)
2.24 kg (4.9 lbs)

Certification

CE

- **Wide flow range: 2 to 20 L/min**
- **Fully programmable**
  - Manual run
  - Timed run and delayed start
  - Intermittent sampling
- **Robust steel casing**
- **Sturdy handle for easy portability**
- **Long run times**
- **High-performance sampling capabilities**
- **Convenient front-mounted power socket**
- **Battery or AC operation**
  - Choose lightweight 3.2-Ah battery or long-run 7-Ah battery
- **Flow fault feature ensures sample integrity**
  - Run time display is retained during fault

The highly versatile SKC Flite 3 air sample pump provides high-performance sampling for asbestos and other particulates. With features such as a robust steel casing to withstand daily rigors, a front-mounted power socket to provide easy access for charging or powering, and a sturdy handle for easy portability, the Flite 3 is the choice for most high-volume sampling applications. Use the fully programmable timer to set a manual run, a timed run with or without delayed start, or intermittent sampling. Flite 3 is ideal for area and environmental monitoring, stack sampling, indoor air studies, asbestos monitoring, biosampling, and long-term background monitoring.

Typical Run Time*

Filter	Flow (L/min)	Run Time (Hrs)
25-mm MCE, 0.8 µm	4	30
25-mm MCE, 0.8 µm	8	13
25-mm MCE, 0.8 µm	12	4.5
25-mm MCE, 1.2 µm	4	32
25-mm MCE, 1.2 µm	8	15
25-mm MCE, 1.2 µm	12	8
25-mm Glass Fiber	8	16
25-mm Glass Fiber	12	8.5
25-mm Glass Fiber	16	5.5

* *Using new, fully charged 7-Ah battery in clean factory conditions. Pump and battery performance may vary.*

Flite 3 Sample Pump with Aluminum Sampling Mast Cat. No. 901-213

Description	Cat. No.
Flite 3 Sample Pump Only	**901-3011**
Flite 3 Pump Kits	
Sample Pump with 3.2-Ah lightweight battery, charger (100-240 V), and 1 meter (39 inches) of Tygon tubing	**901-3011-3K**
Sample Pump with 7-Ah long run time battery, charger (100-240 V), and 1 meter (39 inches) of Tygon tubing	**901-3011-7K**

Sampling Accessories	Cat. No.
Rigid Aluminum Sampling Mast	**901-213**
Asbestos Sampling Head, 25 mm, with aluminum cowl	**225-54A**

Power Accessories	Cat. No.
Battery Charger, 110-240 V, multi-plug	**901-310**
AC Adapter, 110-240 V, multi-plug	**901-311**
Replacement Lead-acid Battery	
3.2-Ah Capacity	**P901301**
7-Ah Capacity	**P901302**

Flite 3 requires 1/4-inch ID tubing; see page 35.

AirLite — Economy on the Go

5 to 3000 ml/min with AA Alkaline Batteries

Simple operation
- Turn on, calibrate, and sample — no programming or battery charging

Simple power
- Economical, disposable AA alkaline batteries are ready to go anytime for over 10 hours *(see run times at far right)*

Compact design
- AirLite fits in the palm of your hand!
- 340 grams (12 ounces)

Sample integrity
- Constant flows up to 3000 ml/min‡
- Patented** flow control system holds constant flow to ± 5% of set-point
- Compensation for back pressure and temperature changes
- Low battery and flow fault indicator and shut-off

The simple choice for:
- Abatement projects
- Indoor air sampling
- Emergency response

AirLite Typical Run Times†

Mixed Cellulose (MCE) Filter 0.8-µm pore size

Filter Diameter	37 mm	37 mm	25 mm
Flow Rate	1 L/min	2 L/min	2 L/min
Duracell Standard	23.5	14.5	10.5
Rayovac Maximum	20.0	16.5	11.0
Walmart EverActive	24.0	16.0	10.5

Glass Fiber Filter

Filter Diameter	37 mm	37 mm	25 mm
Flow Rate	1 L/min	2 L/min	2 L/min
Energizer	29.5	18.0	18.5
Rayovac Maximum	26.5	23.5	19.5
Walmart EverActive	33.5	24.5	20.0

† *Run times in hours. Obtained using new pump and new alkaline batteries. Pump and battery performance may vary.*

Certification

CE

AirLite® is the simple solution when a 5 to 3000 ml/min sampler is needed for abatement projects, indoor air sampling, and emergency response in environments that do not require intrinsic safety. AirLite maintains full back pressure compensation from 1000 to 3000 ml/min; flows from 5 to 500 ml/min require low flow accessory *(see below)*. Powered by economical, disposable AA alkaline batteries, AirLite provides run times greater than 10 hours *(see run times at above right)*. AirLite is ready to go anytime you are!

Small and lightweight battery-powered AirLite

Description	AirLite SKC Inc. Cat. No.	AirLite SKC Ltd. Cat. No.
AirLite Pump* with 3 AA alkaline batteries and screwdriver set	110-100	110-100
Single Pump Kit-Dust/Particulate includes pump* as described above, calidaptor (391-01), 1 meter (39 inches) of Tygon tubing, plastic IOM MultiDust Sampler (225-70A), 4 extra MultiDust cassettes (225-71A), Plastic Cyclone (225-69), 4 extra cyclone cassettes (225-62), and 1 Step by Step Guide, in a durable carry case (224-98)		110-100KP
5-pack Pump Kit-High Flow includes 5 pumps* as described above and filter cassette holders (225-1), in a Pelican carry case (224-907)	110-100K5	
5-pack Pump Kit-Dust/Particulate includes 5 each pumps as described above, plastic IOM MultiDust Samplers (225-70A), and Plastic Cyclones (225-69), 5 one-meter (39-inch) lengths of Tygon tubing, 10 extra cyclone cassettes (225-62), 10 extra MultiDust cassettes (225-71A), calidaptor (391-01), and 3 Step by Step Guides, in a durable carry case (224-97B)		110-100K5P

* *Not intrinsically safe*

‡ *Flows from 5 to 500 ml/min require Low Flow Adapter Kit accessory. See pages 50-51.*

** *U.S. Patent No. 6,741,056*

The AirLite Pump requires 1/4-inch ID tubing; see page 35.

Tech Tips

▶ *The AirLite Sample Pump may be used with rechargeable 1.5-volt AA batteries instead of disposable batteries but will only achieve half the run time.*

Personal Sample Pump Battery Chargers

SKC PowerFlex Chargers

SKC PowerFlex® battery charging systems provide flexibility for your fleet of NiMH and NiCad powered SKC personal sample pumps. Pump-specific cables allow connection and charging of batteries in different SKC personal pump models while using one PowerFlex charger! Instead of carrying several bulky wall cubes or charging units, you only need one lightweight charger and the appropriate cables. The 5-station PowerFlex can charge up to three different SKC pump models simultaneously. *See PowerFlex charger ordering (Cat. Nos. 223-1000 and -2000 and 223-1000 Series cables) in table at right.*

ABOUT

Battery Maintenance

Battery life is based on chemistry, environmental conditions, and patterns of use. Go to *www.skcinc.com/instructions/1756.pdf* to learn about recommended use, maintenance, and storage that will maximize each battery chemistry's advantages, minimize disadvantages, and provide for optimal battery performance and cycle life.

5-station PowerFlex Carry Case

Includes padded shoulder strap and compartment for cables. Also included with single pump kits. *See page 35.*

Cat. No. 224-903

SKC Pump	Universal UL	Universal ATEX	AirChek TOUCH	AirChek 3000
				
Single Chargers (100-240 V)			*Choose a charging cradle:** **Standard Cradle 220-800**  **e-Cradle 220-900** 	
Cat. No.	**PowerFlex#*** 223-2000**	**223-203A**		**223-240A**
5-station Chargers (100-240 V)			*Choose a power supply:** **Single –** For use with 1 cradle **220-600**  **Multi –** For use with 2 to 5 cradles **220-700** 	
Cat. No.	**PowerFlex#*** 223-1000**	**223-103A**		**223-109A**
Required PowerFlex Cable(s)				
Cat. No.	**223-1002**	**N/A**	**N/A**	**N/A**
Replacement Batteries†				
Cat. No.	**P21661MH (NiMH) P21661 (NiCad)**	**P22419MTX**	**P75718**	**P21030**
Battery Eliminators for Line Operation				
Cat. No.	**223-325 (115 V) 223-325B (230 V)**	**223-305C - U.K. Plug 223-305B - Euro Plug**	***See cradles and power supplies (above)***	**223-330C - U.K. Plug 223-330B - Euro Plug**

 # For use with U.S.-produced pump models only; not compatible with EX or ATEX models
** Cradle and power supply required; each sold separately*
*** CE marked when used with the power supply provided by SKC; power supply is UL and cUL Listed for electrical safety*
† Replacing batteries with non-approved battery packs voids any warranty and intrinsic safety approvals.
‡ Li-Ion batteries may be subject to special shipping regulations.

Ordering a PowerFlex Charger?
Don't forget to order PowerFlex Cables!

Fast Find! Charger Guide

AirChek 52	Sidekick	Pocket Pump TOUCH	AirChek XR5000	Leland Legacy
				
 PowerFlex#*** 223-2000	 223-203A	 Single Charger 220-300	 223-241	 223-241
 PowerFlex#*** 223-1000	 223-103A	 5-port USB Charging Hub 220-400	 Take Charge 5 223-441Δ	 Take Charge 5 223-441Δ
223-1004	N/A	N/A	N/A	N/A
P78011AMH (NiMH) P78011A (NiCad)	P78050MH - Standard Sidekick P78051MTX - Deluxe and Intermediate Sidekick	P76303	P85004 (4-cell Li-Ion)‡ P85002 (2-cell Li-Ion)‡	P75692 (Li-Ion)‡
223-300 (115 V)	223-300C - U.K. Plug 223-300B - Euro Plug	220-300	223-241	223-241

‡ *Li-Ion batteries may be subject to special shipping regulations.*
Δ *Not CE approved*

ABOUT

Charging NiMH Batteries
Use SKC-approved PowerFlex chargers *(see page 30)* for charging nickel-metal hydride (NiMH) pump batteries. *For more information, go to www.skcinc.com/instructions/1756.pdf.*

Charging Li-Ion Batteries
SKC Li-Ion pump batteries must be charged using SKC-approved single and 5-station Li-Ion battery chargers *(see left for ordering)*. These chargers provide the smart circuitry required to keep Li-Ion batteries in optimum operating condition. *For more information on the characteristics of Li-Ion batteries, go to www.skcinc.com/instructions/1756.pdf.*

Tech Tips

▶ *Li-Ion is a "clean" system and only takes what it can absorb; therefore, Li-Ion batteries do not require the continuous "trickle" charge that other battery chemistries need. SKC Li-Ion battery chargers apply a trickle charge to fully charged Li-Ion batteries* ***only when the charger senses a drop in battery voltage*** *(such as occurs with self-discharge while the battery is stored on the charger). Once full battery voltage is restored, the charger shuts off the trickle charge.*

More Information
SKC Sample Pump Battery Pack Characteristics and Maintenance at www.skcinc.com/instructions/1756.pdf
www.skcinc.com

SKC chek-mate Calibrator

New!

- **0.75 to 5 L/min flow range**
  - Contact SKC for calibrators to measure other flow ranges
- **Volumetric accuracy of 1%**
- **Less than 10-minute stabilization to ambient temperature**
- **Built-in sensors adjust for changes in temperature and atmospheric pressure**
- **Calibration laboratory accuracy certified by UKAS/NIST and backed by ISO 17025 accreditation**
  - Calibration certificate supplied
- **Displays continuous real-time volumetric flow rate readings in L/min**
- **Sleek design is field portable for calibration anywhere, anytime**
  - 18 x 8.3 x 3.3 cm (7.1 x 3.3 x 1.3 inches)
  - Only 242 grams (8.5 ounces)
  - Compact for handheld use
- **9-volt alkaline battery operation**
  - Auto shut-off feature conserves battery
- **Use in any orientation**
  - No moving parts

Certifications

CE RoHS

Standard of Good Practice

Before sampling, set and verify pump flow rate to that required in the sampling method. After sampling, verify that the flow rate has not changed by more than ± 5% during the sampling period.

Differential pressure flowmeter provides fast, accurate readings anywhere, anytime.

Description		Cat. No.
chek-mate Flowmeter includes 9-volt alkaline battery	with NIST-traceable calibration certificate	**375-07550N**
	with UKAS-traceable calibration certificate	**375-07550**

Economical Field Rotameters

Secondary Flow Standards

- Easy-to-read scales
- Provisions for panel mounting
- Lightweight, rugged, and portable

Meas. Range (L/min)	Scale (inch)	Accuracy*	Cat. No.
0.05 to 0.5	2	5%	**320-2A05**
0.1 to 1.0‡	4	3%	**320-4A1**
0.4 to 5.0	4	3%	**320-4A5**
2 to 20	4	3%	**320-4A20L**
4 to 50	4	3%	**320-440**
3 to 30	4	3%	**320-530**
3 to 30	4	3%	**320-100†**

* *Full scale* † *Fittings adapted for QuickTake 30 sample pump*
‡ *Product scale is marked in CCM (cc/min), which is equivalent to ml/min.*

320 Series

393 Series

Rotameters with 100-mm Scale

2.5% VDI/VDE 3513-2:2008

Meas. Range (L/min)	Cat. No.
0.02 to 0.25*	**393-002025**
0.3 to 3.4	**393-0334**
0.6 to 5	**393-0650**
1 to 13	**393-1130**
2 to 26	**393-2260**
Accessories	
Calidaptor, for hands-free IOM calibration	**391-01**
Cowled Head Adapter	**391-05**

* *2.5% Full-scale accuracy*

Tech Tips

- *A primary standard, as it relates to flowmeters, is based on direct and measurable linear dimensions, such as the length and diameter of a cylinder, which will not change over time.*
- *Rotameters and other flowmeters, such as wet test meters and dry gas meters, are termed secondary standards. Secondary standards can be used to obtain accurate, reliable measurements of pump flow rates if they are calibrated to a primary standard.*

Pneumatic Test Kit

The Pneumatic Test Kit is an all-in-one kit for testing sample pump flow range compensation. The kit includes a rotameter that measures 1 to 5 L/min, a valve, and a magnehelic gauge that reads from 0 to 80 inches water back pressure.

Cat. No. **224-6580**

Soap Film Flowmeters

Primary Standards for Calibrating Sample Pumps

Description	Meas. Range (ml/min)	Cat. No.
Laboratory Film Flowmeter KitΔ includes precision glass buret, film solution, operating instructions, adapter for vacuum or pressure, and aluminum tripod stand	300 to 3000	**311-1000**
Portable Field Flowmeter KitΔ includes precision glass buret, film solution, operating instructions, and carry case	5 to 500	**303**
Calibrating Accessories		
Film Solution, 473 ml (1 pint)		**302-4011**
Precision Digital Stopwatch, powered by lithium battery		**303-01-1**

Δ *Laboratory Film and Portable Field Flowmeter Kits are calibrated to a primary standard ± 2% of the volumes marked on the flowmeter.*

Pump Sampling Accessories

Personal Exposure Vest

- Channels prevent tubing snags/kinks
- Snap-on pockets for up to 6 pumps
- Comfortable, evenly weighted
- Safety yellow, ANSI Class 2 compliant
- Self-extinguishing/fire-resistant polyester mesh

See page 105 for details and ordering.

Tripod Stand

Stand telescopes to 1.5 meters (5 feet) and holds sampling media securely for breathing zone measurements. *Stand does not hold a pump.*

Description	Cat. No.
Tripod, for cassette or BioStage Impactor	**228-506**

For Tubing
see page 35

Tubing for Air Sampling

Description	Applications	Diameter Inches (mm) ID	Diameter Inches (mm) OD	Cat. No.	Length in Meters (feet)
Tygon	Sampling trains	4.76 ($^{3}/_{16}$)	7.94 ($^{5}/_{16}$)	**225-1346**	**3 (10)**
Tygon	Sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	6.35 ($^{1}/_{4}$)	9.53 ($^{3}/_{8}$)	**225-13-4A** **225-13-4** **225-1345**	**1 (3.3)** **3 (10)** **15 (50)**
Tygon	For calibrating QuickTake pumps	9.53 ($^{3}/_{8}$)	12.7 ($^{1}/_{2}$)	**225-1351** **225-1352**	**3 (10)** **15 (50)**
Tygon	For calibrating DPS	7.94 ($^{5}/_{16}$)	14.29 ($^{9}/_{16}$)	**225-1349**	**3 (10)**
Latex Rubber, black	Sampling trains	4.76 ($^{3}/_{16}$)	7.94 ($^{5}/_{16}$)	**226-03-003**	**3.7 (12)**
Latex Rubber, black	Sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	6.35 ($^{1}/_{4}$)	9.53 ($^{3}/_{8}$)	**226-03-004**	**3.7 (12)**
Latex Rubber, amber	Sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	6.35 ($^{1}/_{4}$)	9.53 ($^{3}/_{8}$)	**225-1347**	**3 (10)**
Polyurethane, reinforced to prevent kinking	Sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	6.35 ($^{1}/_{4}$)	11.9 ($^{15}/_{32}$)	**225-1350**	**3 (10)**
PTFE†	Inert for bag sampling; fits over bag fitting	4.76 ($^{3}/_{16}$)	6.35 ($^{1}/_{4}$)	**231-9-23**	**3 (10)**
PTFE†	Inert for bag sampling; fits inside bag fitting	1.59 ($^{1}/_{16}$)	3.18 ($^{1}/_{8}$)	**231-9-21**	**3 (10)**
PTFE†	Inert for bag sampling; fits Vac-U-Chamber sample inlet	6.35 ($^{1}/_{4}$)	7.94 ($^{5}/_{16}$)	**231-937** **231-924**	**3 (10)** **15 (50)**

† *PTFE tubing is not suitable for particulate sampling because static effect can cause sample loss in the tubing.*

Tubing Accessories	Cat. No.	Qty.
PVC Adapters, Luer taper connects to 6.35-mm ($^{1}/_{4}$-inch) ID tubing 	**225-13-2** **225-132A**	**10** **250**
Spring Tubing Support, for use with 7.94-mm ($^{5}/_{16}$-inch) OD tubing to prevent kinking	**225-1348**	**5**
Tubing, Collar Clip, and Cable Ties	**225-13-8**	**ea**
Collar Clip and Cable Ties only	**225-13-6**	**10**

Pump Cases and Protective Pouches

Description		Cat. No.
5-pack Pump Kit Carry Cases, watertight, airtight, dustproof, and crushproof, equipped with foam for complete equipment protection (Pelican)		
AirChek TOUCH, on wheels for easy transport		**224-914**
AirChek 3000, AirChek 52/Sidekick, AirLite, or XR5000, on wheels for easy transport		**224-907**
Universal XR Series		**224-908**
Pocket Pump TOUCH		**224-915**
AirChek 3000, AirChek 52/Sidekick, or XR5000 Deluxe Kit, on wheels for easy transport		**224-910**
Single Pump Kit Carry Cases		
Pelican *(shown at right)*		**224-901**
Nylon with shoulder strap *(shown at right)*, also used for 5-station PowerFlex		**224-903**
Protective Pump Pouches, for personal sampling, designed for personal comfort with adjustable waist belt, and shoulder strap		
Universal XR	**Black**	**224-87**
	Red *(shown at right)*	**224-95A**
AirChek 3000, XR5000,‡ or AirChek 52/Sidekick	**Black**	**224-88**
	Red *(shown at right)*	**224-96A**
AirLite	**Black, with belt loop (no shoulder or waist strap)**	**224-902**
AirChek TOUCH	**Black**	**224-911**
Noise-reducing Pump Pouches, reduce noise level from 62.5 to 55 dBA*		
AirChek 3000, XR5000,‡ or AirChek 52/Sidekick	**Black *(shown at right)***	**224-96C**
XR5000 Standard Model (2-cell Li-Ion)	**Black**	**224-913**
Waist Belt, extends up to 122 cm (48 inches)		**224-12**
For Leland Legacy pump pouch and cases, *see p. 23*		

‡ *High-power Li-Ion model only*

* *Measured at 1 meter (39 inches) from an AirChek 52/Sidekick pump running at 2 L/min with 37-mm, 0.8-µm MCE cassette*

Soft-side nylon case Cat. No. 224-903 standard in single pump kits

Protective and noise-reducing pump pouches Cat. Nos. 224-95A, 224-96A, and 224-96C

Hard-sided Pelican case Cat. No. 224-901 alternative case for single pump kits

SKC Quality Sorbent Tubes

SKC on the Outside Means Quality on the Inside

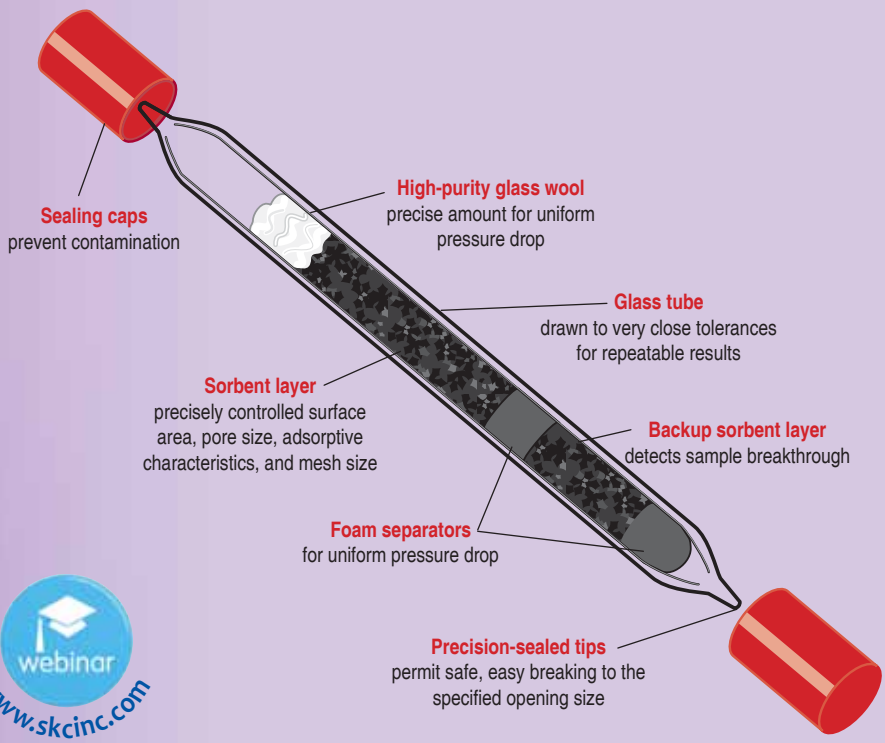
SKC was the first to bring the NIOSH sorbent tube design to the commercial market over 40 years ago.

SKC leads the way in sorbent tube research to make quality sorbent tubes available for protecting workers and public health.

Over 100 SKC Sorbent Tubes are available for standard and specialty applications. SKC also manufactures custom sorbent tubes to your specifications.

Look for the SKC name when choosing sorbent tubes. SKC brings to you over 40 years of expertise, the support of experienced technical professionals, low background sorbents, quality manufacturing, QC data online, repeatable performance, and accurate sampling.

- **Meet NIOSH and OSHA specifications**
- **High-quality, low-background sorbents**
- **SKC quality control ensures sorbents and tubes meet high standards**
  - Accurate sorbent weights
  - Consistent method-specified mesh size and separators
  - Tested for uniform back pressure
  - Accurate, repeatable results
- **Large batch production of Anasorb® CSC Lot 2000 charcoal to ensure availability for many years**
- **Backup sorbent layer for breakthrough indication**
- **Validation of reliability**
  - Specified in OSHA, NIOSH, and EPA methods
  - Used by health and safety professionals around the world for compliance and consulting
- **Sorbent background certification available online** *(see right)*



webinar
www.skcinc.com

Anasorb

A Trademark of Quality

In 1973, SKC made the first commercial sorbent tube. Since then, SKC has led advancements in sorbent tube technology. To more easily identify SKC proprietary sorbents in air sampling methods, the registered trademark, Anasorb, is used for SKC proprietary sorbents of all types.

Sorbent Equivalencies

Anasorb	Equivalent Sorbent
708	Chromosorb 108
727	Chromosorb 106
C300	Hydrar, Carulite
CSC	None
747	None
GCB1	Carbotrap B (20/40) Carbopack B (60/80)
GCB2	Carbotrap C (20/40) Carbopack C (60/80)

Seeing is Believing!

Visit www.skcinc.com/catalog/infopage.php?id=5200 to view Sorbent Background Certificates of Analysis.

For Sample Pumps
see pages 4-29

Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 143-211 or search the online Sampling Guide at www.skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent *(treatment)*	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-01 226-01A 226-01-BULK	Anasorb CSC, Coconut Charcoal Anasorb CSC, Coconut Charcoal Anasorb CSC, Coconut Charcoal	6 x 70 6 x 70 6 x 70	2 2 2	100/50 100/50 100/50	GS GS GS	F F W F F W F F W	A A A	50 10 1000
226-01GWS	Anasorb CSC, Coconut Charcoal	6 x 70	2	100/50	GS	W W W	A	50
226-09 226-09-BULK	Anasorb CSC, Coconut Charcoal Anasorb CSC, Coconut Charcoal	8 x 110 8 x 110	2 2	400/200 400/200	GS GS	F W W F W W	B B	50 1000
226-09-02	Anasorb CSC, Coconut Charcoal	8 x 150	3	350/350/350	GS	W W W W	C	50
226-10	Silica Gel	6 x 70	2	150/75	GS	F W W	A	50
226-10-03	Silica Gel *(specially cleaned)*	7 x 110	2	400/200	GS	W W G W	B	50
226-10-04	Silica Gel	8 x 110	2	300/150	GS	W W W	B	50
226-10-06*	Silica Gel *(sulfuric acid)*	6 x 70	2	200/100	GS	W W W	A	50
226-15	Silica Gel	8 x 110	2	520/260	GS	F W W	B	50
226-15GWS	Silica Gel	8 x 110	2	520/260	GS	W W W	B	50
226-16	Anasorb CSC, Coconut Charcoal	10 x 110	2	800/200	GS	F W W	C	50
226-16-02	Anasorb CSC, Coconut Charcoal	10 x 160	2	1800/200	GS	F W W	D	50
226-17-1A	Anasorb C300†	6 x 70	1	200	GS	W W	A	50
226-17-3A	Anasorb C300†	8 x 110	1	500	GS	W W	B	50
226-18	Alumina	8 x 110	2	400/200	GS	F W W	B	50
226-22	Silica Gel	10 x 110	2	1040/260	GS	F W W	C	50
226-23*	XAD-2 *(octanoic acid)*	6 x 70	2	100/50	GS	W W W	A	50
226-25	Anasorb CSC, Coconut Charcoal Anasorb CSC, Coconut Charcoal	8 x 110 8 x 110	1 1	400 200	GS	W W W W	D	50 sets
226-27◊	XAD-2 *(2-hydroxymethyl piperidine)*	8 x 110	2	450/225	GS	W W W	B	20
226-28	Soda Lime	7 x 110	2	600/200	GS	W W W G W	B	50
226-29*	Anasorb 747 *(sulfuric acid)*	8 x 110	2	500/250	GS	W W W	B	50
226-30	XAD-2	7 x 70	2	80/40	GS	W W W	B	50
226-3002A	XAD-2 XAD-2	10 x 110 10 x 110	1 1	600 300	GS	W W W W	D	10 sets
226-30-03	XAD-2	8 x 110	2	100/30	GS	W W W	B	50
226-30-04	XAD-2	8 x 110	2	100/50	GS	W W W	B	50
226-30-05	XAD-2	8 x 110	2	150/75	GS	W W W	B	50
226-30-06	XAD-2	8 x 110	2	400/200	GS	W W W	B	50
226-30-07◊	XAD-2 *(p-anisidine)*	8 x 110	2	100/50	GS	W W W	B	20
226-30-08	Anasorb 708	6 x 70	1	100	GS	W W	A	50
226-30-16* (OVS) 226-30-16A* (OVS)	XAD-2/Glass Fiber Filter XAD-2/Glass Fiber Filter	13→8 x 75 13→8 x 75	2 2	270/140 270/140	GO GO	F F G T F F G T	V V	10 50
226-30-18*	XAD-2 *(naphthylisothiocyanate)*	6 x 70	2	80/40	GS	W W W	A	50
226-35	Tenax TA	6 x 70	2	30/15	GS	F W W	A	50
226-35-01*	Tenax TA	6 x 70	2	20/10	GO	W W W	A	50
226-35-02*	Tenax TA Tenax TA	6 x 130 6 x 130	1 1	35 17	GO	W W W W	—	50 sets

* *Limited shelf-life; contact SKC for more information* † *Anasorb C300 is equivalent to Hydrar and Carulite.*
◊ *Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.*

***TUBE ENDS: GS:** Glass Sealed **GO:** Glass Open **SS:** Stainless Steel Open*
***SEPARATORS: W:** Glass Wool **G:** Glass Fiber Filter **F:** Foam **T:** PTFE Ring **S:** Screen **N:** Nylon Ring **Q:** Quartz Filter **R:** Glass Spacer*

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.

the SKC Advantage!

- ☑ **Produced the first commercial sorbent tube**
- ☑ **Over 40 years of proven performance!**
- ☑ **Validation and reliability** SKC tubes are specified and used by OSHA, NIOSH, EPA, and health and safety professionals around the globe for compliance and consulting.
- ☑ **High-quality, low-background sorbents**
- ☑ **Consistent method-specified mesh size and separators** maintain uniform back pressure and breakthrough volumes.
- ☑ **Large batch production** Anasorb CSC Lot 2000 charcoal will be available for many years.
- ☑ **Sorbent background certification available online**
- ☑ **Backup sorbent layer** for breakthrough indication
- ☑ **Technical backup** SKC technical experts provide fast, accurate answers to your questions.
- ☑ **Easy-off "hat" caps on specialty tubes**

For tube holders and accessories see pages 50-51

Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 143-211 or search the online Sampling Guide at www.skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent *(treatment)*	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-35-03	Tenax TA	8 x 110	2	100/50	GS	W W W	B	50
226-35031	Tenax TA	8 x 110	2	100/50	GS	W W W	B	10
226-36	JXC Charcoal	8 x 150	2	630/315	GS	F W W	C	50
226-37	Anasorb CSC, Coconut Charcoal Anasorb CSC, Coconut Charcoal	8 x 110 8 x 110	1 1	400 200	GS	F W F W	D	50 sets
226-39	Florisil	6 x 70	2	100/50	GS	W W W	A	50
226-39-02	Florisil	8 x 110	2	400/200	GS	W W W	B	50
226-40◊	Oxidizer Molecular Sieve *(triethanolamine) (2 tubes)*	7 x 110 7 x 70 (2)	1 1	800 400 (2)	GS	W W W W	—	10 sets
226-40-02*	Molecular Sieve *(triethanolamine)*	7 x 110	2	400/200	GS	W W W	B	50
226-42*	Silica Gel *(sulfuric acid)*	8 x 110	2	200/200	GS	W W W	B	50
226-42-02*	Firebrick (gas chrom-R) *(sulfuric acid)*	7 x 70	1	300	GS	W W	B	50
226-44	Drying Tube	6 x 70	1	250	GS	W W	—	50
226-44-02	Drying Tube	10 x 160	1	900	GS	W W	—	50
226-47-01	Silica Gel	6 x 70	2	100/50	GS	W W W	A	50
226-48	Silica Gel	7 x 110	2	150/150	GS	W W W	B	50
226-49-102	Chromosorb 102	6 x 70	2	66/33	GS	W W W	A	50
226-49-106	Chromosorb 106	6 x 70	2	75/37	GS	W W W	A	50
226-49-108	Anasorb 708	6 x 70	2	75/37	GS	W W W	A	50
226-51	Silica Gel	6 x 70	2	100/50	GS	F W W	A	50
226-53*	Silica Gel *(sulfuric acid)*	6 x 70	2	150/75	GS	W W W	A	50
226-54◊	XAD-2 *(2-hydroxymethyl piperidine)*	6 x 70	2	45/23	GS	W W W	A	20
226-55*	Silica Gel *(sodium hydroxide)*	7 x 70	2	150/75	GS	W W W	B	20
226-56* (OVS)	Tenax TA/Glass Fiber Filter	13→8 x 75	2	140/70	GO	F F G T	V	10
226-57* (OVS)	XAD-7/Glass Fiber Filter	13→8 x 75	2	200/100	GO	F F G T	V	10
226-57A* (OVS)	XAD-7/Glass Fiber Filter	13→8 x 75	2	200/100	GO	F F G T	V	50
226-58* (OVS)	XAD-2/Quartz Filter	13→8 x 75	2	270/140	GO	F F Q T	V	10
226-58A* (OVS)	XAD-2/Quartz Filter	13→8 x 75	2	270/140	GO	F F Q T	V	50
226-59-01	Porapak-N	6 x 70	2	88/44	GS	W W W	A	50
226-59-03	Porapak-Q	6 x 70	2	78/39	GS	W W W	A	50
226-59-04	Porapak-R	6 x 70	2	70/35	GS	W W W	A	50
226-61* 226-61A*	Silica Gel/Charcoal *(charcoal treated with sodium hydroxide)*	10 x 210 10 x 210	3 3	750/1250/250 750/1250/250	GS GS	W W R W W R W W	D D	50 20
226-67*	Anasorb CSC, Coconut Charcoal *(potassium hydroxide)*	6 x 70	2	100/50	GS	W R W W	A	50
226-68◊	JXC Charcoal, Drierite *(hydroquinone)*	8→6 x 160	3	1600/160/110	GS	W W W W	D	20
226-70A◊	Silica Gel *(p-methoxyphenol)*	8 x 150	2	1200/600	GS	W W W	C	10
226-73*	Anasorb CSC, Coconut Charcoal *(t-butylcatechol)*	6 x 70	2	100/50	GS	W W W	A	50
226-75	Anasorb 727¥	8 x 110	2	300/150	GS	W W W	B	20
226-80*	Anasorb 747 *(potassium hydroxide)*	6 x 70	2	100/50	GS	F W W	A	50
226-81A	Anasorb 747	6 x 70	2	140/70	GS	F W W	A	20

* *Limited shelf-life; contact SKC for more information* ¥ *Anasorb 727 is equivalent to Chromosorb 106.*
◊ *Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.*

***TUBE ENDS: GS:** Glass Sealed **GO:** Glass Open **SS:** Stainless Steel Open*
***SEPARATORS: W:** Glass Wool **G:** Glass Fiber Filter **F:** Foam **T:** PTFE Ring **S:** Screen **N:** Nylon Ring **Q:** Quartz Filter **R:** Glass Spacer*

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.

Tech Tips

- *The approximate surface areas for 20/40-mesh SKC Anasorb 747 and Anasorb CSC sorbents are as follows:*

  - Anasorb 747 is 980 m^2/gm

  - Anasorb CSC is 1200 m^2/gm

- **Q:** ***Is it possible to increase the flow rate of a method to lower the detection limit?***
  A: *NIOSH recommends not exceeding the method-stated maximum flow rate. Instead, sample for a longer period and monitor closely for breakthrough.*

Standard of Good Practice

Use inert PTFE tubing to connect two tubes in series or for other applications in which the air sample comes into contact with the tubing before collection onto the sampling media.

For Sample Pumps
see pages 4-29

Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 143-211 or search the online Sampling Guide at www.skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent *(treatment)*	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-82	Anasorb 747 Anasorb 747	8 x 110 8 x 110	1 1	400 200	GS	F W F W	D	20 sets
226-83	Anasorb 747	8 x 110	2	400/200	GS	F W W	B	50
226-84	Anasorb 747	10 x 110	2	800/200	GS	F W W	C	20
226-92*	Polyurethane Foam (PUF)	22 x 100	1	76 mm	GO	—	P	ea
226-93	XAD-4	7 x 70	2	80/40	GS	W W W	B	50
226-94	XAD-7	6 x 70	2	60/30	GS	W W W	A	50
226-95	XAD-7	6 x 110	2	100/50	GS	W W W	B	50
226-96*	XAD-7 *([NBD] chloride)*	8 x 110	2	100/50	GS	W W W	B	50
226-97	XAD-7 *(specially cleaned)* XAD-7 (2 tubes)	8 x 110 8 x 110 (2)	1 1	175 175 (2)	GS	W G W W W	—	20 sets
226-98*	XAD-7 *(phosphoric acid)*	6 x 70	2	80/40	GS	W W W	A	50
226-99* (OVS)	Silica Gel/Glass Fiber Filter	13→8 x 75	2	520/260	GO	F F G T	V	10
226-106A	Chromosorb 102	8 x 110	2	200/100	GS	W W W	B	20
226-107	Chromosorb 102	8 x 110	2	100/50	GS	W W W	B	50
226-110	Chromosorb 106	7 x 70	2	100/50	GS	W W W	B	50
226-111A	Chromosorb 106	10 x 150	2	600/300	GS	W W W	C	10
226-114	Porapak-P	6 x 110	2	100/50	GS	F W W	B	50
226-115	Porapak-Q	6 x 110	2	150/75	GS	W W W	B	50
226-116A*	Porapak-T Porapak-T	6 x 40 6 x 40	1 1	75 25	GO	W W W W	B	10 sets
226-117◊	XAD-2 *(2-hydroxymethyl piperidine)*	6 x 110	2	150/75	GS	W W W	B	20
226-118◊	XAD-2 *(2-hydroxymethyl piperidine)*	6 x 110	2	120/60	GS	W W W	B	20
226-119◊ 226-119A◊ 226-119-7	High-purity Silica Gel with low background *(2,4-dinitrophenylhydrazine)*	6 x 110 6 x 110 7 x 110	2 2 2	300/150 300/150 300/150	GS GS GS	W W W W W W W W W	B B B	20 100 20
226-120◊	High-purity Silica Gel with low background *(2,4-dinitrophenylhydrazine)* with built-in ozone scrubber	8 x 115	3	1500/ 300/150	GS	W W W W	D	20

* *Limited shelf-life; contact SKC for more information* ◊ *Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.*

***TUBE ENDS: GS:** Glass Sealed **GO:** Glass Open*
***SEPARATORS: W:** Glass Wool **G:** Glass Fiber Filter **F:** Foam **T:** PTFE Ring **S:** Screen **N:** Nylon Ring **Q:** Quartz Filter **R:** Glass Spacer*

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.

Data Interpretation

Formaldehyde

▶ ***LEED Green Buildings***
Formaldehyde Indoor Air Maximum Concentration: 27 ppb. Maximum concentration in health care facilities is 16.3 ppb.

See formaldehyde sorbent tube Cat. No. 226-119 or 226-120 at right.

Source: LEED for New Construction Rating System v4 (U.S. Green Building Council, http://www.usgbc.org)

For continuous formaldehylde measurement
see the Formaldehyde Multimode Monitor on page 136

SKC Formaldehyde SPIKES QC Media

SKC makes laboratory quality control easy with its pre-spiked Formaldehyde SPIKES sorbent tubes. SPIKES are 6 x 110-mm (OD x L) glass-sealed sorbent tubes. Each tube contains two sections (300/150 mg) of high-purity (low-background) silica gel sorbent treated with 2,4-dinitrophenylhydrazine and glass wool separators (WWW). The 300-mg section is spiked with formaldehyde to ± 25% of the stated target level. **Formaldehyde SPIKES are stocked at these commonly requested levels and are sold in packages of 10.**

Spike Level	Cat. No.	Qty.
1.0 µg	227-111	10
3.0 µg	227-112	10
5.0 µg	227-113	10
7.5 µg	227-114	10
10.0 µg	227-115	10

Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 143-211 or search the online Sampling Guide at www.skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent *(treatment)*	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-124*	PUF/Tenax TA/PUF	22 x 100	3	3 cm/750 mg/ 3 cm	GO	—	P	**ea**
226-126*	PUF/Glass Fiber Filter	22 x 100	1	76 mm	GO	F S G N	P	**ea**
226-129*	PUF/XAD-2/PUF	65 x 125	3	50 mm/10 gm/ 25 mm	GO	—	—	**ea**
226-131*	PUF	65 x 125	1	75 mm	GO	—	—	**ea**
226-134*	Tenax TA	16 x 125	1	1.6 gm	GO	W W	—	**ea**
226-142*	Carbon Beads/PTFE Filter *(carbon beads treated with potassium hydroxide)*	16→8 x 85	2	100/50	GO	W W W T T	—	**5**
226-143*	PUF/XAD-2/PUF	22 x 100	3	3 cm/1500 mg/ 3 cm	GO	—	P	**ea**
226-151◊	Charcoal *(proprietary coating)*	6 x 70	2	100/50	GS	W W W	A	**20**
226-153◊	XAD-2 *(di-n-butylamine)*	8 x 110	2	400/200	GS	W W W	B	**20**
226-154	Anasorb 747	6 x 70	1	200	GS	W W	A	**50**
226-165A◊	Silica Gel *(mercuric cyanide)*	6 x 110	2	300/150	GS	W W W	B	**20**
226-170	XAD-4	6 x 70	1	120	GS	W W	A	**20**
226-171*	Anasorb 747/Tenax TA	16 x 125	2	5.2 gm/1.2 gm	GO	W W	—	**ea**
226-175	XAD-4	8 x 150	2	400/200	GS	W W W	—	**20**
226-176	Silica Gel *(hydrochloric acid)*	10 x 150	3	700/150/150	GS	W W W W	C	**20**
226-177◊	Silica Gel *(silver nitrate)*/Glass Fiber Filter *(sodium carbonate/glycerol)*	16→8 x 85	2	200/200	GO	T T T W W	—	**5**
226-178◊	Anasorb 747 *(hydrobromic acid)*	6 x 70	2	100/50	GS	W W W	A	**20**
226-182◊	Molecular Sieve *(triethanolamine)* and oxidizer	10 x 110	3	400/800/400	GS	W W W W	C	**50**
226-183	Silica Gel *(specially washed and baked)*/Glass Fiber Filter	[7 x 110 7 x 110	1 1	[600 600	GS	[W G W W G W	D	**20 sets**

* *Limited shelf-life; contact SKC for more information*

◊ *Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.*

TUBE ENDS: GS: *Glass Sealed* ***GO:*** *Glass Open*
SEPARATORS: W: *Glass Wool* ***G:*** *Glass Fiber Filter* ***F:*** *Foam* ***T:*** *PTFE Ring* ***S:*** *Screen* ***N:*** *Nylon Ring* ***Q:*** *Quartz Filter*

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.

SKC Quality Bulk Sorbents for Laboratory QA/QC Requirements

- *Meet stringent specifications for environmental applications*
- *Undergo extensive cleaning procedures to ensure low backgrounds*

Sorbent	Mesh Size	Amount (grams)	Cat. No.
Anasorb CSC	20/40	100	**P2260101**
Silica Gel	20/40	100	**P22610**
Tenax GR	20/35	10	**P226124**
Tenax TA	35/60	10	**P226125**
	20/35	10	**P226126**
Anasorb GCB2	20/40	10	**P226127**
Anasorb GCB1	20/40	10	**P226128**
	60/80	10	**P226132**
Anasorb C300	20/40	100	**P226171**
Anasorb 747	20/40	100	**P226200**

Standard of Good Practice

▶ *Maintain the sorbent tube in a vertical position when sampling. This position will prevent the sorbent from falling away from the wall of the glass tube and creating a small channel for the air to pass through without adsorbing onto the sorbent.*

For Formaldehyde SPIKES QC media
see page 40

For Sample Pumps
see pages 4-29

Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 143-211 or search the online Sampling Guide at www.skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent *(treatment)*	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-186◊	Oxidizer	7 x 110	1	800	GS	W W	B	**20**
226-188◊	Silica Gel *(2,4-dinitrophenylhydrazine)*	10 x 110	2	800/200	GS	W W W	C	**20**
226-191	Silica Gel *(o-phenylenediamine)*	8 x 110	2	520/260	GS	W W W	B	**50**
226-192	XAD-2/XAD-2/Anasorb CSC	8 x 110	3	50/100/150	GS	W W W W	B	**50**
226-193-UC	Silica Gel *(MTSO)*	7 x 110	1	800	GS	W W	B	**20**
226-196	Anasorb CSC, Coconut Charcoal *(t-butylcatechol)*	8 x 110	2	400/200	GS	W W W	B	**20**
226-199-UC	Silica Gel *(MTSO)*	8 x 110	2	800/200	GS	W G W	B	**20**
226-330‡∞	Anasorb GCB2/GCB1/Carbosieve S-III	6 x 115	3	250/150/100	GO	W W W W	N/A	**ea**
226-339‡§∞	Tenax TA	1/4 x 3-1/2 in	1	100	GO	W W	N/A	**ea**
226-340‡§∞	Tenax TA	1/4 x 3-1/2 in	1	100	SS	S W W S	N/A	**ea**
226-341‡§∞	Carbosieve S-III	1/4 x 3-1/2 in	1	100	SS	S W W S	N/A	**ea**
226-345‡§∞	Tenax GR/Anasorb GCB1	1/4 x 3-1/2 in	2	125/120	GO	W W W	N/A	**ea**
226-346‡§∞	Anasorb GCB1/Carbosieve S-III	1/4 x 3-1/2 in	2	175/80	GO	W W W	N/A	**ea**
226-347‡§∞	Anasorb GCB2/GCB1/Carbosieve S-III	1/4 x 3-1/2 in	3	120/125/105	GO	W W W W	N/A	**ea**
226-348‡§∞	Tenax GR/Anasorb GCB1	1/4 x 3-1/2 in	2	175/150	SS	O S W S O	N/A	**ea**
226-349‡§∞	Anasorb GCB1/Carbosieve S-III	1/4 x 3-1/2 in	2	280/165	SS	S W S	N/A	**ea**
226-350‡§∞	Anasorb GCB2/GCB1/Carbosieve S-III	1/4 x 3-1/2 in	3	210/140/165	SS	S W W W S	N/A	**ea**
226-356‡§∞	Anasorb GCB1	1/4 x 3-1/2 in	1	400	SS	S W W S	N/A	**ea**
226-357‡§∞	Tenax TA	1/4 x 3-1/2 in	1	250	SS	S W W S	N/A	**ea**
226-358‡§∞	Chromosorb 106	1/4 x 3-1/2 in	1	350	SS	S W W S	N/A	**ea**
226-360‡§∞	Tenax TA	1/4 x 3-1/2 in	1	250	GO	W W	N/A	**ea**
226-363‡§∞	Carbopack X	1/4 x 3-1/2 in	1	400	SS	S W W S	N/A	**ea**

‡ *Tubes are chemically purged before shipping; use within 6 months or recondition, restocking fee applies.* ∞ *Available unpurged, see page 47*
§ *Each tube has a flow direction arrow and unique number.* ◊ *Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.*

TUBE ENDS: GS: *Glass Sealed* ***GO:*** *Glass Open* ***SS:*** *Stainless Steel Open*
SEPARATORS: W: *Glass Wool* ***G:*** *Glass Fiber Filter* ***F:*** *Foam* ***T:*** *PTFE Ring* ***S:*** *Screen* ***N:*** *Nylon Ring* ***O:*** *Other* ***Q:*** *Quartz Filter*

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.

SKC Sampling Media and Pump for Peracetic Acid (PAA)

SKC offers the sampling media and pump required for sampling PAA according to the French Institut National de Recherche et de Sécurité (INRS) method for the simultaneous measurement of PAA and hydrogen peroxide (HP). Method media include sorbent tubes containing sorbent treated with high-purity MTSO reagent for ultra-low background (*see Cat. Nos. 226-193-UC and 226-199-UC above*), quartz filters coated with titanium oxysulfate hydrate in 25-mm cassette (*see Cat. No. 225-9030 on page 65*), and AirChek XR5000 sample pump (*see pages 14-15*) to provide the 1 L/min flow rate at higher back pressure. PAA is analyzed by high-performance liquid chromatography with UV detection and HP by molecular absorption spectrometry.

Contact SKC for the latest updates on OSHA methods in development for PAA and hydrogen peroxide.

Standard of
Good Practice
Store and prepare sampling media in solvent-free environments.

Tube Breakers

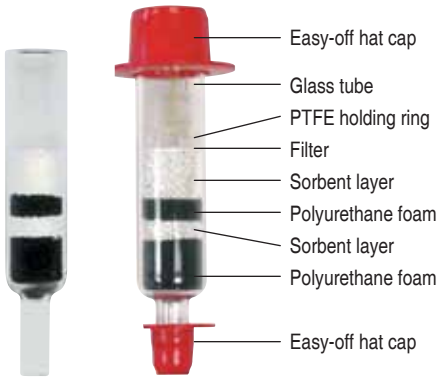
Description	Cat. No.
Tube Breaker/Capper, stainless steel	
Size S, 6 and 7-mm OD tubes	**222-3-50**
Size L, 8 and 10-mm OD tubes	**222-3-51**
Tube Scorer/Breaker, for 6-mm OD tubes; scores and breaks end tips off glass tubes, leaving a clean, smooth opening	**800-01200**

For Thermal Desorption Tubes purged by SKC or your lab
see page 47

OSHA Versatile Sampler (OVS) Tubes

For Sampling Pesticides, Explosives, and Glycols

- Sorbent and filter combined in one tube
- Collect aerosols and vapors simultaneously
- Low backgrounds ensure sample integrity
- Meet OSHA and NIOSH method design specifications
- Eliminate the need for cumbersome filter and tube sampling trains
- Available with a variety of sorbents
- Easy-off hat caps



OSHA originally designed OSHA Versatile Sampler (OVS) Tubes to overcome the inconveniences of earlier methods. SKC OVS Tubes contain a filter to trap aerosols and a two-section sorbent bed to adsorb vapors in one specially constructed glass tube that eliminates cumbersome filter and tube sampling trains. Only cleaned and verified materials are used in OVS Tubes to ensure low background interference. A flow rate of 1 L/min provided by a personal sample pump is typically used to obtain volumes ranging from 60 to 480 liters. Samples are solvent extracted and analyzed by GC or HPLC with detector.

Available with a variety of sorbent and filter combinations, SKC OVS Tubes are truly versatile for sampling applications and methods including pesticides such as DDVP (dichlorvos), carbaryl (Sevin), chlorpyrifos (Dursban), Diazinon, malathion, and parathion; explosives such as TNT and DNT; alcohols such as glycols; and biocides.

Application — Method	Sorbent (mg)	Filter	Cat. No.	Qty.
Pesticides — OSHA 62, 63, 67, 70, 74, OSHA CSI	XAD-2 (270/140)	Glass fiber	**226-30-16**	**10**
Organotin Compounds* — OSHA CSI			**226-30-16A**	**50**
Pesticides, organophosphorus — NIOSH 5600, 5601, 5602	XAD-2 (270/140)	Quartz fiber	**226-58**	**10**
			226-58A	**50**
Explosives (trinitrotoluene [TNT] and dinitrotoluene [DNT]) — OSHA 44 **Phthalate Esters —** OSHA 104 **Acrylates and Benzophenone —** Non-agency method†	Tenax TA (140/70)	Glass fiber	**226-56**	**10**
Caprolactam Vapor — OSHA CSI	XAD-7 (200/100)	Glass fiber	**226-57**	**10**
Glycols — NIOSH 5523			**226-57A**	**50**
Kathon 886 Biocide — Non-agency method‡	Silica gel (520/260)	Glass fiber	**226-99**	**10**
Accessories				
OVS Tube Holder includes 0.9 meter (3 feet) of tubing and collar clip, *see details at above right*			**224-29V**	**ea**
OVS Adapter Kit includes tubing and adapter for calibration of OVS Tubes			**224-31**	**ea**

* *Methyl tin mercaptide, stannous-2-ethyl hexanoate, butyltin trichloride* † *See Ref. 39 on page 213.* ‡ *See Ref. 55 on page 213.*

OVS Tube Holder

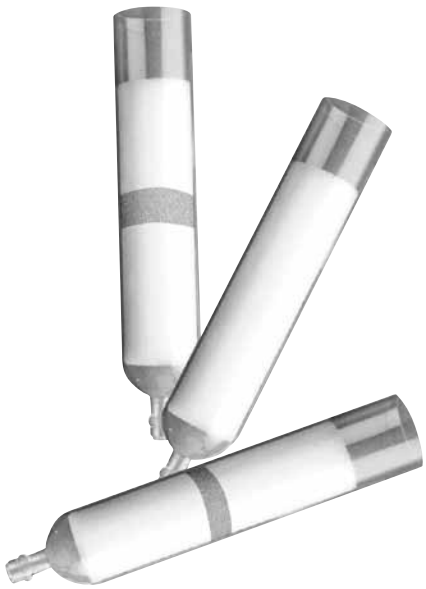
OSHA Versatile Sampler Tubes are typically used at a flow rate of 1 L/min provided by a personal sample pump. The special OVS Tube Holder is designed to accommodate the tube's 13-mm diameter, provide a convenient clip to attach the tube in the breathing zone, and protect the tube during sampling.

OVS Tube Holder includes fitting with durable protective cover, 0.9 meter (3 feet) of tubing, and collar clip
Do not use an Adjustable Low Flow Holder
Cat. No. 224-29V

Low-volume PUF Tubes

For Sampling Semi-volatiles from 1 to 5 L/min

- For measurements up to 24 hours
- Custom PUF/sorbent combinations available
- Precleaned and ready to use
- Meet specifications of EPA Method TO-10A, EPA IP-8, ASTM D4861, and ASTM D4947
- Can be repacked and recertified by SKC



Sample Time:	*4 to 24 hours*
Sample Rate:	*1 to 5 L/min*
Sample Pump:	*XR Series, AirChek Series, or Leland Legacy*

SKC Low-volume PUF Tubes contain polyurethane foam (PUF) or PUF/sorbent combinations that meet the specifications of EPA and ASTM indoor and ambient air sampling methods for pesticides in homes, public buildings, and offices. The methods specify the use of a sample pump, operating at a flow rate of 1 to 5 L/min, to draw air through the PUF tube to sample concentrations as low as 0.001 mg/m^3. Collection times vary from 4 to 24 hours. *See pages 8-10 and 14-23 for sample pump information.*

Precleaned and ready to use, SKC Low-volume PUF Tubes are convenient and can be repacked and recertified to save money and recycle glass. *See above left.*

Low-volume PUF Tubes

Methods	Compounds	Sorbent (Amount)	Cat. No.
EPA TO-10A, IP-8	Organochlorine and organophosphorus pesticides, carbamate, pyrethrin, triazine, and urea pesticides	PUF (76 mm)	
ASTM D4861	Organochlorine and organophosphorus pesticides and PCBs		
ASTM D4947	Chlordane and heptachlor residues		**226-92**
ASTM D4861	Organochlorine and organophosphorus pesticides and PCBs	PUF/Tenax/PUF (30 mm/750 mg/30 mm)	
EPA TO-10A	Organochlorine and organophosphorus pesticides, carbamate, pyrethrin, triazine, and urea pesticides		**226-124**
Custom	Pesticides, PCBs, and PAHs	PUF/XAD-2/PUF (30 mm/1500 mg/30 mm)	**226-143**
Custom	Pesticides, PCBs, and PAHs	PUF/glass fiber filter (76 mm)	**226-126**
Accessories			
Tube Holder for Low-volume PUF Tubes, *see p. 50 for details*			**224-29P**
Multi-purpose Calibration Jar, *see p. 104 for details*			**225-111**

Note: *PUF tubes used in the Statements of Work for Superfund sites must be used and analyzed within 14 days of being cleaned.*

ABOUT

Repacking Service and Replacement Parts

Repacking service for Low-volume PUF Tubes includes cleaning the glass, packing it with new sorbent/PUF, and inserting it into a cleaned storage bottle. ***Contact SKC for an RA number and decontamination form.***

Repack for Cat. No. 226-92 New PUF packed into cleaned original glass and inserted into cleaned storage bottle **Cat. No. P22692R**
Replacement PUFs for Cat. No. 226-92 Uncleaned, 76-mm length, pk/20 **Cat. No. P22692**
Repack for Cat. No. 226-143 New PUF/sorbent packed into cleaned original glass and inserted into cleaned storage bottle **Cat. No. P226143R**
Repack for Cat. No. 226-126 New PUF/filter packed into cleaned original glass and inserted into cleaned storage bottle **Cat. No. P226126R**
Repack for Cat. No. 226-124 New PUF/sorbent packed into cleaned original glass and inserted into cleaned storage bottle **Cat. No. P226124BV**

24-hour Sampling?

Use Low-volume PUF Tubes with the Leland Legacy Sample Pump at 5 L/min

see pages 22-23

High-volume PUF Tubes

For Sampling Semi-volatiles from 220 to 280 L/min

SKC High-volume PUF and PUF/sorbent combination tubes are designed for use with high-volume samplers to meet EPA and ASTM method specifications for ambient air sampling of organochlorine pesticides, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs).

Combination PUF/XAD-2 sorbent tube

- Meets EPA Method 600/8-80-038 specifications
- Contains cleaned XAD-2 sorbent between two PUFs
- XAD-2 sorbent improves volatile component extraction during analysis

PUF-only sorbent tube

- Meets ASTM D6209, EPA IP-7, TO-4A, TO-9A, and TO-13A
- Packed with precleaned PUF for low background

SKC High-volume PUF Tubes are cleaned and ready to use.

High-volume PUF Tubes

Methods	Compounds	Sorbent (Amount)	Cat. No.
EPA 600/8-80-038	Organochlorine pesticides, PCBs	PUF/XAD-2/PUF (50 mm/10 gm/25 mm)	
Non-agency‡	Nonpolar organic compounds		**226-129**
EPA IP-7, TO-4A, TO-9A, TO-13A	Organochlorine pesticides, dioxins and furans, PCBs, PAHs	PUF (75 mm)	
ASTM D6209	Polycyclic aromatic hydrocarbons		**226-131**

Note: *PUF tubes used in the Statements of Work for Superfund sites must be used and analyzed within 14 days of being cleaned.*
‡ *See Non-agency Method 38 on page 213.*

Repacking Service and Replacement Parts

Repacking service for High-volume PUF Tubes includes cleaning the glass, packing it with new sorbent and/or PUF, and inserting it into a cleaned storage bottle. ***Contact SKC for an RA number and decontamination form.***

Description		Cat. No.	Qty.
Repack for Cat. No. 226-129 includes new PUF/sorbent packed into cleaned original glass and inserted into cleaned storage bottle		**P226129R**	**ea**
Replacement PUF for Cat. No. 226-129, uncleaned	25-mm length	**P226129A**	**10**
	50-mm length	**P226129B**	**10**
Repack for Cat. No. 226-131 includes new PUF packed into cleaned original glass and inserted into cleaned storage bottle		**P226131R**	**ea**
Replacement PUF for Cat. No. 226-131, 75-mm length	Uncleaned	**P226131**	**10**
	Cleaned	**P226131C**	**10**
Glass Cartridge with support screens for Cat. No. 226-129 or 226-131		**P226129C**	**ea**

Quartz Filters for High-volume PUF Sampling

Description	Cat. No.	Qty.
QM-A, high-purity microfibers, 450-µm thickness, 102-mm diameter	**225-1808**	**100**

Custom PUF Tubes

You provide the specifications, SKC will provide the tubes. Custom PUF, PUF/sorbent combination, and PUF/filter combination tubes are available.

Contact SKC with your specifications — www.skcinc.com, search on "custom."

For sampling PAHs, PCBs, pesticides, and associated particulate at 10 L/min
see pages 24-25

Active/Passive Method Cross-reference

SKC sorbent tubes are specified in many active sampling methods. In recent years, OSHA has developed eight diffusive sampling methods in which SKC passive samplers are specified for sampling the same compounds of interest as active methods. Passive sampling saves deployment time and money as no pump is needed. Check the method to determine if passive sampling is an option for your application. ***See the table below for passive alternatives to active sorbent tubes.***

Compound	Active Method/ Tube Cat. No.	Pg. No.	Passive Method/ Sampler Cat. No.	Pg. No.
Benzene	OSHA 1005 226-01	38	OSHA 1005 575-002	75-76
Butyl acetates	OSHA 1009 226-01	38	OSHA 1009 575-002	75-76
Formaldehyde	NIOSH 2016 226-119/226-120	40	OSHA 1007 500-100	84
Hydrogen cyanide	NIOSH 6010 226-28	38	OSHA 1015 590-400	86
MEK/MIBK	OSHA 16 (MEK) 226-10	38	OSHA 1004 575-002	75-76
Mercury	OSHA ID-140 226-17-1A	38	OSHA ID-140 520-03/02A	86
Styrene	OSHA 89 226-73	39	OSHA 1014 575-006	75-76
Toluene	OSHA 111 226-81A or 226-01	38-39	OSHA 111 575-002	75-76
Trichloroethylene/ tetrachloroethylene	OSHA 1001 226-01	38	OSHA 1001 575-002	75-76
Xylenes/ethylbenzene	OSHA 1002 226-01	38	OSHA 1002 575-002	75-76

Custom Sorbent Samplers from SKC

SKC can make the media needed for in-house methods or SOPs at competitive prices!

- PUF, PUF/sorbent, and PUF/filter cartridges
- Multi-bed sorbent tubes
- Sorbent repacks or refills
- Tubes for thermal or solvent desorption
- Glass or stainless steel construction

Go to www.skcinc.com and enter "Custom Tubes" in the search bar

VOC Chek 575 Passive Samplers for ppm-Level Organic Vapors

OSHA Methods 1001, 1002, 1004, 1005, 1009, 1014, and 111

500-100 UME^{X} 100 Passive Sampler for Formaldehyde

OSHA Method 1007

590-400 Passive Sampler for HCN

OSHA Method 1015

520-03/02A Passive Sampler for Inorganic Mercury

OSHA Method ID-140

More Information

For a list of laboratories analyzing SKC sample media, *visit www.skcinc.com*

Thermal Desorption Sorbent Tubes

For Sub-ppb VOC Measurements

SKC offers single and multiple-bed thermal desorption tubes that meet EPA Method TO-17 requirements for the determination of VOCs in ambient air. All SKC thermal desorption tubes are sealed with PTFE end caps and marked with a permanent serial number. **SKC offers two options for thermal desorption tubes: purged or unpurged (UP).** Purchase SKC thermally purged thermal desorption tubes for immediate use in the field. Purchase unpurged tubes for thermal purging by your laboratory as needed. Glass transport tubes and Swagelok fittings are available as accessories.

Perkin Elmer or Markes International Thermal Desorber Tubes

*Available in **glass or stainless steel,** these tubes measure 6.35-mm OD x 88.9-mm length (1/4-inch OD x 3 1/2-inch length).*

Method	Sorbent	SS Purged Cat. No.	SS Unpurged Cat. No.	Glass Purged Cat. No.	Glass Unpurged Cat. No.
ASTM D6196	Anasorb GCB1*	226-356	226-356-UP	—	—
ASTM D6196; MDHS 72	Tenax TA	226-357	226-357-UP	226-360	226-360-UP
ASTM D6196; MDHS 72	Chromosorb 106	226-358	226-358-UP	—	—
EPA TO-1, IP-1B	Tenax TA	226-340	226-340-UP	226-339	226-339-UP
EPA TO-2	Carbosieve S-111	226-341	226-341-UP	—	—
EPA TO-17	Anasorb GCB1*/Carbosieve S-111	226-349	226-349-UP	226-346	226-346-UP
EPA TO-17, NIOSH 2549	Anasorb GCB2*/Anasorb GCB1*/ Carbosieve S-111	226-350	226-350-UP	226-347	226-347-UP
EPA TO-17	Tenax GR/Anasorb GCB1*	226-348	226-348-UP	226-345	226-345-UP
	Carbopack X	226-363	226-363-UP	—	—

Screening Tubes (Fit Dynatherm Thermal Desorber)

*Available in **glass**, these tubes measure 6-mm OD x 115-mm length (0.24-inch OD x 4.5-inch length).*

Method	Sorbent		Cat. No.	Qty.
EPA IP 1B, NIOSH 2549	GCB2*/GCB1*/Carbosieve S-111	Purged	226-330	ea
		Unpurged	226-330-UP	ea

* *Anasorb GCB1 is equivalent to Carbopack B; Anasorb GCB2 is equivalent to Carbopack C.*

Accessories

Description	Cat. No.	Qty.
Glass Transport Tubes, for 88.9-mm (3 1/2-inch) length tubes	226-300	5
PTFE Ferrules, set of 2	P30121	ea
Swagelok Fittings, for 6.35-mm (1/4-inch) OD tubes, set of 2	P50291	ea

Swagelok Fittings available, see below left for ordering

Standard of Good Practice

▶ *It is a standard of good practice to purge thermal desorption tubes before each use.*

For Passive Thermal Desorption Tubes, see pages 48-49

Traps for Volatile Organic Sampling Trains (VOSTs)

VOSTs are specified by U.S. EPA 0031 in SW-846 for sampling VOCs in gaseous effluent from stationary emission sources such as hazardous waste incinerators. SKC VOST traps meet method specifications, are tested for background and pressure drop, and feature Swagelok fittings and PTFE ferrules. Traps are **not** supplied thermally purged. *See note below.*

Method	Sorbent (gm)	Description	Cat. No.
EPA 0031	Tenax TA, 35/60 mesh (1.6)	Glass open, 16-mm OD x 125-mm L	226-134†

† *Limited shelf-life* ***Note:*** *VOST traps must be purged prior to use. Use and analyze within 14 days of conditioning.*

For Sample Pumps, see pages 4-29

Diffusive Thermal Desorption Tubes

Time-averaged Assessment of BTEX and Other VOCs

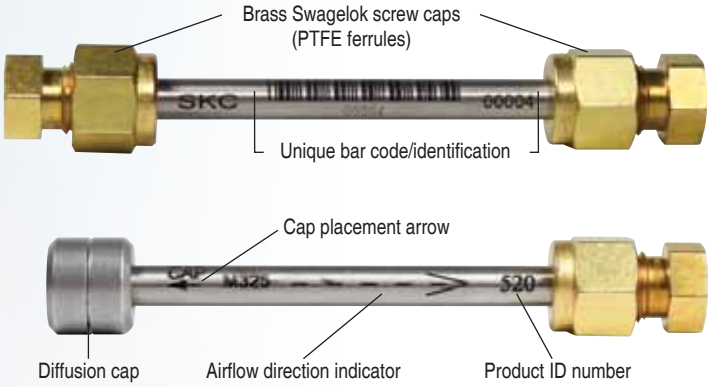
- Validated sampling rates for benzene, toluene, ethylbenzene, xylenes, and many other VOCs
- Contain pre-conditioned Carbopack® X sorbent
- SilcoNert® 2000 deactivated 3.5 x 0.25-inch OD stainless steel tubes
  - Ideal for protecting sample integrity over long sampling periods
- Use to determine average concentration over longer sampling periods up to 14 days
- No pump or training required
- Reusable to keep costs low
- Unique identification number and bar code
- Weatherproof tube shelter available
- Airflow and cap placement arrow indicators printed on tube
- Sealed with brass Swagelok screw caps with PTFE ferrules for transport
- Each collected compound can be analyzed quantitatively

SKC Diffusive Thermal Desorption (TD) Tubes are designed to provide accurate sampling of VOCs at refinery fencelines and for other ambient air monitoring applications without the use of a sample pump. Sampling times of up to 14 days provide an average concentration that eliminates the effects of daily variables such as hazard concentration and temperature. A weatherproof shelter accessory protects samples.

Description	Cat. No.	Qty.
SKC Diffusive TD Tubes,* 3.5 x 0.25-in OD deactivated stainless steel tubes filled with pre-conditioned Carbopack X and supplied with diffusion caps and brass Swagelok screw caps with PTFE ferrules	226-520	10
Diffusion Caps	226-525	10
Shelter	226-526	ea

* *Tubes must be used within 30 days of conditioning*

SKC Diffusive Thermal Desorption Tubes for BTEX and Other VOCs



SKC Diffusive TD Tubes are conditioned and quality control tested to assure low background.

Weatherproof shelter accessory protects TD tubes.

More Information

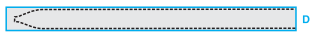
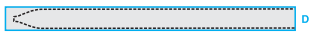
McClenny, W.A. et al., "24 h Diffusive Sampling of Toxic VOCs in Air onto Carbopack X …," http://doi.org/fhgn4s

U.S. EPA Method 325B: https://goo.gl/B4viuV

www.skcinc.com

Single-tube Low Flow Sampling Accessories

Build a **single-tube low flow sampling train** in three easy steps: (1) select a pump, (2) select the pump specific tube holder, and (3) select a protective tube cover (based on sorbent tube size, *see Sorbent Tube Selection Guide on pages 38-42*). Pocket Pump TOUCH holders are supplied with protective tube covers.

Step 1	Step 2	Step 3	
Pumps	**Tube Holders** NeW!	**Tube Covers**	
AirChek 52/Sidekick **AirChek 3000** **AirChek XR5000** **AirChek TOUCH** **AirLite**	**All-in-One Low Flow Single Tube Holder** **Cat. No. 224-27** 	**A** (6-mm OD x 70-mm L) **Cat. No. 224-29A**  **B** (8-mm OD x 110-mm L) **Cat. No. 224-29B**  **C** (10-mm OD x 150-mm L) **Cat. No. 224-29C**  **D** (10-mm OD x 220-mm L) **Cat. No. 224-29D**  *Select desired tube from the Sorbent Tube Selection Guide on pp. 38-42. Match the letter indicated in the Tube Cover column in the Guide to the letter above.*	
Universal Series	**Adjustable Low Flow Tube Holder** **Cat. No. 224-26-01** 		
Pocket Pump TOUCH	**Low Flow Tube Holder with cover (non-adjustable)** **Cat. No. 222-3-1 (A)** *with* **A** (6-mm OD x 70-mm L)  **222-3L-1 (B)** *with* **B** (8-mm OD x 110-mm L)  **222-3XL-1 (C)** *with* **C** (10-mm OD x 150-mm L)  **222-3XD-1 (D)** *with* **D** (10-mm OD x 220-mm L) 	

Specialty Tube Holders

For Sorbent Sampling ≥ 1 L/min Without Low Flow Controller

OVS Tube Holder

The OVS Tube Holder accommodates the 13-mm diameter of SKC OVS Tubes.

OVS Tube Holder includes fitting with durable protective cover, 3 feet of tubing, and collar clip. *Do not use an Adjustable Low Flow Holder*

Cat. No. 224-29V

Low-volume PUF Tube Holder

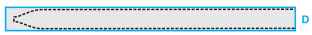
The Low-volume PUF Tube Holder accommodates the 22-mm diameter and 100-mm length of SKC Low-volume PUF Tubes.

Low-volume PUF Tube Holder includes fitting with durable protective cover, 3 feet of tubing, and collar clip. *Do not use an Adjustable Low Flow Holder*

Cat. No. 224-29P

Multiple-tube Low Flow Sampling Accessories

Build a **multiple-tube low flow sampling train** in four easy steps: (1) select a pump, (2) select the constant pressure controller (if pump requires it), (3) select a tube holder, and (4) select protective tube covers (based on sorbent tube size, *see Sorbent Tube Selection Guide on pages 38-42*).

Step 1	Step 2	Step 3	Step 4	
Pumps	**Constant Pressure Controller (CPC)**	**Adjustable Multiple-tube Low Flow Holders**	**Tube Covers**	
AirChek 52/Sidekick **AirChek 3000** **AirChek XR5000** **AirChek TOUCH** **AirLite**	**CPC** **Cat. No. 224-26CPC** 	**2 tubes (Dual)** **Cat. No. 224-26-02**  **3 tubes (Tri)** **Cat. No. 224-26-03**  **4 tubes (Quad)** **Cat. No. 224-26-04** 	**A** (6-mm OD x 70-mm L) **Cat. No. 224-29A**  **B** (8-mm OD x 110-mm L) **Cat. No. 224-29B**  **C** (10-mm OD x 150-mm L) **Cat. No. 224-29C**  **D** (10-mm OD x 220-mm L) **Cat. No. 224-29D**  *Select desired tube from the Sorbent Tube Selection Guide on pages 38-42. Match the letter indicated in the Tube Cover column in the Guide to the letter above.*	
Universal Series	**None required** (pump has built-in regulator)			

Sampling/Analysis Accessories

Tool Kit

Includes scissors, pliers, file, 2 slotted screwdrivers, 2 Phillips screwdrivers, forceps, and charcoal pick

Cat. No. 376-01-01

Sampling Labels

Identify samples with sample number, date, flow, pump number, time on, and time off, pk/500

Cat. No. 225-1370

Septum Vials

Glass vials (3.7-ml) with screw-on molded plastic caps; fit Vial Rack Cat. No. 226-04-1. *Vial racks are not included. Contact SKC for ordering information on racks.*

Septum Vials, 3.7 ml, pk/100
Cat. No. 226-02A

SKC Sample Bags

Bag Materials Expand Sampling Options

SKC Sample Bags

In addition to the classic Tedlar bag, SKC provides the world's largest selection of bags in materials for various compounds in stock and ready for shipment. SKC sample bags are constructed of low-background top-grade bag materials with evenly sealed leak-free seams and high-quality bag fittings.

Make the Best Choice!

SKC publishes performance data on its bag materials to equip you with the knowledge you need to make the best choice. *See www.skcinc.com/instructions/1805.pdf for information.*

Choose the Best Bag for Your Application

Tedlar
- Classic DuPont film
- Good stability for VOCs, CO, CO_2, methane, SF_6, and some sulfur compounds including hydrogen sulfide

Pages 54-55

Standard FlexFoil®
- Effectively retains hydrogen sulfide for 48 hours!
- Good light and moisture barrier properties
- Good stability for CO, CO_2, methane, hydrogen, hydrogen sulfide, carbonyl sulfide, methyl and ethyl mercaptan, and sulfur hexafluoride (SF_6)

Page 56

FlexFoil PLUS
- All the benefits of Standard FlexFoil — PLUS. . .
  - Low VOC backgrounds
  - Good stability for VOCs
  - Suitable for collecting low ppm to high ppb-level VOCs
  - New bags for breath-gas analysis!

Page 57

SamplePro® FlexFilm
- Low VOC background
- Good stability for many VOCs, CO, CO_2, methane, and sulfur hexafluoride (SF_6)
- Acceptable stability for some sulfur compounds
- Not recommended for hydrogen sulfide and carbonyl sulfide
- Most economical option
- Requires flat storage and transport for sample integrity

Page 58

Bag Stability Data

Want to know the stability of specific compounds in different types of film? Access the SKC Bag Stability Report at www.skcinc.com/instructions/1805.pdf.

SKC Quality Bag Films

SKC manufactures and stocks high-quality 2-mil DuPont Tedlar, 3-mil SamplePro FlexFilm, and 5-mil 4-ply FlexFoil sample bags. Seams are strong, evenly sealed, and leak tested.

ABOUT

SKC Superior Bag Fittings

SKC stocks sample bags with a choice of fittings to meet your applications. SKC bag fittings are designed specifically for industrial hygiene and environmental air sampling. Choose from dual stainless steel or all-in-one polypropylene, stainless steel, or PTFE fittings that combine the hose/valve and septum into one lightweight, economical fitting.

For Bag Sampling Pumps see page 60

Classic Tedlar Bags for VOCs

The Flexibility of Dual Stainless Steel Fittings

- **Dual stainless steel fittings provide complete sampling flexibility**
  - Bags are configured with one hose/valve fitting and one septum fitting
- **Reliable, inert stainless steel fitting construction prevents leakage**
- **Stocked in a variety of sizes; custom bags available**
- **Bag available for EPA TCLP method**
- **Breath-gas analysis bags for end-exhaled air determined BEIs and medical applications** *(see left)*

ABOUT

Breath-gas Analysis Bags

ACGIH lists Biological Exposure Indices (BEIs) determined by end-exhaled air for methyl chloroform, tetrachloroethylene, and trichloroethylene. SKC Breath-gas Analysis Bags are also ideal for collecting samples of human breath to be analyzed for volatile organic compounds (VOCs) or volatile sulfur compounds (VSCs), possible biomarkers for some diseases. **SKC Breath-gas Analysis Bags are offered in Tedlar and FlexFoil PLUS *(page 57).*** *See www.skcinc.com/instructions/1805.pdf for information on bag material stability.*

Tedlar Bags with Dual Stainless Steel Fittings

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1	231-01 231-01A	10 ea	
3	231-03	10	
5	231-05 231-05A	10 ea	
10	231-10	10	
25	231-25	5	
50	231-50	5	
75	231-75	5	
100	231-100	3	
Replacement Septa	231-9-04	10	

Tedlar Bag with Single Stainless Steel Septum Fitting (attaches to ZHE)

Description	Cat. No.	Qty.	Fitting
Tedlar Sample Bag, 1 liter, with single stainless steel septum fitting suitable for attaching directly to Zero Head-space Extractor (ZHE) with stainless steel adapter, *required*	231-01-TCLP	10	
Stainless Steel Adapter, for use with ZHE, *required*	231-01-ZHE	ea	

Tedlar Bag with Stainless Steel Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
Tedlar Sample Bags, 1 liter, each with stainless steel fitting and individually packaged clean mouthpiece, *see About above left*	249-01	5	

For PTFE Tubing
see page 60

More Information

SKC Bag Stability Report – www.skcinc.com/instructions/1805.pdf

www.skcinc.com

Classic Tedlar Bags for VOCs

Convenient and Economical Single Polypropylene Fitting

- **Single combined polypropylene fitting**
  - Combines the septum and hose/valve into one fitting
- **An industry standard!**
- **Economical**
- **Single lightweight fitting provides easy bag handling**
- **Stocked in a variety of sizes; custom bags available**

Performance Profile

Background
Moderately low VOC

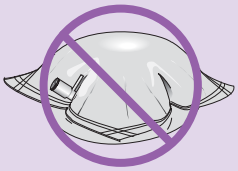
Stability
Good for VOCs, some sulfur compounds (including H_2S), CO, CO_2, methane, and SF_6

Thickness
2 mil

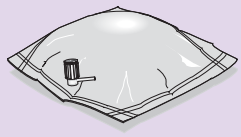
Sample Pump
Grab Air or Pocket Pump TOUCH, *see pp. 60-61*

Most Popular Bag!

Tech Tips



Incorrect inflation



Correct inflation

For Bag Sampling Pumps
see page 60

For Vac-U-Chamber
see pages 62-63

Tedlar Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	232-02	10	
0.7 *(Fits Vac-U-Tube Cat. No. 231-945)*	232-945A	10	
1 *(Fits small Vac-U-Chamber Cat. No. 231-940)*	232-01 232-01A	10 ea	
3	232-03 232-03A	10 ea	
5	232-05 232-05A	10 ea	
8 *(Fits large Vac-U-Chamber Cat. No. 231-939)*	232-939	10	
10 *(Fits extra-large Vac-U-Chamber Cat. No. 231-944)*	232-10 232-10A	10 ea	
25 *(Fits jumbo Vac-U-Chamber Cat. No. 231-946)*	232-25	5	
50	232-50	5	
75	232-75	5	
100	232-100	3	
Replacement Septa	232-01-RS	10	

Tedlar Bag with Polypropylene Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
Tedlar Sample Bags, 1 liter, each with polypropylene fitting, fitting adapter, and individually packaged clean mouthpiece, *see About on p. 54*	249-01-PP	5	

Standard FlexFoil Sample Bags

Superior Bag for Sulfur Compounds and Low Molecular Weight Gases

- Effectively retain hydrogen sulfide for 48 hours!
- Strong, flexible, evenly sealed seams
- Lightproof and moistureproof
  - Excellent for light-sensitive compounds
- Choice of all-in-one polypropylene or stainless steel hose/valve and septum fittings
- Stocked in a variety of sizes
- Custom bags available

Performance Profile

Background
Moderate to high VOC and low sulfur

Stability
Good for CO, CO_2, methane, hydrogen, and SF_6
Good 48-hour stability for hydrogen sulfide, hydrogen, carbonyl sulfide, and methyl and ethyl mercaptan

Thickness
4 ply (5 mil)

Sample Pump
Grab Air or Pocket Pump TOUCH, *see pp. 60-61*
Also see the Vac-U-Chamber on pp. 62-63.

ABOUT

Standard FlexFoil Applications

- CO_2 — OSHA Method ID-172
- CO_2 — NIOSH 6603
- CO — OSHA ID-210‡
- Sulfur compounds
- Indoor air studies (CO, CO_2, SF_6)

‡ *OSHA ID-210 specifies 5-layer foil bags. SKC 4-ply FlexFoil bags hold 100 ppm CO for 5 days without loss. See www.skcinc.com/instructions/1706.pdf for more information.*

More Information

SKC Bag Stability Report – www.skcinc.com/instructions/1805.pdf

www.skcinc.com

Standard FlexFoil Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1 *(Fits small Vac-U-Chamber Cat. No. 231-940)*	262-01 262-01A	10 ea	
3	262-03 262-03A	10 ea	
5	262-05	10	
8 *(Fits large Vac-U-Chamber Cat. No. 231-939)*	262-08	10	
10 *(Fits extra-large Vac-U-Chamber Cat. No. 231-944)*	262-10	10	
25 *(Fits jumbo Vac-U-Chamber Cat. No. 231-946)*	262-25	5	
50	262-50	5	
Replacement Septa	236-01-RS	10	

Standard FlexFoil Bags with Single Stainless Steel Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1	263-01 263-01A	10 ea	
3	263-03 263-03A	10 ea	
5	263-05	10	
10	263-10	10	
25	263-25	5	
50	263-50	5	
Replacement Septa	233-01-RS	10	

FlexFoil PLUS Sample Bags

Specially Cleaned for Low ppm to High ppb-Level VOCs

- All the benefits of Standard FlexFoil — PLUS detection and good storage stability for low ppm to high ppb-level VOCs
- Strong, flexible, evenly sealed seams
- Lightproof and moistureproof
  - Excellent for light-sensitive compounds
- Choice of all-in-one polypropylene or stainless steel hose/valve and septum fittings
- Stocked in a variety of sizes
- Custom bags available
- Breath-gas analysis bags are available in FlexFoil PLUS

Performance Profile

Background
Low VOC and sulfur *(specially cleaned)*

Stability
Good for low ppm to high ppb-level VOCs
Good for CO, CO_2, methane, hydrogen, and SF_6
Good 48-hour stability for hydrogen sulfide, hydrogen, carbonyl sulfide, and methyl and ethyl mercaptan

Thickness
4 ply (5 mil)

Sample Pump
Grab Air or Pocket Pump TOUCH, *see pp. 60-61*
Also see the Vac-U-Chamber on pp. 62-63.

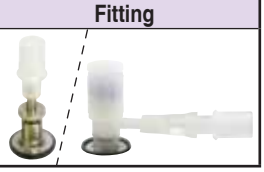
FlexFoil PLUS Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1 *(Fits small Vac-U-Chamber Cat. No. 231-940)*	252-01 252-01A	10 ea	
3	252-03 252-03A	10 ea	
5	252-05	10	
8 *(Fits large Vac-U-Chamber Cat. No. 231-939)*	252-08	10	
10 *(Fits extra-large Vac-U-Chamber Cat. No. 231-944)*	252-10	10	
25 *(Fits jumbo Vac-U-Chamber Cat. No. 231-946)*	252-25	5	
50	252-50	5	
Replacement Septa	236-01-RS	10	

FlexFoil PLUS Bags with Single Stainless Steel Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1	253-01 253-01A	10 ea	
3	253-03 253-03A	10 ea	
5	253-05	10	
10	253-10	10	
25	253-25	5	
50	253-50	5	
Replacement Septa	233-01-RS	10	

FlexFoil PLUS Bags with Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
FlexFoil PLUS Sample Bags, 1 liter, each with individually packaged clean mouthpiece *See About on p. 54 for details.*			
Stainless steel fitting	269-01	5	
Polypropylene fitting	269-01-PP	5	

ABOUT

FlexFoil PLUS Sample Bag Applications
- Biogas and landfill gas (LFG) sampling
- VOCs
- Pollution level monitoring
- Site sampling/mobile surveys
- Breath analysis
- Calibration gas transfer
- Calibration mixtures
- Leak/spill exposure assessment

More Information
SKC Bag Stability Report – www.skcinc.com/instructions/1805.pdf
www.skcinc.com

ABOUT

Breath-gas Applications
- ACGIH BEIs for end-exhaled air
- Metabolic status determination
- Asthma detection by exhaled nitric oxide
- Lung cancer detection
- Diabetes detection
- Fructose malabsorption with hydrogen breath test
- Helicobacter pylori (H. pylori) with urea breath test
- Organ rejection detection
- Carbon monoxide poisoning detection
- Smoking cessation evaluation

Easy sampling for breath-gas analysis

SamplePro FlexFilm Air Sample Bags

Economical Alternative to Tedlar for VOCs

- Best alternative to Tedlar for performance and economy
- Lower total VOC background than Tedlar
- Minimal adsorption
- Choice of fittings
  - **Single combined polypropylene** hose/valve and septum for economy and light weight
  - **Dual stainless steel** for sampling flexibility
- Stocked in a variety of sizes; custom bags available

Performance Profile

Background
Low VOC (lower total VOCs than Tedlar)

Stability
Good for VOCs, CO, CO_2, methane, and SF_6
Acceptable for some sulfur compounds

Thickness
3 mil

Sample Pump
Grab Air or Pocket Pump TOUCH, *see pp. 60-61*
Also see the Vac-U-Chamber on pp. 62-63.

Tech Tips

- *SamplePro FlexFilm bags have a maximum operating temperature of 60 C (140 F).*
- *Store bags flat. Rolling or creasing bags during storage can affect performance.*
- *Inflate bags only to 80%.*

SamplePro FlexFilm as Alternative to Tedlar

SKC SamplePro FlexFilm bags are a suitable low-cost alternative to Tedlar.

- Tests on 14 compounds in FlexFilm provided recoveries of > 80% after two days of ambient storage; results for the same compounds were similar in Tedlar.
- A side-by-side background study of Tedlar and FlexFilm proved FlexFilm has three times lower VOC background than Tedlar.
- FlexFilm exhibits higher levels of hydrogen sulfide and carbonyl sulfide background than Tedlar.
- FlexFilm requires flat storage to maintain material integrity.

More Information
SKC Bag Stability Report –
www.skcinc.com/instructions/1805.pdf
www.skcinc.com

FlexFilm Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	236-006 236-006A	10 ea	
1 *(Fits small Vac-U-Chamber Cat. No. 231-940)*	236-001 236-001A	10 ea	
3	236-002 236-002A	10 ea	
5	236-005 236-005A	10 ea	
8 *(Fits large Vac-U-Chamber Cat. No. 231-939)*	236-004	10	
10 *(Fits extra-large Vac-U-Chamber Cat. No. 231-944)*	236-003 236-003A	10 ea	
25 *(Fits jumbo Vac-U-Chamber Cat. No. 231-946)*	236-007	5	
40	236-040	5	
80	236-080	5	
Replacement Septa	236-01-RS	10	

FlexFilm Bags with Dual Stainless Steel Fittings

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	237-02 237-02A	10 ea	
1	237-01 237-01A	10 ea	
3	237-03 237-03A	10 ea	
5	237-05 237-05A	10 ea	
10	237-08 237-08A	10 ea	
25	237-25	5	
40	237-40	5	
80	237-80	5	
Replacement Septa	231-9-04	10	

Larger FlexFilm bag sizes are available. Contact SKC.

SKC CUSTOM AIR SAMPLE BAGS

SAMPLE BAGS MADE YOUR WAY!

Special bag sizes

SKC manufactures single or multiple-cell sample bags for your applications.

Quality fittings for your applications

SKC offers fittings designed specifically for air sampling in the following configurations and materials:

- **All-in-one Stainless Steel**
- **Dual Stainless Steel**
- **All-in-one Polypropylene**
- **All-in-one PTFE**
- **Combination**

Choice of bag material

SKC manufactures its bags from ultra-clean top-grade materials with strong evenly sealed seams. Choose from the following bag materials:

- **SamplePro FlexFilm** (3 mil)
- **Tedlar** (2 mil)
- **4-ply Standard FlexFoil** (5 mil)
- **4-ply FlexFoil PLUS** (5 mil)

SKC will create the bags you need!

Select the film, fitting, and bag dimensions at www.skcinc.com/catalog/infopage.php?id=2900 and send the form to your SKC representative. SKC will take it from there!


Indoor air


Biogas/landfill gas/Superfund sites


Soil vapor


Stack emissions


Worker or process exposure


Material testing

SKC custom sample bags are proven performers!

Contact SKC today for a quote on your custom sample bags!
www.skcinc.com and search on "laboratories"

Grab Air Sample Pump — 1 L/min

Economy Pump for Filling Bags

- 9-volt alkaline battery for approximately 1000 liters of volume on one battery
- Low battery indicator
- Fixed 1 L/min flow rate

The SKC Grab Air Sample Pump is an economical choice for grab-and-go bag sampling when intrinsic safety is not required. Grab Air operates at a fixed flow rate of 1 L/min for up to 1000 liters of volume on one 9-volt battery. Simply attach a sample bag to the outlet port and turn on the pump. Simple, quick, economical — Grab Air.

Description	Cat. No.
Grab Air Pump with 9-volt alkaline battery; *for tubing, see Cat. No. 231-9-23 below*	**222-2301**
Grab Air Hazmat Kit includes pump as described above, 0.9 meter (3 feet) of 4.76-mm (3/16-inch) ID PTFE tubing, and ten 1-liter Tedlar bags with single polypropylene fitting Cat. No. 232-01	**222-2111**

PTFE Tubing

Inert Tubing for Bag Sampling

- Heat and corrosion resistant
- Chemically inert
- Strong

Chemically inert SKC PTFE tubing is ideal for bag sampling to prevent sample loss through adsorption to the tubing's inner surface. SKC offers PTFE tubing with different diameters to fit over or inside bag fittings.

PTFE Tubing	Cat. No.	Length in Meters (feet)
Fits over all SKC bag fittings and Grab Air pump exhaust 4.76-mm (3/16-inch) ID, 6.35-mm (1/4-inch) OD	**231-9-23**	**3 (10)**
Fits inside bag fitting 1.59-mm (1/16-inch) ID, 3.18-mm (1/8-inch) OD	**231-9-21**	**3 (10)**
Fits Vac-U-Chamber sample inlet port 6.35-mm (1/4-inch) ID, 7.94-mm (5/16-inch) OD	**231-937** **231-924**	**3 (10)** **15 (50)**

Tech Tips

- *Use only PTFE tubing for bag sampling to prevent sample loss through adsorption to the tubing's inner surface.*
- *PTFE tubing can be used at temperatures up to 260 C (500 F).*

Pocket Pump® TOUCH — 20 to 500 ml/min

Programmable Pump for Bag Sampling

- 20-hour run time with rechargeable Li-Ion battery
- Constant flows from 20 to 500 ml/min — also suitable for sorbent tube sampling and other low flow applications
- Simple operation for quick grab samples
- Program with a PC and DataTrac Pro Software for delayed start and timed runs for studies
- Continuous sample volume calculations
- Quick-connect adapter accessory makes bag sampling easy *(see below)*

Certifications

CE c UL us LISTED

Description	Cat. No.
Pocket Pump TOUCH with Li-Ion battery pack *Requires Pocket Pump* **TOUCH** *charger Cat. No. 220-300 and adapter Cat. No. 220-200 for bag sampling; see below*	220-1000TC
Pocket Pump TOUCH Single Charger	220-300

For negative pressure sample collection
see pages 62-63

Quick-connect Accessory for Secure Bag Sampling

- Rugged metal
- Easy installation
- Holds 6.35-mm (1/4-inch) OD tubing securely
- Press to release tubing

The Quick-connect Adapter accessory makes bag sampling with Pocket Pump TOUCH fast and easy. The Quick-connect Adapter threads into the pump exhaust port and securely holds 6.35-mm (1/4-inch) OD tubing (Cat. No. 231-9-23) during sampling. When sampling is complete, a quick press of the adapter flange releases the tubing.

Cat. No. **220-200**

Vac-U-Chamber

Eliminates Pump Contamination During Bag Sampling

- **Allows direct filling of air sample bags**
  - Uses negative pressure provided by most personal air sample pumps
  - Designed to contain SKC sample bags
- **Rugged and airtight construction**
  - Will not collapse under vacuum
- **Available in several sizes, including extra large for EPA Method 0040**
- **Protects sample and pump from contamination**
  - Sample does not pass through the pump
  - Sample contacts only inert tubing and bag
- **Sample line extends from contaminant source through case to bag**

For Convenient, Reliable Bag Sampling

The SKC Vac-U-Chamber is a rigid air sample box that allows sample bags to be filled directly by using negative pressure provided by most personal air sample pumps. Because the sample does not pass through the pump, both sample and pump contamination are eliminated. All surfaces in contact with the sample are constructed of inert materials. The Vac-U-Chamber's rigid walls will not collapse under vacuum conditions.

Vapor Intrusion Monitoring

Soil Gas Sampling for Vapor Intrusion Evaluations

Soil gas sampling can identify underground contamination and trace the source, extent, and movement of pollutants.

U.S. EPA Standard Operating Procedure (SOP) 2042 for Soil Gas Sampling specifies sample bags as containers inside an airtight chamber (e.g., Vac-U-Chamber). A sample pump creates negative pressure in the chamber, causing soil gas to enter into the bag directly. Samples are analyzed in the field with direct-reading instruments and/or in a qualified laboratory.

Vac-U-Chamber

Multiple Sizes Available for Your Applications

Applications

- U.S. EPA Method 18 (VOCs — industrial sources)
- U.S. EPA 0040 (POHCs — stationary sources)
- Soil gas/vapor sampling
  - U.S. EPA SOP 2042
- Indoor air remediation system monitoring petroleum constituents (U.S. EPA SOPs 2102, 2103, and 2104)
- Groundwater testing
- Stack sampling
- Ventilation studies
- Hazmat testing

Small Vac-U-Chamber for 1-liter Bags

Description		Cat. No.	Qty.
Complete Vac-U-Chamber Kit includes Standard AirChek XR5000 sample pump, single charger, small Vac-U-Chamber, and 10 Tedlar sample bags Cat. No. 232-01	**100-240 V**	210-4124	ea
Small Vac-U-Chamber only with polypropylene fittings (supplied without pump), suitable for use with SKC 1-liter sample bags below		231-940	ea
1-liter Sample Bags with single polypropylene fitting, for use with small Vac-U-Chamber Cat. No. 231-940	**Tedlar**	232-01	10
	SamplePro FlexFilm	236-001	10
	FlexFoil PLUS	252-01	10
	Standard FlexFoil	262-01	10

Large Vac-U-Chamber for 8-liter Bags

Description		Cat. No.	Qty.
Complete Vac-U-Chamber Kit includes Standard AirChek XR5000 sample pump, single charger, large Vac-U-Chamber, and 10 Tedlar sample bags Cat. No. 232-939	**100-240 V**	210-4115	ea
Large Vac-U-Chamber only with stainless steel fittings (supplied without pump), suitable for use with SKC 8-liter sample bags below		231-939	ea
8-liter Sample Bags with single polypropylene fitting, for use with large Vac-U-Chamber Cat. No. 231-939	**Tedlar**	232-939	10
	SamplePro FlexFilm	236-004	10
	FlexFoil PLUS	252-08	10
	Standard FlexFoil	262-08	10

Extra-large Vac-U-Chamber for 10-liter Bags

Description		Cat. No.	Qty.
Extra-large Vac-U-Chamber only with stainless steel fittings (supplied without pump), suitable for use with SKC 10-liter sample bags below		231-944	ea
10-liter Sample Bags with single polypropylene fitting, for use with extra-large Vac-U-Chamber Cat. No. 231-944	**Tedlar**	232-10	10
	SamplePro FlexFilm	236-003	10
	FlexFoil PLUS	252-10	10
	Standard FlexFoil	262-10	10

Jumbo Vac-U-Chamber for 25-liter Bags

Description		Cat. No.	Qty.
Jumbo Vac-U-Chamber only with stainless steel fittings (supplied without pump), suitable for use with SKC 25-liter sample bags below		231-946	ea
25-liter Sample Bags with single polypropylene fitting, for use with jumbo Vac-U-Chamber Cat. No. 231-946	**Tedlar**	232-25	5
	SamplePro FlexFilm	236-007	5
	FlexFoil PLUS	252-25	5
	Standard FlexFoil	262-25	5

Standard of
Good Practice

For best results, do not reuse sample bags. This prevents the risk of "carry over" from the previous sample.

Reference: McGarvey, L.J., Shorten, C.V., "The Effects of Adsorption on the Reusability of Tedlar Air Sample Bags," AIHA Journal, Vol. 61, May/June 2000, pp. 375-380.

For Sample Pumps, see pages 14-15

More Information

www.skcinc.com

Search "1665"

SKC Chemically Coated Filters

Convenient Alternative to Impinger Wet Chemistry Methods

- **Meet agency method specifications**
- **Economical**
- **Ready to use**
  - Preloaded into cassettes with end plugs and shrink bands
- **Time-saving**
- **Easy personal sampling**
- **Small package sizes for short shelf-life products**
- **Custom coated filters are available**

SKC Coated Filters make sampling reactive compounds fast, easy, and safe. Simply unplug the lightweight cassette, insert it into an SKC Filter Cassette Holder, clip to a worker's collar, and attach the cassette to a personal sample pump. There is no broken glass or splashing reagent. In addition, most filter coatings derivatize the contaminant(s) of interest, producing a more stable compound for storage and analysis. Use SKC Coated Filters to collect compounds that exist as an aerosol or mist or for some higher boiling vapors.

Sample Time:	*Varies; 15 minutes to 1 hour*
Sample Rate:	*0.5 to 5 L/min*
Sample Pump:	*AirChek Series*
Analysis:	*Typically solvent extraction and gas or liquid chromatography*

ABOUT

Certificates of Conformance

SKC provides online Certificates of Conformance for SKC-manufactured coated filters. Visit www.skcinc.com and search "conformance" to view certificates.

ABOUT

OSHA NEP for Isocyanates

In 2013, OSHA announced a three-year National Emphasis Program (NEP) to protect workers from the serious health effects of occupational exposure to isocyanates. Workers are most commonly exposed to these highly reactive, low molecular weight chemicals while manufacturing foams, fibers, coatings, and elastomers. Isocyanate exposure can cause occupational asthma, pneumonitis, irritation of the skin and mucous membranes, cancer, and death. Respiratory illnesses also can be caused by isocyanate exposure to the skin. Visit www.osha.gov/OshDoc/Directive_pdf/CPL_03-00-017.pdf for more information.

Custom Coated Filters

Made to Your Specifications

Choose from quality filter materials

- Glass fiber
- Mixed cellulose ester (MCE)
- Polyvinyl chloride (PVC)
- PTFE
- Other materials available

Specify filter pore size and diameter

Choose from a variety of support materials

Strict QC ensures consistent, accurate loading of specified coating

Supplied as filters only or preloaded in cassettes for ready use

- Preloaded cassettes are available with shrink bands

Contact your SKC representative today or visit www.skcinc.com/catalog/infopage.php?id=2900.

Chemically Coated Filter Selection Guide

Chemical	Method∞	Preloaded Filter; Coating (in 37-mm cassettes)	Cat. No.*	Qty.
Acetic anhydride	OSHA 82	2 Glass filters; 1-(2-pyridyl) piperazine §	225-9009 §	10
Acetic anhydride	OSHA 102	2 Glass filters; veratrylamine and di-n-octyl phthalate	225-9010 †	10
4-Aminobiphenyl	OSHA 93	2 Glass filters; sulfuric acid	225-9004	10
Aniline	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Arsenic, volatile compounds	OSHA ID-105	1 MCE filter and cellulose pad; sodium carbonate	225-9001	10
Benzidine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
Bromine, chlorine	NIOSH 6011	1 **25-mm** PTFE pre-filter and polypropylene support; 1 **25-mm** specially cleaned silver membrane and polypropylene support **(in 25-mm cassette)**	225-9006	5
Crotonaldehyde	OSHA 81	2 Glass filters; 2,4-dinitrophenylhydrazine and phosphoric acids §	225-9019 §	10
o-Dianisidine	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
3,3'-Dichlorobenzidine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
Diisocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42 ‡	1 Glass filter and cellulose support; 1-(2-pyridyl)piperazine ‡§	225-9013 §† 225-9002 ‡§	10 10
Diphenylamine	OSHA 78	2 Glass filters; sulfuric acid	225-9004	10
Fluorides	OSHA ID-110 NIOSH 7902 ASTM D4765	1 MCE filter and cellulose pad; sodium carbonate	225-9001 #	10
Fluorides, particulate	NIOSH 7906	2 Nitrocellulose filters; 1 coated with sodium carbonate, 1 uncoated	225-9031	10
Glutaraldehyde	OSHA 64	2 Glass filters; 2,4-dinitrophenylhydrazine and phosphoric acid §	225-9003 §	10
Hydrazine	OSHA 108	2 Glass filters; sulfuric acid	225-9012	10
Hydrofluoric acid	NIOSH 7906	2 Nitrocellulose filters; 1 coated with sodium carbonate, 1 uncoated	225-9031	10
Hydrogen bromide	NIOSH 7907	2 Quartz filters; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen chloride	NIOSH 7907	2 Quartz filters; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen peroxide	OSHA 1019 NON 57 •	2 **25-mm** Quartz filters; titanium oxysulfate hydrate **(in 25-mm cassette)**	225-9030 •	10
Isocyanates	ASTM Σ	1 PTFE filter; 1 glass filter impregnated with MAMA (ISO-CHEK Sampling System, *see p. 66)*	225-9022 Σ 225-9022A Σ	12 36
Isocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42 ‡	1 Glass filter and cellulose support; 1-(2-pyridyl)piperazine ‡§	225-9013 §† 225-9002 ‡§	10 10
Isocyanates (HDI, MDI, TDI, IPDI, HDI-BT, HDI-IC)	OR-OSHA 1010▼	1 **13-mm** Glass filter; MAMA **(in 13-mm Swinnex holder)** §	225-9029 §▼	5
Isocyanates, organic	MDHS 25/3 (U.K.)	1 **25-mm** A/E glass filter; methoxyphenyl piperazine ◊§	Special order	5
n-Isopropylaniline	OSHA 78	2 Glass filters; sulfuric acid	225-9004	10
Maleic anhydride	OSHA 86	2 Glass filters; veratrylamine §	225-9021 §	10
Maleic anhydride	■	1 **25-mm** Glass filter; veratrylamine ◊§	225-9028 ◊§	10
Mercaptans (methyl-, ethyl-, n-butyl-, phenyl-)	NIOSH 2542 OSHA 26	1 Glass filter; mercuric acetate §	225-9007 §	10
4,4'-Methylene bis (2-chloroaniline) (MOCA)	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
Methylene bisphenyl (MDI)	OSHA 47 ‡	1 Glass filter and cellulose support; 1-(2-pyridyl)piperazine ‡§	225-9013 §† 225-9002 ‡§	10 10
4,4'-Methylenedianiline	OSHA 57 Ω NIOSH 5029	2 Glass filters; sulfuric acid	225-9004	10
1-Naphthylamine, 2-naphthylamine	OSHA 93	2 Glass filters; sulfuric acid	225-9004	10
Nitric acid	NIOSH 7907	2 Quartz filters; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Nitrobenzene	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Ozone	OSHA ID-214	2 Glass filters; nitrite-impregnated §	225-9014 §	10
Phenylenediamine (o-, m-, p-)	OSHA 87	2 Glass filters; sulfuric acid	225-9004	10
Phosphine	OSHA 1003	1 Glass filter; 1 polyester filter coated with mercuric chloride §	225-9018 †§	10
Phosphoric acid	NIOSH 7908	1 Quartz filter ♠	225-9033	10
Sulfur dioxide	NIOSH 6004 (modified)	1 MCE pre-filter and support/1 cellulose filter and support; sodium carbonate	225-9005	10
Sulfuric acid	NIOSH 7908	1 Quartz filter ♠	225-9033	10
2,4-Toluenediamine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
2,6-Toluenediamine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
o-Tolidine	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
o-Toluidine	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Toluidine (o-, m-, p-)	OSHA 73	2 Glass filters; sulfuric acid	225-9004	10
1,3,5-Triglycidyl isocyanurate (TGI)	OSHA PV2055	1 Glass filter; hydrobromic acid	225-9027	10
Valeraldehyde	OSHA 85	3 Glass filters; 2,4-dinitrophenylhydrazine and phosphoric acid §	225-9020 §	10
m-Xylenediamine (m-XDA, p-XDA)	OSHA 105	2 Glass filters; sulfuric acid	225-9004	10

* *Coated filters have a limited shelf-life.*
† *Custom order due to very limited shelf-life*
Δ *ASTM D5836 and D5932 for 2,4-TDI, 2,6-TDI only*
◊ *Filters only; not preloaded in cassettes*
§ *Storage below 4 C (39.2 F) required*
¥ *Also requires Sorbent Tube Cat. No. 226-15, see page 38*
Ω *OSHA 57 is an update of NIOSH 5029, which called for a single filter.*
‡ *See Tech Tips on page 98.*
∑ *Meets multiple ASTM methods, see page 66*
\# *Collects both vapor and aerosol phases of fluorides. Patented in Canada by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail du Québec), Canada Patent No. 1,299,114*
∞ *The methods listed are the most widely used. Additional methods may be listed in the Sampling Guide. See pages 143-211.*
● *Also requires Sorbent Tube Cat. No. 226-193-UC or 226-199-UC for simultaneous, separate sampling of peracetic acid, see page 42*
▼ *Also requires Impinger Cat. No. 225-36-1, see page 67*
■ *For inhalable TLV; analysis by OSHA 86*
♠ *A coated filter is not needed for this method as sulfuric acid and phosphoric acid are non-volatile acids and are present in the air as an aerosol.*

ISO-CHEK

Simultaneous and Separate Collection of Isocyanate Phases

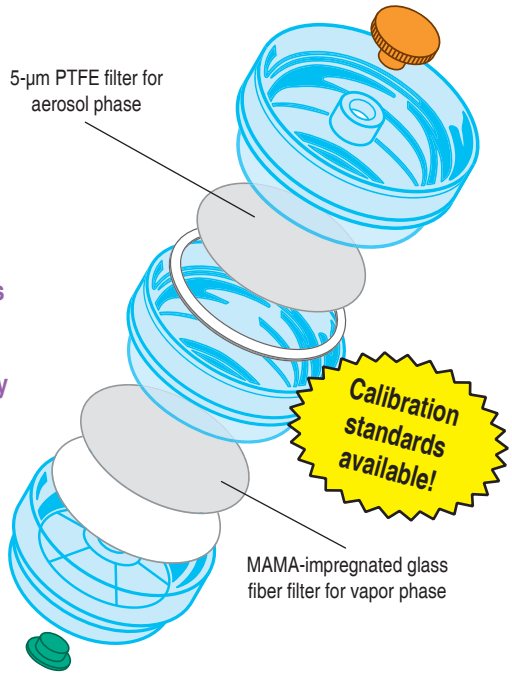
the ISO-CHEK Advantage!

- ☑ **Simultaneous collection and separation of phases at the point of collection**
  Less time-consuming and more accurate analysis of each phase
- ☑ **Reagent is stable at room temperature.**
- ☑ **1 L/min flow efficiently captures aerosol phase isocyanates compared to denuder collectors.**
- ☑ **No handling precautions**
  No broken glass or splashing impinger liquid

Standard of Good Practice

Store and prepare sampling media in solvent-free environments.

- **Accurately samples diisocyanates: HDI, MDI, IPDI, HMDI, 2,4-TDI, and 2,6-TDI**
- **Meets the specifications of several methods**
  - ASTM D5932 for 2,4 and 2,6-TDI
  - ASTM D6561 for HDI
  - ASTM D6562 for HDI
- **The only filter-based system that simultaneously traps and separates both monomers and oligomers**
  - For better determinations of control strategies
- **Decreases sample preparation and analysis time by 40% compared to other methods**
  - Premade calibration standards are available
- **Highly stable — low temperature storage and transport not required**
- **Highly sensitive analysis provides detection limits below current regulated exposure levels**
  - Ideal for occupational sampling and environmental surveys
  - Requires only a 15-minute sample time
- **Round-robin proficiency testing for ISO-CHEK labs ensures accurate, consistent analysis**
  - See laboratory list at www.skcinc.com



Exploded view of ISO-CHEK Filter Cassette (Cassette in image is tinted for clarification.)

Suitable for most isocyanates, the patented# ISO-CHEK® Sampling System employs a two-stage filter arrangement that results in the simultaneous collection and separation of vapor from aerosol at the point of collection. The filter that collects the vapor phase is impregnated with 9-(N-methyl-aminomethyl) anthracene (MAMA), a highly stable reagent that minimizes storage and handling requirements.

ABOUT

ISO-CHEK Development
ISO-CHEK was developed and patented by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail du Québec).

Description	Cat. No.	Qty.
ISO-CHEK Sampling System with Derivatizing Reagent,*† preloaded clear cassettes and jars of Derivatizing Solution (MOPIP in toluene)	225-9023 225-9023A	4 10
ISO-CHEK Cassettes,* preloaded clear cassettes for isocyanates, *requires Derivatizing Solution; see below*	225-9022 225-9022A	12 36

Accessories	Cat. No.	Qty.
Derivatizing Solution,*† 5 ml of MOPIP in toluene, in jars	225-9050	12
Jars, 37 mm with PTFE-lined cap	225-8377	36
Calibration Standard,‡ MAMA-HDI, 1 gram	225-9053	ea
Calibration Standard,‡ MAMA-HMDI, 1 gram	225-9056	ea
Calibration Standard,‡ MAMA-IPDI, 1 gram	225-9054	ea
Calibration Standard,‡ MAMA-MDI, 1 gram	225-9062	ea
Calibration Standard,‡ MAMA-2,4-TDI and 2,6-TDI, 1 gram	225-9052	ea
Calibration Standard Set,‡ HDI, MDI, IPDI, 2,4-TDI, 2,6-TDI, 1 gram each	225-9055	set
Packaging Kit, materials for shipping 10 packages of 10 samplers and jars	225-9059	ea

 # U.S. Patent No. 4,961,916; see About at left
** Limited shelf-life*
† Hazmat shipping charges for air shipments only, ground shipments exempt
‡ Limited shelf-life, freezer storage recommended; refrigerated shipping not required

More Information
www.skcinc.com
Search "1869"

Glass Midget Impingers

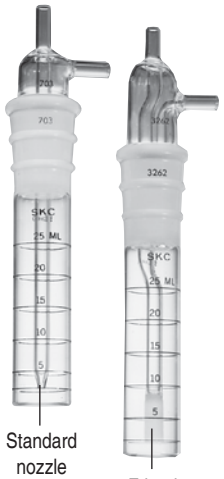
Collection of Airborne Hazards into Liquids

SKC glass impingers feature graduations that are accurate to within ± 0.5 ml for each increment. Serial numbers on both sections assist with sample identification and proper part matching.

Standard Midget Impinger has a 25-ml capacity with graduations in 5-ml increments. The nozzle is precisely placed to ensure proper collection.

Special Midget Impinger with Fritted Nozzle is a modified standard midget impinger with a special fritted nozzle to increase contact between the air sample and the liquid. Many NIOSH and OSHA procedures call for this type of bubbler impinger.

Spill-resistant Midget Impinger features a special outlet side arm that extends midway down with sufficient capacity above to handle all liquid in the standard or fritted impinger.



Glass Midget Impinger	Cat. No.
Standard Midget, 25 ml, standard nozzle	**225-36-1**
Special Midget, 25 ml, fritted nozzle, 170 to 220-micron frit	**225-36-2**
Spill-resistant Midget, 25 ml, standard nozzle	**225-36-4**
Spill-resistant Midget, 25 ml, fritted nozzle, 170 to 220-micron frit	**225-36-5**
Glass Midget Impinger Accessories	
Trap for Midget Impingers, glass trap for area sampling, can be used with or without sorbent, *see photo at right*	**225-22**
In-line Plastic Traps with sorbent to remove vapors, pk/3	**225-22-01**
Replacement Trap Sorbent, 200 grams, to remove vapors, for use in Cat. Nos. 225-22 and 225-22-01	**225-22-02**
Holster, thick vinyl fabric with a clip for attachment to clothing	**225-20***
Holders,* for attaching to air sample pump	
Single,* stainless steel, for 1 impinger or 1 trap	**225-20-01**
Double,* stainless steel, for 2 impingers or impinger and trap	**225-20-02**

* *Not suitable for PFA impingers*

PFA Midget Impingers

Savillex PFA (fluoropolymer) 60-ml impingers are unbreakable, inert to virtually all chemicals, and perform well in high-temperature and cryogenic applications. Available in two different port configurations, the transfer caps and ferrule nuts provide a leak-tight seal.

PFA Midget Impinger	Cat. No.
Impinger with 1-piece Molded Transfer Cap, 60-ml capacity, with a 6.35-mm (1/4-inch) vertical port and a 6.35-mm (1/4-inch) side port for horizontal connections; includes ferrule nuts	**225-0020**
Impinger with Port Transfer Cap, 60-ml capacity, with 2 vertical 6.35-mm (1/4-inch) ports for close assembly of sampling train; includes ferrule nuts	**225-0021**
PFA Midget Impinger Accessories	
Single Holder for PFA Impinger,† stainless steel, attaches to sample pump	**225-0026**
Holster for PFA Impinger,† vinyl, with clip, for attaching to clothing	**225-0027**
In-line Plastic Traps with sorbent to remove vapors, pk/3	**225-22-01**
Replacement Trap Sorbent, 200 grams, to remove vapors, for use in Cat. Nos. 225-22 and 225-22-01	**225-22-02**
180-degree PFA Tube Bend, 6.35-mm diameter x 203.2-mm length (1/4-inch diameter x 8-inch length), used to connect 2 PFA impingers, *for use with Cat. No. 225-0021 only*	**225-0022**
90-degree PFA Tube Bend, 6.35-mm diameter x 152.4-mm length (1/4-inch diameter x 6-inch length), used to connect 2 PFA impingers, *for use with Cat. No. 225-0021 only*	**225-0023**

† *Not suitable for glass impingers*

Tech Tips

▶ *Use a trap with impingers to prevent impinger liquid from being drawn into the sample pump. Solid sorbents may be added to the trap when using a volatile liquid to protect the pump chamber from vapors. See Cat. Nos. 225-22 and 225-22-01.*

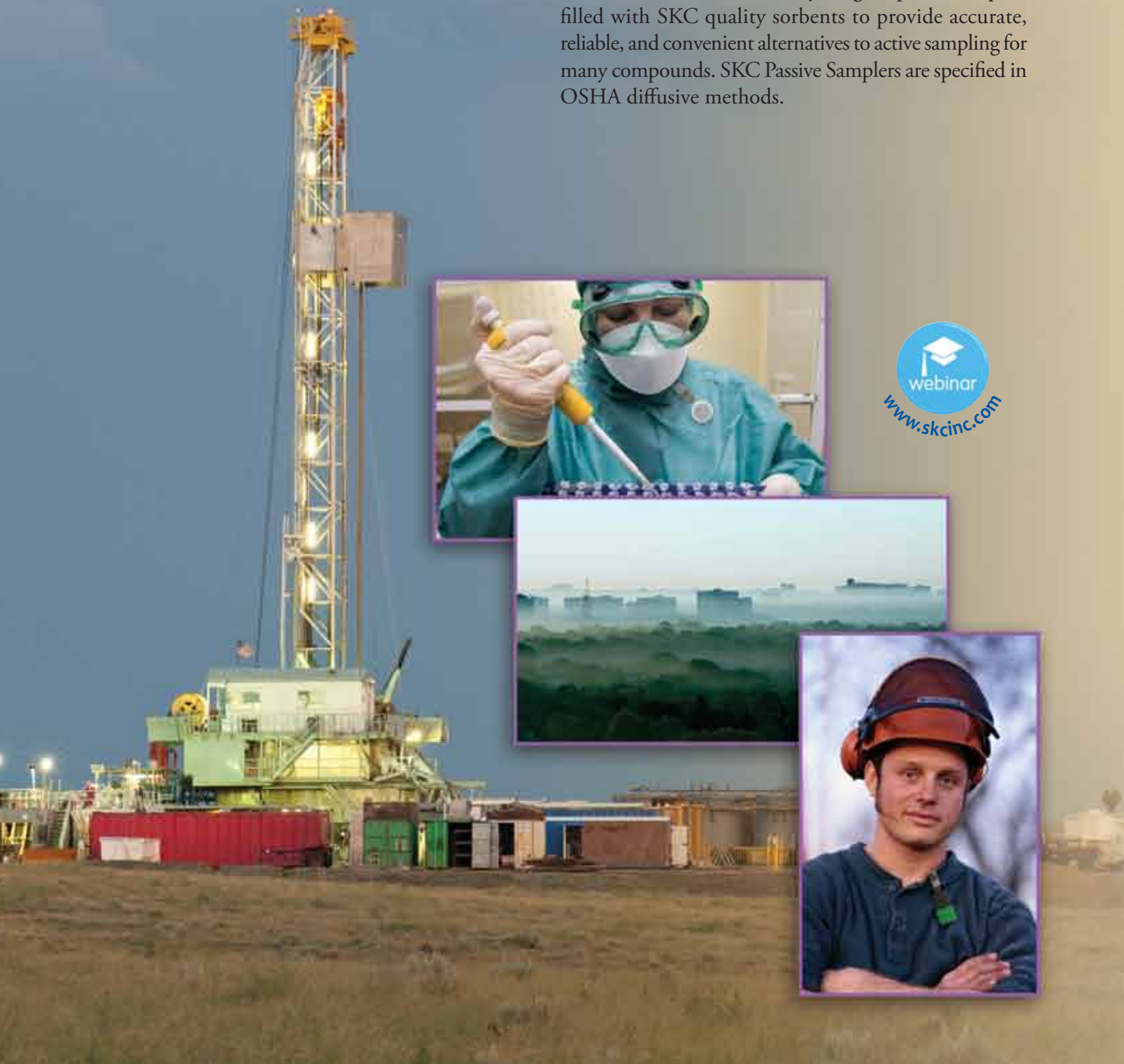
Glass Trap shown with Impinger and PCXR8 Sample Pump

Cat. No. 225-0021 *Cat. No. 225-0020*

SKC Passive Samplers

New Designs for New Applications

SKC sorbent innovation and research is not limited to sorbent tubes. SKC has carefully designed passive samplers filled with SKC quality sorbents to provide accurate, reliable, and convenient alternatives to active sampling for many compounds. SKC Passive Samplers are specified in OSHA diffusive methods.



Diffusive TD Tubes

BTEX/Other VOCs

See pages 70-71

VOC Chek 575 and ULTRA

ppb to ppm-Level VOCs

See pages 74-75 and 72-73

Passive Samplers for Health Care

Ethylene Oxide, Isoflurane, Halothane

See page 83

UME^{X} 100

Formaldehyde/Other Aldehydes

See page 84

UME^{X} 200

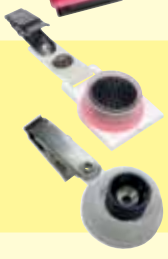
Nitrogen Dioxide/Sulfur Dioxide

See page 85

UME^{X} 300

Ammonia

See page 85



Elemental Mercury and Hydrogen Cyanide

See page 86

Diffusive Thermal Desorption Tubes

Time-averaged Assessment of BTEX and Other VOCs

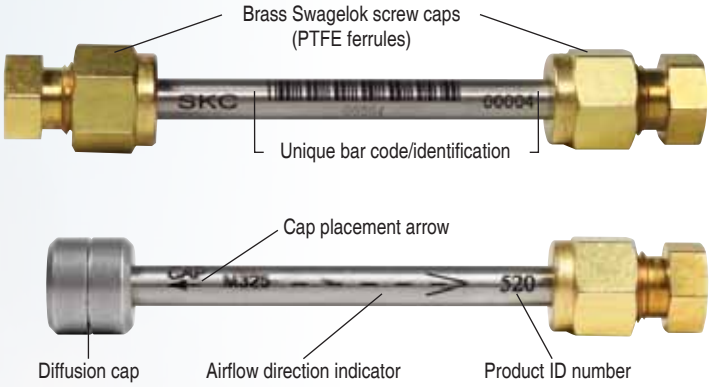
- Validated sampling rates for benzene, toluene, ethylbenzene, xylenes, and many other VOCs
- Contain pre-conditioned Carbopack® X sorbent
- SilcoNert® 2000 deactivated 3.5 x 0.25-inch OD stainless steel tubes
  - Ideal for protecting sample integrity over long sampling periods
- Use to determine average concentration over longer sampling periods up to 14 days
- No pump or training required
- Reusable to keep costs low
- Unique identification number and bar code
- Weatherproof tube shelter available
- Airflow and cap placement arrow indicators printed on tube
- Sealed with brass Swagelok screw caps with PTFE ferrules for transport
- Each collected compound can be analyzed quantitatively

SKC Diffusive Thermal Desorption (TD) Tubes are designed to provide accurate sampling of VOCs at refinery fencelines and for other ambient air monitoring applications without the use of a sample pump. Sampling times of up to 14 days provide an average concentration that eliminates the effects of daily variables such as hazard concentration and temperature. A weatherproof shelter accessory protects samples.

Description	Cat. No.	Qty.
SKC Diffusive TD Tubes,* 3.5 x 0.25-in OD deactivated stainless steel tubes filled with pre-conditioned Carbopack X and supplied with diffusion caps and brass Swagelok screw caps with PTFE ferrules	226-520	10
Diffusion Caps	226-525	10
Shelter	226-526	ea

* *Tubes must be used within 30 days of conditioning*

SKC Diffusive Thermal Desorption Tubes for BTEX and Other VOCs



SKC Diffusive TD Tubes are conditioned and quality control tested to assure low background.

Weatherproof shelter accessory protects TD tubes.

More Information

McClenny, W.A. et al., "24 h Diffusive Sampling of Toxic VOCs in Air onto Carbopack X …," http://doi.org/fhgn4s

U.S. EPA Method 325B: https://goo.gl/B4viuV

www.skcinc.com

ULTRA Passive Samplers

Convenient Alternative to Canisters and Thermal Desorption Tubes

Compare ULTRA to Canisters

Side-by-side studies using ULTRA® Passive Samplers (Anasorb GCB1) and stainless steel canisters demonstrate excellent sampling correlation.

Compound	ULTRA (µg/m³)	Canister (µg/m³)
Benzene	4.2	4.5
	2.1	2.0
	1.9	1.6
	6.67	6.8
	1.58	1.5

Compound	ULTRA (µg/m³)	Canister (µg/m³)
Perchloro-ethylene	1.1	1.6
	2.3	2.2
	32.9	30.0
	1.37	2.0
	2.85	2.6

Compound	ULTRA (µg/m³)	Canister (µg/m³)
o-Xylene	7.55	7.9
	1.16	0.93
	1.96	1.9
	8.3	6.2
	13.3	11.0

Compound	ULTRA (µg/m³)	Canister (µg/m³)
Toluene	30.0	26.0
	20.3	19.0
	44.0	46.0
	10.8	8.8
	6.1	3.8

Compound	ULTRA (µg/m³)	Canister (µg/m³)
m,p-Xylene	21.2	19.2
	5.52	5.6
	34.1	36.7
	3.7	2.51
	5.7	5.1

- **Results comparable to canisters for EPA Method TO-15**
  - No cleaning or certification costs
  - Lower purchase price
  - No expensive shipping
- **Passive alternative for EPA TO-17 — no pump required**
- **Choose from 5 sorbents for indoor and ambient air sampling (including SVOCs)**
  - Anasorb GCB1
  - Tenax TA
  - Chromosorb 106
  - Carbopack X
  - Charcoal (solvent extraction)
- **Easy on/off sampling**
- **Small, lightweight, and easy to transport**
- **Validated sampling (uptake) rates**
  - See www.skcinc.com/catalog/passive-guide.php
- **Built-in blank/correction sorbent section available**
- **Sample integrity**
  - Manufactured in an ultra-clean environment
  - Extensive cleaning and QC procedures
  - Sonically welded housing
- **Long-term sampling up to 30 days reduces temporal variability (*see www.skcinc.com/pdf/1812.pdf*)**
- **Ideal for vapor intrusion sampling**
  - See EPA-OSWER technical guide at www.epa.gov, search "vapor intrusion"

ULTRA Passive Samplers

Convenient Alternative to Canisters and Thermal Desorption Tubes

Patented ULTRA — Front view*

Ordering

Select from prefilled samplers or separate sampler housing and sorbent vials.

Sorbent/Amount	Economy Prefilled Samplers, without built-in blank, pk/5 Cat. No.	Prefilled Samplers, with built-in blank, pk/5 Cat. No.	Sorbent Vials for User-filled Samplers, pk/2, *require empty housing Cat. No. 690-200* Cat. No.
Anasorb GCB1,#‡ 370 mg in each compartment or vial	690-101-NB	690-101	690-201
Chromosorb 106,#† 285 mg in each compartment or vial	690-103-NB	690-103	690-203
Tenax TA,# 253 mg in each compartment or vial	690-104-NB	690-104	690-204
Charcoal,# 500 mg in each compartment or vial (solvent extraction)	690-105-NB	690-105	690-205
Carbopack X,# 400 mg in each compartment or vial	690-106-NB	690-106	690-206
Empty Sampler Housing, for user-filled ULTRA, *required*			690-200

 # Limited shelf-life *‡ Comparable to Carbopack B* *† Go to www.osha.gov and search "ULTRA" for additional information on sampling rates for Chromosorb 106.*

Sampling Accessories	Cat. No.
Rate Reducer, 12 holes, lowers sampling rate for extended sampling time and higher concentrations	690-300
Transfer Funnel, for filling sampler housing with sorbent from vials, for ULTRA only	690-301
Stand for Indoor Sampling	690-302
Shelter for Outdoor Sampling	690-303

Analysis Accessories	Cat. No.
Thermal Desorption Tube, Perkin Elmer, 6.35 x 88.9 mm (0.25 x 3.5 inches), includes screens and end caps	P226530
Analysis Transfer Funnel, facilitates transfer of sorbent from vial to 6.35-mm (0.25-inch) OD thermal desorption tube	590-264

* *U.S. Patent No. 6,607,581*

See www.skcinc.com/catalog/passive-guide.php for sampling rates for over 50 compounds.

SKC 575 Series Passive Samplers are now...

VOC 575 Series

✓Decrease sampling costs

- More sorbent/capacity + validation to 2x exposure level
  = One sampler per 8-hour shift
  = One analysis of a single layer
  = Savings for you

✓Increase convenience

- No assembly required for sampling
- New design for easier sorbent transfer during analysis
- Reference guides available for laboratories

✓Increase reliability

- Sampling rates for over 300 compounds *(see pages 76-82)*
- Online research reports document performance for legal and compliance issues. Visit www.skcinc.com/reports.asp
- Specialty samplers available for ethylene oxide (EtO), styrene, and methanol
- Validated in OSHA methods

Easy 3-step Sampling!

Remove front cap.

Clip in worker's breathing zone to sample.

Cap and record information.

Passive Samplers

for ppm-Level Organic Vapors

Front of VOC Chek 575 Series Sampler (actual size)

Back of VOC Chek 575 Series Sampler designed for easier analysis

Active/Passive Sampling Cross-reference

Compound	Active Method	Tube Cat. No.	Passive Method	Sampler Cat. No.
Benzene	OSHA 1005	226-01	OSHA 1005	575-002
Butyl acetates	OSHA 1009	226-01	OSHA 1009	575-002
MEK/MIBK	OSHA 16 (MEK)	226-10	OSHA 1004	575-002
Styrene	OSHA 89	226-73	OSHA 1014	575-006
Toluene	OSHA 111	226-81A or 226-01	OSHA 111	575-002
Trichloroethylene/ tetrachloroethylene	OSHA 1001	226-01	OSHA 1001	575-002
Xylenes/ethylbenzene	OSHA 1002	226-01	OSHA 1002	575-002

VOC Chek 575 Series Passive Sampler Ordering

Passive Sampler for:	Sorbent		Cat. No.
Organic vapors	Charcoal Lot 2000, 350 mg	**pk/5** **pk/25**	**575-001†** **575-001A**
Organic vapors	Anasorb 747, 500 mg	**pk/5** **pk/25**	**575-002†** **575-002A**
Ethylene oxide	Anasorb 747 treated with hydrobromic acid, 500 mg	**pk/5** **pk/25**	**575-005** **575-005A**
Styrene	Anasorb 747 treated with tert-butyl catechol, 500 mg	**pk/5**	**575-006**
Methanol	Anasorb 747, 500 mg, includes secondary diffusion barrier	**pk/5**	**575-007**

† *Larger quantity packages are available. Contact SKC.*

Leader in Passive Sampler Technology

SKC VOC Chek® 575 Series Passive Samplers are identified as a reliable alternative to active sampling for many compounds in OSHA diffusive methods!

Methanol Passive Sampler Cat. No. 575-007
see ordering below left

STOP

No need to double your costs!

VOC Chek Series samplers have:

- More sorbent in a single layer
- More capacity
- Validated results to 2x exposure limit
- Lower price than double-layer samplers

See the VOC Chek 575 Series Selection Guide pages 76-82

VOC Chek 575 Series Selection Guide

On-worker ppm Level Sampling of Organic Vapors

SKC VOC Chek 575 Series Passive Samplers are available with sorbents such as activated carbon and Anasorb 747 that strongly retain the collected compounds and require solvent extraction for laboratory analysis.

Use the following guide to locate target compounds and get an overview of critical sampling parameters along with the SKC catalog number of the recommended SKC VOC Chek 575 Series Passive Sampler. Visit www.skcinc.com and download our free SKC Sampling Guide app to access this information on your Android or Apple device.

Validation Levels

See the Validation Level column in this guide to determine the level of scientific testing. Go to www.skcinc.com and search the number in the Research Report column to access online research reports.

Full – Stringent NIOSH testing protocol has been applied to verify sampler desorption efficiency, sampling rate, capacity, and the effects of relative humidity, temperature, concentration, reverse diffusion, and storage on accuracy.

Bi-level – NIOSH testing protocol has been applied to the most volatile member of a related (homologous) series of chemicals; therefore, related less volatile series members require only partial validation *(described below)* to achieve the same level of sampling accuracy. *See Guild et al. (http://doi.org/cjzqd7) or request a copy from SKC.*

Partial – NIOSH testing protocol has been applied to verify sampling rate, desorption efficiency, and storage stability.

Calculated – This calculation of a sampling or uptake rate uses the diffusion coefficient of a specific chemical (D) and the cross-sectional area (A) and length (L) of the sampler's diffusion path (based on sampler geometry).

OSHA – Sampler has been validated by OSHA and is referenced in a published OSHA method.

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ TWA (ppm)	OSHA PELs Δ CLG/STEL (ppm)	Sampling Rate (ml/min)	Sampling Time Min (min)	Sampling Time Max (hrs)	Analytical Method	DE % §	SKC VOC Chek 575 Cat. No.
Acetic acid	Calculated		10	15 #	19.6			GC-FID	99.2	575-001
Acetic acid	Calculated		10	15 #	19.6			GC-FID	107.9	575-002
Acetoin (acetyl methyl carbinol)	Calculated				14.9			GC-FID		575-001 or 575-002
Acetone	Full	1303	1000		20.3 √	15	4	GC-FID	90.2	575-002
Acetone	Full	1303	1000		15.2 ≈	240	8 ≈	GC-FID	90.2	575-002
Acetonitrile	Calculated		40		22.4			GC-FID	103	575-001
Acetonitrile	Calculated		40		22.4			GC-FID	108	575-002
Acetyl methyl carbinol (acetoin)	Calculated				14.9			GC-FID		575-001 or 575-002
Acrylonitrile	Full		2	10 C	20.4	15	8	GC-FID	81	575-002
Allyl alcohol	Calculated		2	4 #	18.4			GC-FID	64	575-001
Allyl alcohol	Calculated		2	4 #	18.4			GC-FID	76	575-002
Allyl chloride	Calculated		1	2 #	17.8			GC-FID	95.1	575-001
Allyl chloride	Calculated		1	2 #	17.8			GC-FID	101.3	575-002
n-Amyl acetate	Calculated		100		11.7			GC-FID	93.5	575-001
n-Amyl acetate	Calculated		100		11.7			GC-FID	96	575-002
sec-Amyl acetate (2-pentyl acetate)	Calculated		125		11.8			GC-FID		575-001
n-Amyl alcohol	Calculated				13.9			GC-FID	87.3	575-001
n-Amyl alcohol	Calculated				13.9			GC-FID	100.6	575-002
t-Amyl methyl ether (methyl tert-amyl ether)	Bilevel	1355			13.1	30	8	GC-FID	99	575-001
Aniline	Calculated		5		14.2			GC-FID		575-001
Benzene	Full	1312	1	5	16	15	8	GC-FID	93.5	575-001
Benzene	OSHA 1005		1	5	17.1	15	8	GC-FID	93.6	575-002
Benzotrifluoride (trifluoromethyl benzene; OXSOL 2000)	Bilevel		100		13.3	15	8	GC-FID	106	575-001
Benzotrifluoride (trifluoromethyl benzene; OXSOL 2000)	Bilevel		100		13.3	15	8	GC-FID	107	575-002
Benzyl acetate	Calculated		10		11.3			GC-FID	91.2	575-002
Benzyl chloride	Calculated		1	1 C	12.9			GC-FID	98.7	575-001
Benzyl chloride	Calculated		1	1 C	12.9			GC-FID	98.9	575-002
Bromobenzene	Calculated				13.8			GC-FID		575-001
Bromodichloromethane (dichlorobromomethane)	Calculated				16.1			GC-FID		575-001
Bromoethane (ethyl bromide)	Calculated		200	250 #	18.5			GC-FID		575-001
Bromoform	Calculated		0.5		15.2			GC-FID		575-001
Bromomethane (methyl bromide)	Calculated			20 C	22.1			GC-FID		575-001
1-Bromopropane (propyl bromide)	Full	1740	0.1		14.4	30	8	GC-FID	100	575-001
1-Bromopropane (propyl bromide)	Full	1740	0.1		14.7	30	8	GC-FID	107	575-002
1,3-Butadiene	Calculated		1	5	19.6			GC-FID		575-001
n-Butane	Calculated				18.1			GC-FID		575-001
n-Butanol (n-butyl alcohol)	Calculated		100	50 #	15.5			GC-FID	94	575-001

See page 212 for abbreviations.

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ TWA (ppm)	OSHA PELs Δ CLG/STEL (ppm)	Sampling Rate (ml/min)	Sampling Time Min (min)	Sampling Time Max (hrs)	Analytical Method	DE % §	SKC VOC Chek 575 Cat. No.
n-Butanol (n-butyl alcohol)	Calculated		100	50 #	15.5			GC-FID	100	575-002
2-Butanol (sec-butyl alcohol)	Calculated		150	150 #	15.6			GC-FID	93	575-001
2-Butanol (sec-butyl alcohol)	Calculated		150	150 #	15.6			GC-FID	100	575-002
2-Butanone (methyl ethyl ketone, MEK)	Bilevel	1306	200		17.1	15	12	GC-FID	100	575-002
2-Butanone (methyl ethyl ketone, MEK)	OSHA 1004		200		16.88		8	GC-FID	92.3	575-002
2-Butoxyethanol (butyl CELLOSOLVE solvent)	Calculated		50		12			GC-FID	89.7	575-002
n-Butyl acetate	OSHA 1009		150	200 #	13.07	15	8	GC-FID	99.2	575-002
n-Butyl acetate	Partial	1894	150	200 #	12.3	30	8	GC-FID	90.4	575-001
n-Butyl acetate	Partial	1894	150	200 #	13.2	30	8	GC-FID	98.7	575-002
sec-Butyl acetate	Calculated		200		12.8			GC-FID	96.2	575-001
sec-Butyl acetate	Calculated		200		12.8			GC-FID	96.6	575-002
sec-Butyl acetate	OSHA 1009		200		12.74	15	8	GC-FID	98.9	575-002
t-Butyl acetate	Calculated		200		12.7			GC-FID	95.1	575-001
t-Butyl acetate	Calculated		200		12.7			GC-FID	94.8	575-002
t-Butyl acetate	OSHA 1009		200		13.09	15	8	GC-FID	98.9	575-002
Butyl acrylate	Bilevel		10 ‡		11.7	30	8	GC-FID	95	575-002
t-Butyl alcohol	Calculated		100	150	15.8			GC-FID	84	575-002
n-Butyl alcohol (1-butanol)	Calculated		100	50 #	15.5			GC-FID	94	575-001
n-Butyl alcohol (1-butanol)	Calculated		100	50 #	15.5			GC-FID	100	575-002
sec-Butyl alcohol (2-butanol)	Calculated		150	150 #	15.6			GC-FID	93	575-001
sec-Butyl alcohol (2-butanol)	Calculated		150	150 #	15.6			GC-FID	100	575-002
t-Butyl benzene	Calculated				11.3			GC-FID		575-002
Butyl CELLOSOLVE acetate (ethylene glycol monobutyl ether acetate)	Calculated		5		10.4			GC-FID		575-002
t-Butyl ethyl ether (ethyl tert-butyl ether)	Bilevel	1356			13.1	15	8	GC-FID	101	575-001
n-Butyl glycidyl ether	Calculated		50	5.6 ‡	11.6			GC-FID	104	575-002
t-Butyl methyl ether (methyl t-butyl ether, MTBE)	Full	1352			13.6	8.5	8	GC-FID	97.4	575-001
p-tert-Butyl toluene	Bilevel		10		10.4	15	8	GC-FID	100	575-001
n-Butylbenzene	Calculated				11.23			GC-FID	103	575-002
sec-Butylbenzene	Calculated				11.3			GC-FID		575-002
gamma-Butyrolactone	Calculated				16.6			GC-FID	80.9	575-002
Camphor	Calculated		2 mg/m³		10.8			GC-FID	94.2	575-001
Camphor	Calculated		2 mg/m³		10.8			GC-FID	113	575-002
Carbolic acid (phenol)	Calculated		5	15.6 C	14.5			GC-FID		575-001 or 575-002
Carbon disulfide	Calculated		20	30	19.54			GC-FID		575-001
Carbon tetrachloride	Bilevel		10	25 C	14.1	30	8	GC-FID	98.3	575-001
2-CELLOSOLVE acetate (2-ethoxyethyl acetate)	Calculated		100		12.1			GC-FID	95.4	575-002
1-Chloro-2-methyl benzene (monochlorotoluene; OXSOL 10)	Bilevel		50 ‡		13	15	8	GC-FID	91.8	575-001
1-Chloro-2-methyl benzene (monochlorotoluene; OXSOL 10)	Bilevel		50 ‡		13	15	8	GC-FID	91	575-002
1-Chloro-4-(trifluoromethyl)benzene (parachlorobenzotrifluoride; OXSOL 100)	Bilevel		25 ◊		11.8	15	8	GC-FID	102	575-001
1-Chloro-4-(trifluoromethyl)benzene (parachlorobenzotrifluoride; OXSOL 100)	Bilevel		25 ◊		11.8	15	8	GC-FID	108	575-002
Chlorobenzene	Partial		75		14.41	15	8	GC-FID	93.3	575-001
Chlorobenzene	Partial	1838	75		14.41	15	8	GC-FID	87.6	575-002
Chlorobromomethane	Calculated		200		18.3			GC-FID	103	575-002
Chloroethane (ethyl chloride)	Calculated		1000		20.02			GC-FID		575-001
Chloroform	Bilevel		10	50 C	13	60	8	GC-FID	97.3	575-001
Chloromethane (methylchloride)	Calculated				24.6			GC-FID		575-001
o-Chlorostyrene	Bilevel	1374	50 ‡		9.8	15	8	GC-FID	75.2	575-002
4-Chlorotoluene	Calculated				12.4			GC-FID		575-001
Cumene (isopropyl benzene)	Bilevel		50		12.8	15	8	GC-FID	99.3	575-001
Cumene (isopropyl benzene)	Bilevel		50		12.8	15	8	GC-FID	106	575-002
Cyclohexane	Bilevel		300		15.6	15	8	GC-FID	105	575-001
Cyclohexane	Bilevel		300		15.6	15	8	GC-FID	109	575-002
Cyclohexanol	Calculated		50		13.5			GC-FID	98	575-001
Cyclohexanol	Calculated		50		13.5			GC-FID	105	575-002
Cyclohexene	Calculated		300		15.4			GC-FID	102	575-001
Cyclohexene	Calculated		300		15.4			GC-FID	106	575-002
Cyclopentane	Calculated				16.8			GC-FID		575-001
p-Cymene (4-isopropyltoluene)	Calculated				11.3			GC-FID		575-001
Decamethylcyclopentasiloxane (D5)	Partial	1891	5 †		5.66	15	8	GC-FID	99	575-001
Decamethyltetrasiloxane	Calculated				7.36			GC-FID		575-001
n-Decane	Partial				12.2			GC-FID	103	575-002
1-Decanol (decyl alcohol)	Calculated				9.6			GC-FID	97.3	575-002
Decyl alcohol (1-decanol)	Calculated				9.6			GC-FID	97.3	575-002
Desflurane	Partial	1893		2	13.8	30	4	GC-FID	94.3	575-002
Diacetone alcohol	Calculated		50		12.4			GC-FID	92.9	575-002
1,2-Dibromo-3-chloropropane	Calculated		1 ppb		12.6			GC-FID	101.3	575-002
Dibromochloromethane	Calculated				15.6			GC-FID		575-001
1,2-Dibromoethane (ethylene dibromide)	Calculated		20	30	15.3			GC-FID	92.3	575-001

See page 212 for abbreviations.

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ TWA (ppm)	OSHA PELs Δ CLG/STEL (ppm)	Sampling Rate (ml/min)	Sampling Time Min (min)	Sampling Time Max (hrs)	Analytical Method	DE % §	SKC VOC Chek 575 Cat. No.
1,2-Dibromoethane (ethylene dibromide)	Calculated		20	30	15.3			GC-FID	99.4	575-002
1, 6-Dibromohexane (hexamethylene dibromide)	Calculated				10.7			GC-FID		575-001
o-Dichlorobenzene (1,2-dichlorobenzene)	Partial			50 C	12.5	15	8	GC-FID	79.2	575-001
o-Dichlorobenzene (1,2-dichlorobenzene)	Partial	1875		50	12.5	15	8	GC-FID	77.1	575-002
m-Dichlorobenzene (1,3-dichlorobenzene)	Calculated				12.95			GC-FID	91.8	575-001
m-Dichlorobenzene (1,3-dichlorobenzene)	Calculated				12.95			GC-FID	92.7	575-002
p-Dichlorobenzene (1,4-dichlorobenzene)	Calculated		75		12.95			GC-FID	91.1	575-001
p-Dichlorobenzene (1,4-dichlorobenzene)	Calculated		75		12.95			GC-FID	94.7	575-002
1,3-Dichlorobenzene (m-dichlorobenzene)	Calculated				12.95			GC-FID	91.8	575-001
1,3-Dichlorobenzene (m-dichlorobenzene)	Calculated				12.95			GC-FID	92.7	575-002
1,2-Dichlorobenzene (o-dichlorobenzene)	Partial			50 C	12.5	15	8	GC-FID	79.2	575-001
1,2-Dichlorobenzene (o-dichlorobenzene)	Partial	1875		50 C	12.5	15	8	GC-FID	77.1	575-002
1,4-Dichlorobenzene (p-dichlorobenzene)	Calculated		75		12.95			GC-FID	91.1	575-001
1,4-Dichlorobenzene (p-dichlorobenzene)	Calculated		75		12.95			GC-FID	94.7	575-002
Dichlorobromomethane (bromodichloromethane)	Calculated				16.1			GC-FID		575-001
Dichlorodifluoromethane (Freon 12)	Calculated		1000		18.6			GC-FID		575-001
1,1-Dichloroethane	Calculated		100		16.85			GC-FID		575-001
1,2-Dichloroethane (ethylene dichloride)	Bilevel		50	100	14.2	60	8	GC-FID	95.8	575-001
1,2-Dichloroethene (1,2-dichloroethylene)	Full				14.8	15	8	GC-FID	97.1	575-001
1,1-Dichloroethene (vinylidene chloride)	Bilevel		1		12.3	60	8	GC-FID	95.2	575-001
Dichloroethyl ether	Calculated		5 ‡	15 C	12.5			GC-FID		575-001
1,2-Dichloroethylene (1,2-dichloroethene)	Full		200		14.8	15	8	GC-FID	97.1	575-001
1,2-Dichloroethylene (1,2-dichloroethene)	Full				14.8	15	8	GC-FID	97.1	575-001
Dichloromethane (methylene chloride)	Full	1323	25	125	14.7	240	8 π	GC-FID	96	575-001
Dichloromethane (methylene chloride)	Full	1323	25	125	16	15	4	GC-FID	96	575-001
1,2-Dichloropropane (propylene dichloride)	Bilevel		75		14.3	15	8	GC-FID	97.7	575-001
1,1-Dichloropropene	Calculated				15.6			GC-FID		575-001
cis-1,3-Dichloropropene	Partial	1886	1 ‡		13.6	15	8	GC-FID	101	575-002
trans-1,3-Dichloropropene	Partial	1886			14.4	15	8	GC-FID	99.4	575-002
1,2-Dichlorotetrafluoroethane (Freon 114)	Calculated		1000		15.3			GC-FID		575-001
Dicyclopentadiene	Calculated		5 ‡		11.8			GC-FID		575-001
Diethyl ether (ethyl ether)	Calculated		400		16.4			GC-FID		575-001
Diethyl ketone (3-pentanone)	Calculated		200 ‡		14.8			GC-FID	83.9	575-001
Diethyl ketone (3-pentanone)	Calculated		200 ‡		14.8			GC-FID	100.3	575-002
Diethylene glycol dimethyl ether (2-methoxyethyl ether)	Calculated				11.5			GC-FID		575-002
Diethylene glycol monobutyl ether	Calculated				9.97			GC-FID		575-002
Diethylene glycol monoethyl ether	Calculated				9.85			GC-FID		575-002
Diethylene glycol monoethyl ether acetate	Calculated				9.88			GC-FID		575-002
Diethylene glycol monomethyl ether (2-[2-methoxyethoxy] ethanol)	Calculated				11.3			GC-FID		575-002
Diisobutyl ketone (DIBK), (isovalerone)	Bilevel	1305	50		10.3	30	8	GC-FID	98.3	575-002
1,2-Dimethoxyethane (ethylene glycol dimethyl ether)	Calculated				14.7			GC-FID		575-001 or 575-002
Dimethoxymethane (methylal)	Calculated		1000		17.1			GC-FID		575-001
Dimethyl adipate	Calculated				10.73			GC-FID		575-001
Dimethyl disulfide	Calculated				15.4			GC-FID		575-001
2,5-Dimethyl hexane	Calculated				11.86			GC-FID		575-001
2,2-Dimethyl methane	Calculated				21.7			GC-FID		575-001
Dimethyl pentanedioate	Calculated				10.8			GC-FID		575-001
Dimethyl sulfide	Calculated				19			GC-FID		575-001
Dimethyl sulfoxide	Calculated				16.3			GC-FID		575-002
N,N-Dimethylaniline	Calculated		5		12			GC-FID		575-001
2,2-Dimethylbutane (neohexane)	Calculated				14.2			GC-FID		575-001
trans-1,2-Dimethylcyclohexane	Calculated				12.4			GC-FID	106.1	575-001
N,N-Dimethylformamide (DMF)	Calculated		10		16.4			GC-FID	87.2	575-002
2,3-Dimethylpentane	Calculated				12.8			GC-FID		575-001
1,4-Dioxane	Calculated		100		15.8			GC-FID	91.4	575-002
Diphenyl oxide (phenyl ether)	Calculated		1		10.4			GC-FID		575-001
Dipropyl ketone (4-heptanone)	Calculated		50 ‡		12.1			GC-FID	85.3	575-001
Dipropyl ketone (4-heptanone)	Calculated		50 ‡		12.1			GC-FID	112	575-002
Dipropylene glycol methyl ether	Calculated		100		10.8			GC-FID	84.3	575-002
Dodecamethylcyclohexasiloxane	Calculated				6.75			GC-FID		575-001
n-Dodecanol (lauryl alcohol)	Calculated				8.7			GC-FID	107.5	575-001
n-Dodecanol (lauryl alcohol)	Calculated				8.7			GC-FID	103	575-002
1-Dodecene	Calculated				9.29			GC-FID		575-001
1-Dodecyl alcohol (lauryl alcohol)	Calculated				8.7			GC-FID	107.5	575-001
1-Dodecyl alcohol (lauryl alcohol)	Calculated				8.7			GC-FID	103	575-002
Dodecyl methacrylate	Calculated				7.6			GC-FID		575-002
Enflurane (ethrane)	Partial	1893		2	13.8	30	4	GC-FID	101	575-002
Epichlorohydrin	Calculated		5		16.4			GC-FID	88.2	575-002
2,3-Epoxy-1-propanol (glycidol)	Calculated		50		17.8			GC-FID		575-002
2,3-Epoxypropyl methacrylate (glycidyl methacrylate)	Calculated				11.45			GC-FID		575-002

See page 212 for abbreviations.

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ TWA (ppm)	OSHA PELs Δ CLG/STEL (ppm)	Sampling Rate (ml/min)	Sampling Time Min (min)	Sampling Time Max (hrs)	Analytical Method	DE % §	SKC VOC Chek 575 Cat. No.
Ethanol (ethyl alcohol)	Partial	1876	1000		20.3	15	8	GC-FID	99	575-002
2-Ethoxyethanol	Calculated		200		14.4			GC-FID	100.8	575-001
2-Ethoxyethanol	Calculated		200		14.4			GC-FID	111.2	575-002
2-Ethoxyethyl acetate (2-CELLOSOLVE acetate)	Calculated		100		12.1			GC-FID	95.4	575-002
Ethrane (enflurane)	Partial	1893		2	13.8	30	4	GC-FID	101	575-002
Ethyl acetate	Partial	1894	400		13.1	30	8	GC-FID	92.8	575-001
Ethyl acetate	Partial	1894	400		14.1	30	8	GC-FID	100	575-002
Ethyl acrylate	Bilevel		5		13.7	15	8	GC-FID	94.2	575-002
Ethyl alcohol (ethanol)	Partial	1876	1000		20.3	15	8	GC-FID	99	575-002
Ethyl benzene	Bilevel		100		12.9	15	6	GC-FID	100	575-001
Ethyl benzene	Bilevel		100		12.9	15	6	GC-FID	104	575-002
Ethyl benzene	OSHA 1002		100		13.83		8	GC-FID	99.1	575-002
Ethyl bromide (bromoethane)	Calculated		200	250 #	18.5			GC-FID		575-001
Ethyl butyl ketone (3-heptanone)	Calculated		50		12.2			GC-FID	87.9	575-001
Ethyl butyl ketone (3-heptanone)	Calculated		50		12.2			GC-FID	103.4	575-002
Ethyl chloride (chloroethane)	Calculated		1000		20.2			GC-FID		575-001
Ethyl cyanide	Calculated				18.61			GC-FID		575-001
Ethyl ether	Calculated		400		16.4			GC-FID		575-001
Ethyl formate	Calculated		100		17.8			GC-FID		575-001
2-Ethyl hexyl acetate	Calculated				9.8			GC-FID	99	575-002
Ethyl methacrylate	Full		100		13.1	15	8	GC-FID	84.7	575-001
Ethyl methacrylate	Full		100		13.1	15	8	GC-FID	104	575-002
Ethyl propionate	Calculated				14			GC-FID		575-001
Ethyl tert-butyl ether (tert-butyl ethyl ether)	Bilevel	1356			13.1	15	8	GC-FID	101	575-001
Ethylene dibromide (1,2-dibromoethane)	Calculated		20	30	15.3			GC-FID	92.3	575-001
Ethylene dibromide (1,2-dibromoethane)	Calculated		20	30	15.3			GC-FID	99.4	575-002
Ethylene dichloride (1,2-dichloroethane)	Bilevel		50	100 C	14.2	60	8	GC-FID	95.8	575-001
Ethylene glycol	Calculated			100 mg/m^3 C	17.44			GC-FID		575-002
Ethylene glycol diethyl ether	Calculated				12.27			GC-FID		575-002
Ethylene glycol dimethyl ether (1,2-dimethoxyethane)	Calculated				14.7			GC-FID		575-001 or 575-002
Ethylene glycol monobutyl ether acetate (butyl CELLOSOLVE acetate)	Calculated		5		10.4			GC-FID		575-002
Ethylene glycol monohexyl ether	Calculated				10.5			GC-FID		575-001
Ethylene glycol monomethyl ether acetate (methyl CELLOSOLVE acetate)	Calculated		25		12.9			GC-FID	92.4	575-002
Ethylene oxide	Full	1543	1	5 EL	21.2	15	8	GC-ECD	102	575-005
2-Ethylhexanol	Calculated				10.93			GC-FID	93.7	575-002
2-Ethyltoluene	Calculated				12.1			GC-FID	106	575-002
3-Ethyltoluene	Calculated				12.1			GC-FID	101	575-002
4-Ethyltoluene	Calculated				12.1			GC-FID	91	575-002
Freon 11 (trichlorofluoromethane)	Calculated				16.65			GC-FID		575-001
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	Calculated		1000	1250 #	14.1			GC-FID		575-001
Freon 114 (1,2-dichlorotetrafluoroethane)	Calculated		1000		15.3			GC-FID		575-001
Freon 12 (dichlorodifluoromethane)	Calculated		1000		18.6			GC-FID		575-001
Glutaric acid dimethyl ester	Calculated				11.5			GC-FID		575-002
Glycidol (2,3-epoxy-1-propanol)	Calculated		50		17.8			GC-FID		575-002
Glycidyl methacrylate (2,3-epoxypropyl methacrylate)	Calculated				11.45			GC-FID		575-002
Halothane	Full	1893			14.1	15	8	GC-FID	99.9	575-002
n-Heptane	Bilevel		500		13.9	15	8	GC-FID	105	575-001
n-Heptane	Bilevel		500		13.9	15	8	GC-FID	108	575-002
4-Heptanone (dipropyl ketone)	Calculated		50 ‡		12.1			GC-FID	85.3	575-001
4-Heptanone (dipropyl ketone)	Calculated		50 ‡		12.1			GC-FID	112.2	575-002
3-Heptanone (ethyl butyl ketone)	Calculated		50		12.2			GC-FID	87.9	575-001
3-Heptanone (ethyl butyl ketone)	Calculated		50		12.2			GC-FID	103.4	575-002
2-Heptanone (methyl n-amyl ketone)	Calculated		100		12.2			GC-FID	99.8	575-002
1-Heptene	Calculated				13.1			GC-FID		575-001
Hexachlorobutadiene	Calculated		0.02 ‡		10.5			GC-FID		575-001
Hexachloroethane	Calculated		1		11.5			GC-FID		575-001
Hexadecane	Calculated				7.7			GC-FID		575-001
Hexamethyldisiloxane (L2)	Partial	1892	200 †		9.98	15	8	GC-FID	102.9	575-001
Hexamethylene dibromide (1,6-dibromohexane)	Calculated				10.7			GC-FID		575-001
n-Hexane	Bilevel		500		14.3	15	8	GC-FID	100	575-001
n-Hexane	Bilevel		500		14.3	15	8	GC-FID	112	575-002
Hexanol (hexyl alcohol)	Calculated				12.64			GC-FID	92.9	575-002
2-Hexanone (methyl butyl ketone MBK)	Partial	1873	100		14.3	15	8	GC-FID	104	575-002
2-Hexene	Calculated				14.5			GC-FID		575-001
Hexone (methyl isobutyl ketone [MIBK])	Bilevel	1304	100		13.5	30	8	GC-FID	94.6	575-002
Hexone (methyl isobutyl ketone [MIBK])	OSHA 1004		100		13.62		8	GC-FID	92.9	575-002
sec-Hexyl acetate	Calculated		50		11.1			GC-FID		575-002
Hexyl alcohol (hexanol)	Calculated				12.64			GC-FID	92.9	575-002
Hexylene	Calculated				14.5			GC-FID		575-001

See page 212 for abbreviations.

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ TWA (ppm)	OSHA PELs Δ CLG/STEL (ppm)	Sampling Rate (ml/min)	Sampling Time Min (min)	Sampling Time Max (hrs)	Analytical Method	DE % §	SKC VOC Chek 575 Cat. No.
Hexylene glycol	Calculated			25 C	11.81			GC-FID		575-002
Iodomethane (methyl iodide)	Calculated				18.7			GC-FID		575-001
Isoamyl acetate	Calculated		100		11.9			GC-FID	91.9	575-001
Isoamyl acetate	Calculated		100		11.9			GC-FID	108	575-002
Isoamyl alcohol	Calculated		100	125 #	13.9			GC-FID		575-002
Isobutyl acetate	Calculated		150		12.8			GC-FID	106	575-002
Isobutyl acetate	OSHA 1009		150		13.16	15	8	GC-FID	99.1	575-002
Isobutyl acrylate	Calculated				12.2			GC-FID		575-002
Isobutyl alcohol	Calculated		100		15.6			GC-FID	93	575-001
Isobutyl alcohol	Calculated		100		15.6			GC-FID	100	575-002
Isoflurane	Full	1893			13.2	15	8	GC-FID	96	575-002
Isooctyl alcohol	Calculated		50 ‡		10.9			GC-FID		575-002
Isopentane (2-methyl butane)	Calculated		1000	610 #	15.8			GC-FID		575-001
Isophorone	Calculated		25		11.3			GC-FID		575-002
Isopropanol (isopropyl alcohol)	Partial	1839	400	500 #	18.42	15	8	GC-FID	103.5	575-002
Isopropyl acetate	Calculated		250		14.2			GC-FID	88.5	575-001
Isopropyl acetate	Calculated		250		14.2			GC-FID	101	575-002
Isopropyl alcohol (isopropanol)	Partial	1839	400	500 #	18.42	15	8	GC-FID	103.5	575-002
Isopropyl benzene (cumene)	Bilevel		50		12.8	15	8	GC-FID	99.3	575-001
Isopropyl benzene (cumene)	Bilevel		50		12.8	15	8	GC-FID	106	575-002
Isopropyl ether	Calculated		500		13.4			GC-FID		575-001
Isopropyl glycidyl ether	Calculated		50	50 #	12.8			GC-FID		575-001
4-Isopropyltoluene (p-cymene)	Calculated				11.3			GC-FID		575-001
Isovalerone (diisobutyl ketone [DIBK])	Bilevel	1308	50		10.3	30	8	GC-FID	98.3	575-002
Lauryl alcohol (1-dodecanol)	Calculated				8.7			GC-FID	107.5	575-001
Lauryl alcohol (1-dodecanol)	Calculated				8.7			GC-FID	103	575-002
Limonene	Calculated				11.1			GC-FID	102	575-002
Mesityl oxide	Calculated		25		13.7			GC-FID		575-001
Mesitylene (1,3,5-trimethylbenzene)	Calculated		25 ¶		12.1			GC-FID	93.6	575-001
Mesitylene (1,3,5-trimethylbenzene)	Calculated		25 ¶		12.1			GC-FID	96	575-002
Methanol (methyl alcohol)	Partial	1895	200	250	1.2	15	8	GC-FID	101	575-007
2-Methoxy-1-propyl acetate	Calculated				12.1			GC-FID		575-002
1-Methoxy-2-propanol (propylene glycol monomethyl ether)	Calculated		100 ‡	150 #	14.7			GC-FID	82.9	575-001
1-Methoxy-2-propanol (propylene glycol monomethyl ether)	Calculated		100 ‡	150 #	14.7			GC-FID	100	575-002
1-Methoxy-2-propyl acetate (propylene glycol monomethyl ether acetate)	Calculated				12.2			GC-FID	108	575-001
1-Methoxy-2-propyl acetate (propylene glycol monomethyl ether acetate)	Calculated				12.1			GC-FID	103	575-002
2-Methoxyethanol (methyl CELLOSOLVE)	Calculated		0.1		16.1			GC-FID	94.7	575-001
2-Methoxyethanol (methyl CELLOSOLVE)	Calculated		0.1		16.1			GC-FID	91.1	575-002
2-[2-Methoxyethoxy] ethanol (diethylene glycol monomethyl ether)	Calculated				11.3			GC-FID		575-002
2-Methoxyethyl ether (diethylene glycol dimethyl ether)	Calculated				11.5			GC-FID		575-002
Methoxyflurane	Calculated			2	13.3			GC-FID	95.7	575-002
Methyl acetate	Calculated		200	250 #	17.8			GC-FID		575-002
Methyl acrylate	Full		10		15.7	15	8	GC-FID	94.3	575-002
Methyl alcohol (Methanol)	Partial	1895	200	250	1.2	15	8	GC-FID	101	575-007
Methyl amyl alcohol (methyl isobutyl carbinol)	Calculated		25		12.8			GC-FID		575-002
Methyl bromide (bromomethane)	Calculated			20C	22.1			GC-FID		575-002
2-Methyl butane (isopentane)	Calculated		1000	610 #	15.8			GC-FID		575-001
Methyl butyl ketone (MBK), (2-hexanone)	Partial	1873	100		14.3	15	8	GC-FID	104	575-002
Methyl CELLOSOLVE (2-methoxyethanol)	Calculated		0.1		16.1			GC-FID	94.7	575-001
Methyl CELLOSOLVE (2-methoxyethanol)	Calculated		0.1		16.1			GC-FID	91.1	575-002
Methyl CELLOSOLVE acetate (ethylene glycol monomethyl ether acetate)	Calculated		25		12.9			GC-FID	92.4	575-002
Methyl chloroform (1,1,1-trichloroethane)	Bilevel		350		14.1	15	8	GC-FID	99.9	575-001
Methyl cyclohexane	Bilevel		500		14.2	15	8	GC-FID	106	575-001
Methyl ethyl ketone (MEK), (2-butanone)	Bilevel	1306	200		17.1	15	12	GC-FID	100	575-002
Methyl ethyl ketone (MEK), (2-butanone)	OSHA 1004		200		16.88		8	GC-FID	92.3	575-002
Methyl formate	Calculated		100		20.58			GC-FID		575-001
Methyl iodide (iodomethane)	Calculated				18.7			GC-FID		575-001
Methyl isoamyl ketone	Calculated		50		12.3			GC-FID		575-002
Methyl isobutyl carbinol (methyl amyl alcohol)	Calculated		25		12.8			GC-FID		575-002
Methyl isobutyl ketone (MIBK), (hexone)	Bilevel	1304	100		13.5	30	8	GC-FID	94.6	575-002
Methyl isobutyl ketone (MIBK), (hexone)	OSHA 1004		100		13.62		8	GC-FID	92.9	575-002
Methyl isopropyl ketone	Calculated				14.8			GC-FID		575-002
Methyl isothiocyanate	Calculated				17.36			GC-FID		575-001
Methyl methacrylate (MMA)	Bilevel	1308	100		13.1	7.5	8	GC-FID	100.5	575-002
Methyl n-amyl ketone (2-heptanone)	Calculated		100		12.2			GC-FID	99.8	575-002
2-Methyl pentane	Calculated				14.1			GC-FID		575-001
Methyl propyl ketone (2-pentanone)	Calculated		200		14.8			GC-FID	92.6	575-002

See page 212 for abbreviations.

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ TWA (ppm)	OSHA PELs Δ CLG/STEL (ppm)	Sampling Rate (ml/min)	Sampling Time Min (min)	Sampling Time Max (hrs)	Analytical Method	DE % §	SKC VOC Chek 575 Cat. No.
3-Methyl pyrrolidinone	Calculated				13.28			GC-FID		575-002
Methyl styrene (vinyl toluene)	Calculated		100		12.3			GC-FID		575-001
Methyl t-butyl ether (MTBE)	Full	1352			13.6	8.5	8	GC-FID	97.4	575-001
Methyl tert-amyl ether (tert-amyl methyl ether)	Bilevel	1355			13.1	30	8	GC-FID	99	575-001
n-Methyl-2-pyrrolidinone	Calculated		51		13.97			GC-FID		575-001
5-Methyl-3-heptanone	Calculated		25		11.4			GC-FID	87.5	575-001
5-Methyl-3-heptanone	Calculated		25		11.4			GC-FID	110.7	575-002
Methylal (dimethoxymethane)	Calculated		1000		17.1			GC-FID		575-001
Methylchloride (chloromethane)	Calculated				24.6			GC-FID		575-002
1-Methylcyclohexanol	Full		100		12.4	15	8	GC-FID	94.7	575-001
1-Methylcyclohexanol	Full		100		12.4	15	8	GC-FID	108	575-002
Methylcyclopentane	Calculated				14.9			GC-FID		575-001
Methylene chloride (dichloromethane)	Full	1323	25	125	16	15	4	GC-FID	96	575-001
Methylene chloride (dichloromethane)	Full	1323	25	125	14.7	240	8 π	GC-FID	96	575-001
3-Methylhexane	Calculated				12.8			GC-FID		575-001
alpha-Methylstyrene	Bilevel	1359		100 C	12.6	15	12	GC-FID	95.7	575-002
Mineral spirits	Calculated		500		10.95			GC-FID		575-001
Monochlorotoluene (1-chloro-2-methylbenzene; OXSOL 10)	Bilevel		50 ‡		13	15	8	GC-FID	91.8	575-001
Monochlorotoluene (1-chloro-2-methylbenzene; OXSOL 10)	Bilevel		50 ‡		13	15	8	GC-FID	91	575-002
Neohexane (2,2-dimethylbutane)	Calculated				14.2			GC-FID		575-001
Nitrobenzene	Calculated				12.6			GC-FID		575-001
Nonane	Bilevel				10.6	15	8	GC-FID	103	575-001
Nonyl alcohol	Calculated				10.2			GC-FID	96.8	575-002
Octadecane	Calculated				7.1			GC-FID		575-001
Octamethylcyclotetrasiloxane (D4)	Partial	1890	10 ▼		6.32	15	8	GC-FID	97.2	575-001
Octamethyltrisiloxane (L3)	Partial	1902	200 †		8.47	15	8	GC-FID	98.3	575-001
n-Octane	Bilevel		500		12.7	15	8	GC-FID	106	575-001
n-Octane	Bilevel		500		12.7	15	8	GC-FID	110	575-002
Octanol (octyl alcohol)	Calculated				10.86			GC-FID		575-002
1-Octene	Calculated				11.99			GC-FID		575-001
Octyl alcohol (octanol)	Calculated				10.86			GC-FID		575-002
OXSOL 10 (monochlorotoluene [1-chloro-2-methyl benzene])	Bilevel		50 ‡		13	15	8	GC-FID	91.8	575-001
OXSOL 10 (monochlorotoluene [1-chloro-2-methyl benzene])	Bilevel		50 ‡		13	15	8	GC-FID	91	575-002
Parachlorobenzotrifluoride (1-chloro-4-[trifluoromethyl]benzene; OXSOL 100)	Bilevel		25 ◊		11.8	15	8	GC-FID	102	575-001
Parachlorobenzotrifluoride (1-chloro-4-[trifluoromethyl]benzene; OXSOL 100)	Bilevel		25 ◊		11.8	15	8	GC-FID	108	575-002
Pentadecane	Calculated				7.93			GC-FID		575-001
n-Pentane	Full	1311	1000		14.9	15	8	GC-FID	105.2	575-001
3-Pentanone (diethyl ketone)	Calculated		200 ‡		14.8			GC-FID	83.9	575-001
3-Pentanone (diethyl ketone)	Calculated		200 ‡		14.8			GC-FID	100.3	575-002
2-Pentanone (methyl propyl ketone)	Calculated		200		14.8			GC-FID	92.6	575-002
1-Pentene	Calculated				16.3			GC-FID		575-001
2-Pentyl acetate (sec-amyl acetate)	Calculated		125		11.8			GC-FID		575-001
Perchloroethylene (tetrachloroethylene)	Full	1686	100	200 C	13.1	7.5	12	GC-FID	100.8	575-001
Perchloroethylene (tetrachloroethylene)	OSHA 1001		100	200 C	13.06	5	8	GC-FID	95.4	575-002
Perfluoromethylcyclohexane	Partial				10.2			GC-FID	102	575-002
Phenol (carbolic acid)	Calculated		5	15.6 C	14.5			GC-FID		575-001 or 575-002
Phenyl ether (diphenyl oxide)	Calculated		1		10.4			GC-FID		575-001
Phenyl glycidyl ether	Calculated		10		11.6			GC-FID		575-001
4-Phenylcyclohexene	Calculated				11.53			GC-FID		575-001 or 575-002
alpha-Pinene	Partial	1840			11.3	15	8	GC-FID	108.6	575-002
Propane	Calculated		1000		21.73			GC-FID		575-001
n-Propanol (propyl alcohol)	Calculated		200		17.7			GC-FID	87.3	575-001
n-Propanol (propyl alcohol)	Calculated		200		17.7			GC-FID	97.8	575-002
Propionitrile	Calculated		6 ‡		18.61			GC-FID		575-001
n-Propyl acetate	Calculated		200		14.1			GC-FID	87.5	575-001
n-Propyl acetate	Calculated		200		14.1			GC-FID	101.1	575-002
Propyl alcohol (n-propanol)	Calculated		200		17.7			GC-FID	87.3	575-001
Propyl alcohol (n-propanol)	Calculated		200		17.7			GC-FID	97.8	575-002
Propyl bromide (1-bromopropane)	Full	1740	0.1		14.4	30	8	GC-FID	100	575-001
Propyl bromide (1-bromopropane)	Full	1740	0.1		14.7	30	8	GC-FID	107	575-002
n-Propylbenzene	Calculated				12.1			GC-FID	101	575-002
Propylene dichloride (1,2-dichloropropane)	Bilevel		75		14.3	15	8	GC-FID	97.7	575-001
Propylene glycol monomethyl ether (1-methoxy-2-propanol)	Calculated		100 ‡	150 #	14.7			GC-FID	82.9	575-001
Propylene glycol monomethyl ether (1-methoxy-2-propanol)	Calculated		100 ‡	150 #	14.7			GC-FID	100	575-002
Propylene glycol monomethyl ether acetate (1-methoxy-2-propyl acetate)	Calculated				12.2			GC-FID	108	575-001
Propylene glycol monomethyl ether acetate (1-methoxy-2-propyl acetate)	Calculated				12.1			GC-FID	103	575-002

See page 212 for abbreviations.

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ TWA (ppm)	OSHA PELs Δ CLG/STEL (ppm)	Sampling Rate (ml/min)	Sampling Time Min (min)	Sampling Time Max (hrs)	Analytical Method	DE % §	SKC VOC Chek 575 Cat. No.
Propylene oxide	Calculated		100		19.9			GC-FID	98	575-001
Propylene oxide	Calculated		100		19.9			GC-FID	99.7	575-002
Pyridine	Calculated		5		16.6			GC-FID	88.2	575-002
Sevoflurane	Partial	1893		2	12.8	30	4		100	575-002
Solvent naphtha (petroleum) light aromatic	Calculated				11.61			GC-FID		575-001 or 575-002
Stoddard solvent	Calculated		500		10.95			GC-FID		575-001
Styrene	Full	1313	100	200 C	13.7	15	8	GC-FID	86.3	575-002
Styrene	OSHA 1014		100	200 C	13.55	15	8	GC-FID	96.7	575-006
1,1,1,2-Tetrachloroethane	Calculated				13.63			GC-FID	98.3	575-002
1,1,2,2-Tetrachloroethane	Bilevel		5		11.8	480 *	8	GC-FID	64.4 ∞	575-001
Tetrachloroethylene (perchloroethylene)	Full	1686	100	200 C	13.1	7.5	12	GC-FID	100.8	575-001
Tetrachloroethylene (perchloroethylene)	OSHA 1001		100	200 C	13.06	5	8	GC-FID	95.4	575-002
Tetradecane	Calculated				8.3			GC-FID		575-001
Tetrahydrofuran	Partial	1841	200		17.7	15	8	GC-FID	100.6	575-002
1,2,3,4-Tetramethylbenzene	Calculated				11.1			GC-FID		575-001
1,2,3,5-Tetramethylbenzene	Calculated				10.8			GC-FID		575-001
1,2,4,5-Tetramethylbenzene	Calculated				11.2			GC-FID	86.6	575-002
Toluene	Bilevel		200	300 C	14.5	15	8	GC-FID	97.9	575-001
Toluene	OSHA 111		200	300 C	14.89	10	8	GC-FID	97	575-002
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	Calculated		1000	1250 #	14.1			GC-FID		575-001
1,2,3-Trichlorobenzene	Calculated				11.34			GC-FID		575-001
1,2,4-Trichlorobenzene	Calculated			5 C	11.4			GC-FID		575-001
1,1,2-Trichloroethane	Bilevel		10		12.5	15	8	GC-FID	96.7	575-001
1,1,1-Trichloroethane (methyl chloroform)	Bilevel		350		14.1	15	8	GC-FID	99.9	575-001
Trichloroethylene	Full		100	200 C	14.9	15	8	GC-FID	102	575-001
Trichloroethylene	OSHA 1001		100	200 C	14.24	5	8	GC-FID	97.5	575-002
Trichlorofluoromethane (Freon 11)	Calculated				16.65			GC-FID		575-001
1,2,3-Trichloropropane	Bilevel		50		11.9	15	8	GC-FID	98.1	575-001
Tridecane	Calculated				9.2			GC-FID		575-001
Trifluoromethyl benzene (benzotrifluoride; OXSOL 2000)	Bilevel		100		13.3	15	8	GC-FID	106	575-001
Trifluoromethyl benzene (benzotrifluoride; OXSOL 2000)	Bilevel		100		13.3	15	8	GC-FID	107	575-002
1,2,3-Trimethylbenzene	Calculated		25 ¶		12			GC-FID	91.1	575-001
1,2,3-Trimethylbenzene	Calculated		25 ¶		12	15	8	GC-FID	93.8	575-002
1,2,4-Trimethylbenzene	Partial		25 ¶		13.05			GC-FID	88.4	575-001
1,2,4-Trimethylbenzene	Partial	1837	25 ¶		13.05	15	8	GC-FID	88.9	575-002
1,3,5-Trimethylbenzene (mesitylene)	Calculated		25 ¶		12.1			GC-FID	93.6	575-001
1,3,5-Trimethylbenzene (mesitylene)	Calculated		25 ¶		12.1			GC-FID	96	575-002
2,2,4-Trimethylpentane	Calculated				11.89			GC-FID		575-001
n-Undecane	Calculated				9.62			GC-FID		575-001
Vinyl acetate	Full	1860		4 C #	16.4	30	8	GC-FID	92	575-002
Vinyl bromide	Calculated		LFC ‡		19.6			GC-FID		575-001
Vinyl chloride	Calculated		1		21.4			GC-FID		575-001
Vinyl toluene (methyl styrene)	Calculated		100		12.3			GC-FID		575-001
n-Vinyl-2-pyrrolidone	Calculated				13.9			GC-FID		575-001
4-Vinylcyclohexene	Calculated				12.4			GC-FID		575-001
Vinylidene chloride (1,1-dichloroethene)	Bilevel		1		12.3	60	8	GC-FID	95.2	575-001
m-Xylene	Bilevel		100	150 #	12.5	15	8	GC-FID	96.6	575-001
m-Xylene	Bilevel		100	150 #	12.5	15	8	GC-FID	101	575-002
m-Xylene	OSHA 1002		100	150 #	13.82		8	GC-FID	96.1	575-002
o-Xylene	Bilevel		100	150 #	11.9	15	8	GC-FID	91	575-001
o-Xylene	OSHA 1002		100	150 #	14.24		8	GC-FID	89.4	575-002
p-Xylene	Bilevel		100	150 #	12.8	15	8	GC-FID	95.6	575-001
p-Xylene	Bilevel		100	150 #	12.8	15	8	GC-FID	103	575-002
p-Xylene	OSHA 1002		100	150 #	13.94		8	GC-FID	95.3	575-002

* *Lower than the NIOSH-accepted guideline*
\# *NIOSH Short Term Exposure Limit (STEL)*
∞ *Depends on detector sensitivity*
† *In-house exposure level*
‡ *NIOSH Recommended Exposure Limit (REL)*
◊ *Occidental Chemical corporate exposure limits*
≈ *Valid for PEL samples greater than 4 hours duration. If more than 1000 ppm of other contaminants are present, reduce maximum sample time to 4 hours.*
Δ *Agency standards for OSHA listings represent the OSHA PELs reported in 29 CFR 1910.1000 Part 1910, Section 1000.*
§ *The values given for the desorption efficiency were obtained in SKC Inc. laboratories. See the online guide at www.skcinc.com for details on the desorption solvent used.*
¶ *OSHA construction industry standards*
√ *Valid for STEL samples up to 4 hours duration*
π *If more than 1000 ppm contaminants are present, reduce maximum sample time to 4 hours.*
▼ *OARS-WEEL TWA Level (Occupational Alliance for Risk Science - Workplace Environmental Exposure Levels)*
EL *Excursion Limit*
LFC *Lowest feasible concentration*

More information at www.skcinc.com – search "Passive"

See page 212 for abbreviations.

Passive Samplers for Health Care
Anesthetic Gases

Halogenated Ethers

Isoflurane and enflurane are used primarily in veterinary procedures. Isoflurane and halothane are being replaced by desflurane and sevoflurane, which have fewer health effects. Exposure to halogenated ethers can cause eye, skin, and respiratory tract irritation; eye damage; and other serious health effects.

SKC VOC Chek 575 Passive Samplers

- Validated sampling rates for each gas
- Lightweight and miniature size
- No pump or assembly required
- Easy sorbent transfer during analysis

Description	Pkg. of 5 Cat. No.	Pkg. of 25 Cat. No.
Organic Vapors Passive Sampler contains 500 mg Anasorb 747	575-002†	575-002A†

† *Larger quantity packages are available. Contact SKC.*

See details on pages 80-81.

Ethylene Oxide (EtO)

Ethylene oxide is used to sterilize medical equipment and supplies. Exposure health effects can range from respiratory irritation to cancer and reproductive/mutagenic effects.

SKC Ethylene Oxide Passive Sampler

- Uses same sorbent as active OSHA Method 1010
- Fully validated for 8-hour and 15-minute sampling
- Lightweight and miniature size
- No pump or assembly required

Description	Pkg. of 5 Cat. No.	Pkg. of 25 Cat. No.
Ethylene Oxide Passive Sampler contains 500 mg Anasorb 747 treated with hydrobromic acid	575-005†	575-005A†

† *Larger quantity packages are available. Contact SKC.*

For passive samplers for Aldehydes, see page 84.

ABOUT Sampling Anesthetic Gases

OSHA Anesthetic Gases Guidelines for Workplace Exposures recommend air sampling for anesthetic gases every six months to measure worker exposures and to check control measure effectiveness. Personal sampling provides the best estimate of exposure level and is the preferred method for determining worker time-weighted average (TWA) exposure during anesthetic administration and in the post-anesthesia care unit (PACU). *Go to www.osha.gov/dts/osta/anestheticgases/index.html for detailed guidelines.*

ABOUT Sampling Peracetic Acid (PAA) — an Alternate Sterilant

While no passive sampler is available for PAA, SKC offers treated sorbent tubes Cat. Nos. 226-193-UC and 226-199-UC (page 42) and coated filter Cat. No. 225-9030 (page 63) to be used in a sampling train for PAA and hydrogen peroxide. *See page 42 for details.*

Research Reports available at www.skcinc.com

UME^{X}100 Passive Sampler for Formaldehyde

Occupational and Indoor Air Exposure Monitoring

- Meets OSHA Method 1007 specifications
- Conforms to EU ISO 16000-4-2004
- Accuracy exceeds OSHA standards
- Highly selective 2,4-DNPH chemistry; easy analysis
- Documented formaldehyde uptake rates for 15-minute to 24-hour and 7-day samples
  - Sampling rates available for other aldehydes *(see left)*
- Samples low ppb levels of formaldehyde

Sampling Rates for Other Aldehydes

Compound	Sampling Rate (ml/min)
Formaldehyde *(full validation)*	**28.6** (velocity 5 to 100 cm/sec, 15 min to 24 hrs) **20.4** (velocity < 5 cm/sec, 1 to 7 days)
Acetaldehyde	22.8‡
Benzaldehyde	13.5‡
Butyraldehyde	15.8‡
Crotonaldehyde	9.71‡
Glutaraldehyde	14‡
Hexanaldehyde	9.66‡
Isovaleraldehyde	15.5‡
Propionaldehyde	14‡
Chloroacetaldehyde	19.4**
Decylaldehyde	10.4**
Heptanaldehyde	12.8**
Nonanaldehyde	11.6**
o-Phthaldehyde	12.83**
o-Tolualdehyde	12.7**
Valeraldehyde	15.4**

‡ *Partial Validation*
** *Calculated sampling rate; see online Passive Sampling Guide at www.skcinc.com*

Versatile UME^{X} 100 Sampler

*Easy **personal formaldehyde sampling** (15 minutes to 8 hours) — OSHA 1007*

*Convenient **indoor air formaldehyde sampling** (24 hours or 7 days) with UME^{X} 100 and stand accessory*

Tech Tips

Q: ***Why is my lab finding higher background levels of formaldehyde on sampling media than those reported by SKC?***

A: *Page 3 of OSHA 1007 reports that storing samplers at elevated temperatures will cause DNPH to decompose. The decomposition product, 2,4-dinitroaniline, may be seen as formaldehyde by some labs if they are using a short/fast HPLC column with inadequate plate count. EPA TO-11A, Section 13.2.2 recommends an HPLC column efficiency of > 5000 theoretical plates. This column will allow for the effective separation of the formaldehyde peak from interfering peaks.*

Professionals' #1 Choice!

Description	Cat. No.	Price/Qty.
UME^{X}100 Passive Sampler for Formaldehyde*†Δ	500-100	$ 159.00/10
Suitable for sampling other aldehydes	500-100A	379.00/25
Treated Tape for QC - UME^{X} 100*†	P20084	35.00/50

Accessory	Cat. No.	Price/Qty.
Stand for Area Sampling	690-302	$ 8.00/ea

* *Limited shelf-life, single use only; do not reuse*
† *Store at ≤ 4 C (39.2 F)*
Δ *If sampling in an atmosphere containing formalin, see www.skcinc.com/instructions/1795.pdf.*

UMEX200 Passive Sampler for NO_2 and SO_2

Occupational Sampling and Near-road/Urban Air Monitoring

- Same chemistry as active OSHA Method ID-182
- Accurately measures exposures to sulfur dioxide and/or nitrogen dioxide from 15 minutes to 24 hours
- 3-week sample storage at ambient temperature
- Documented sampling rate of 17.3 ml/min for NO_2 and 15.2 ml/min for SO_2

Description	Cat. No.	Price/Qty.
UMEX200 Passive Sampler for Nitrogen Dioxide and/or Sulfur Dioxide*	500-200	$ 159.00/10
Treated Tape for QC - UMEX 200*	P20098	29.00/25

Accessory	Cat. No.	Price/Qty.
Stand for Area Sampling	690-302	$ 8.00/ea

* *Limited shelf-life, single use only; do not reuse*

Personal SO_2/NO_2 sampling *(15 minutes to 8 hours)*

Fenceline monitoring *(up to 24 hours) with UMEX 200 and shelter*

ABOUT UMEX 200 Sampler Applications

Occupational exposure monitoring in:

- Chemical plants
- Textile manufacturing
- Food industry
- Copper smelting
- Power plants
- Paper pulp mills
- Cement manufacturing
- Mines
- Welding
- Construction
- Fertilizer production
- Explosives production

UMEX 200 is ideal for:

- Near-road monitoring
- Fenceline applications
- Urban air studies by community action groups

UMEX300 Passive Sampler for Ammonia

Occupational Sampling and Fenceline/Odor Monitoring

- Chemistry similar to active OSHA Method ID-188 and NIOSH 6016
- Safe – no glass or sulfuric acid liquid in the sampler
- No particulate interference
- Enhanced sensitivity with documented 39.92 ml/min uptake rate
- Detects ammonia to:
  - 2.4 ppm for a 15-minute sample
  - 0.075 ppm for an 8-hour sample
  - 0.025 ppm for a 24-hour sample

Description	Cat. No.	Price/Qty.
UMEX300 Passive Sampler for Ammonia*†	500-300	$ 169.00/10
Treated Tape for QC - UMEX 300*†	P20083	39.00/25

Accessory	Cat. No.	Price/Qty.
Stand for Area Sampling	690-302	$ 8.00/ea

* *Limited shelf-life, single use only; do not reuse*
† *Store at ≤ 4 C (39.2 F)*

Personal ammonia sampling *(15 minutes to 8 hours)*

Fenceline monitoring *(24 hours) with UMEX 300 and stand accessory*

ABOUT UMEX 300 Sampler Applications

Ammonia is one of the most commonly produced industrial chemicals in the U.S and is found in the following industries:

- Agricultural (fertilizers, poultry, swine, dairy)
- Janitorial services (cleaners)
- Food and beverage (refrigeration and fermentation)
- Remediation
- Fuel
- Manufacturing (plastics, explosives, pesticides, textiles, dyes)

Standard of Good Practice

Store and prepare sampling media in solvent-free environments.

Elemental Mercury Passive Sampler

For OSHA Method ID-140

Tech Tips

The 520 Elemental Mercury Passive Sampler only samples elemental mercury (Hg) in the vapor phase; it does not sample elemental Hg in the particulate phase or organic mercury compounds.

More Information

See information on extended sampling times and other data at www.osha.gov/dts/sltc/methods/inorganic/id140/id140bkr.html.

- **Lowest cost per measurement available**
  - Reusable capsule holder
  - Replaceable sorbent capsule
- **Lightweight and easy to use; no pump needed**
- **No moisture or chlorine interferences**
- **Long-term sampling up to 120 hours**
- **Validated by OSHA ID-140**
- **High accuracy, sensitivity, and capacity**
  - Positive analysis of mercury
  - Removable sorbent capsule eliminates false high readings due to contamination of capsule holder

The SKC Elemental Mercury Passive Sampler measures worker exposure level as a time-weighted average (TWA) and permits positive analysis for mercury vapor. This economical and reliable passive sampler is designed for analysis by atomic absorption. The capsule holder can be cleaned and reused to reduce sampling costs.

Description	Cat. No.	Qty.
Sorbent Capsules contain Anasorb C300* and include replacement foams and resealable bags	520-02A	10
	520-02C	30
Reusable Capsule Holder	520-03	ea
	520-03A	5

* *Anasorb C300 is equivalent to Carulite and Hydrar.*

Note: *To sample low levels of mercury, use a sorbent tube.*

Hydrogen Cyanide Passive Sampler

For OSHA Method 1015

- **More accurate than previous methods**
- **Lightweight miniature sampler for unobtrusive sampling**
- **Samples hydrogen cyanide from 0.44 to 20 ppm**
  - Suitable for 15-minute and 8-hour samples
- **Unique sampler design for direct transfer of sorbent into and out of the sampler**
  - Load and unload sorbent easily in the field
  - Sorbent transfers directly to vial for solvent extraction

Back view *Front view*

SKC offers the Hydrogen Cyanide (HCN) Passive Sampler specified in OSHA 1015. The HCN Passive Sampler operates at a sampling rate of 28.4 ml/min and provides accurate HCN exposure results. The sampler design allows field loading of sorbent from vial to sampler housing before sampling and field transfer of sorbent from sampler to vial after sampling. Samples are extracted with water and analyzed by ion chromatography/electrochemical detector (IC/ELCHM).

Description	Cat. No.	Qty.
Hydrogen Cyanide Passive Sampler includes empty sampler housing and sealed glass vial of 600-mg soda lime sorbent	590-400	5

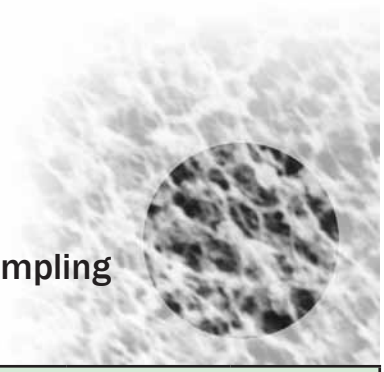
SKC Top Quality Filters

Filter	Features	Page
Mixed Cellulose Ester (MCE)	• Hydrophilic • Low metal background • Autoclavable • Biologically inert • Low artifact - dissolves/clears completely	88
Silver	• Chemically inert • High temperature resistance and autoclavable • Uniform porosity and thickness • Bacteriostatic • Hydrostatic • Hydrophilic and inorganic	91
Polycarbonate	• Smooth surface • Thin, transparent, and non-staining • Chemically resistant; biologically inert • Thermally stable • Hydrophobic • Exceptionally low tare weight	91
Polyvinyl Chloride (PVC)	• Low tare weight • Very hydrophobic • Low ash	93
Polytetrafluoroethylene (PTFE)	• Strong and resistant to acids, bases, and solvents • Hydrophobic • Low background • Low tare mass • Autoclavable	94
Quartz	• Binder-free • Low metal background • Hydrophobic • Autoclavable • Heat treated	95
Glass Fiber	• Binder-free • High temperature tolerance • Autoclavable • Hydrophobic • High particle retention and wet strength	96
Cellulose	• 100% pure • Ashless • Autoclavable • Hydrophilic	96
Gelatin	• Pre-sterilized by gamma irradiation • High moisture content • Water soluble - dissolves easily on agar • Suitable for bioaerosols	100

See pages 106-107 for Size-selective Sampler Guide.

MCE Filters

A Gold Standard for IH Sampling



MCE Filters

Diameter (mm)	Pore Size (µm)	Support Pad‡	Notes	Cat. No.	Qty.
13	5.0	No		225-8050	100
25	0.45	No		225-1911	100
25	0.8	Yes		225-19	100
25	0.8	No	use with IOM *(p. 108)*	225-1930	100
25	0.8	No	black grid	225-1913	100
25	1.2	No		225-1912†	100
37	0.45	No		225-1914	100
37	0.45	Yes		225-9	100
37	0.8	No		225-1939	100
37	0.8	Yes		225-5	100
37	0.8	No	black grid	225-334	100
37	1.2	No		225-1923	100
37	5.0	No		225-1938	100
47	0.45	No		225-506	100
47	0.8	No		225-504	100
47	1.2	No		225-1921	100

† *Recommended for use with the Button Sampler; see page 109* ‡ *Filter supports available on page 103*

Matched-weight MCE Filter Pairs (for User-loading)

Matched-weight MCE filter pairs are certified as matched in weight to within 50 µg. Load the filters into a cassette; the top filter collects the contaminant, the bottom filter acts as a control. No preweighing or conditioning is required. After sampling, both filters are weighed and the difference between weights is the sample weight.

Diameter (mm)	Filter Specifications	Cat. No.	Qty.
37	MCE, 0.8 µm, matched-weight within 50 µg, filter pairs only*	225-532*	50
47	MCE, 0.8 µm, matched-weight within 50 µg, filter pairs only*	225-531*	50

* *Not preloaded in cassettes*

Preloaded MCE Filters

All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	MCE, 0.8 µm	3-pc clear plastic, banded	225-3100	50
25	MCE, 1.2 µm	3-pc black conductive, banded	225-507	50
37	MCE, 0.45 µm	3-pc black conductive, banded	225-1924	50
37	MCE, 0.45 µm	4-pc clear styrene, banded	225-1925	50
37	MCE, 0.8 µm	2-pc clear styrene, banded	225-508	50
37	MCE, 0.8 µm	3-pc clear styrene, banded	225-3-01	50
		3-pc clear styrene, not banded	225-3-01NB	50

Matched-weight MCE Filters Preloaded in Cassettes

All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	MCE, 0.8 µm, matched-weight within 50 µg	2-pc clear styrene, banded	225-525	50
37	MCE, 0.8 µm, matched-weight within 100 µg	3-pc clear styrene, banded	225-3-02	50
37	MCE, 0.8 µm, matched-weight within 50 µg	2-pc clear styrene, banded	225-502	50
			225-527	12
37	MCE, 0.8 µm, matched-weight within 50 µg	3-pc clear styrene, banded	225-503	50
			225-528	12

Nano-Neat MCE Filter Cassettes

Ultra-pure for sampling workplace chromium. Cassettes are tinted purple for easy identification. Each box contains a Certificate of Conformance. All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	MCE, 0.8 µm, Nano-Neat	2-pc purple styrene, banded	225-8402	50
25	MCE, 0.8 µm, Nano-Neat	3-pc purple styrene, banded	225-8404	50
37	MCE, 0.8 µm, Nano-Neat	2-pc purple styrene, banded	225-8408	50
37	MCE, 0.8 µm, Nano-Neat	3-pc purple styrene, banded	225-8410	50

ABOUT

MCE Filters and Nanoparticles

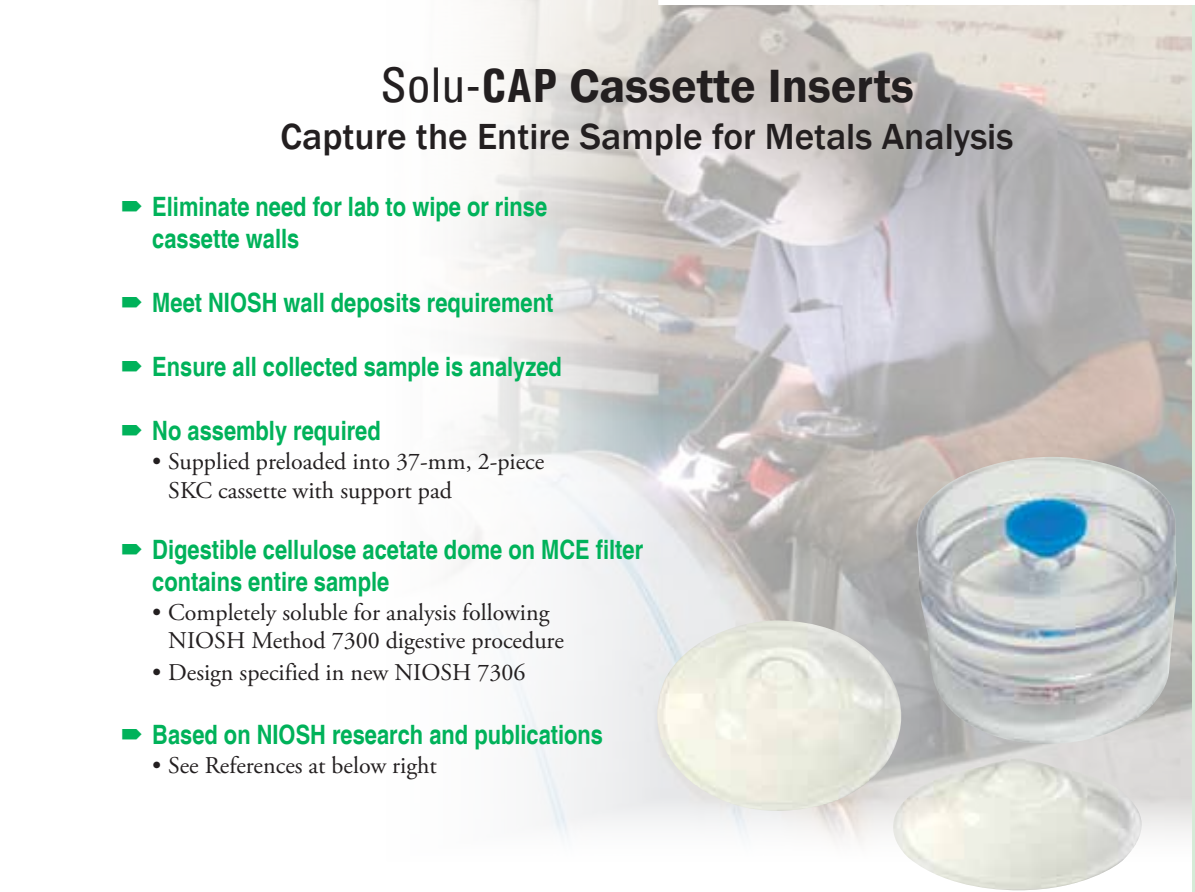
NIOSH has been using the SKC Leland Legacy Sample Pump *(pages 22-23)* with 37-mm, 0.8-µm MCE filters in open-face cassettes for exposure assessments of engineered nanoparticles. Particles are analyzed for particle morphology and elemental mass. Note that nanoparticles will **not** fall through the pores of the 0.8-µm MCE filters; the very intense activity of nanoparticles and their constant collision with other particles prevent them from going through the pores like a sieve.

For more information, see page 71 of the Appendix in NIOSH Publication No. 2009-125, at www.cdc.gov/niosh/docs/2009-125/.

webinar www.skcinc.com

Solu-**CAP Cassette Inserts**

Capture the Entire Sample for Metals Analysis



- **Eliminate need for lab to wipe or rinse cassette walls**
- **Meet NIOSH wall deposits requirement**
- **Ensure all collected sample is analyzed**
- **No assembly required**
  - Supplied preloaded into 37-mm, 2-piece SKC cassette with support pad
- **Digestible cellulose acetate dome on MCE filter contains entire sample**
  - Completely soluble for analysis following NIOSH Method 7300 digestive procedure
  - Design specified in new NIOSH 7306
- **Based on NIOSH research and publications**
  - See References at below right

Use Solu-CAP® preloaded cassette inserts to eliminate sample loss and meet NIOSH requirements for inclusion of all wall deposits. Solu-CAP's digestible cellulose acetate dome is sealed to a quality MCE filter. The user samples and sends the cassette to a laboratory. The lab removes the Solu-CAP insert, digests it in an acid solution per standard procedures, and performs analysis for airborne metals following published methods. **No sample loss!** The Solu-CAP design is specified in new NIOSH 7306.

Solu-CAP Applications

The following analytical methods contain options for including the non-filter deposits that Solu-CAP is designed to collect. *See second reference at right.*

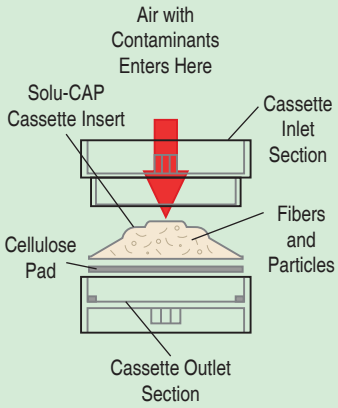
- **NIOSH 7013 Aluminum**
- **NIOSH 7020 Calcium**
- **NIOSH 7024 Chromium**
- **NIOSH 7027 Cobalt**
- **NIOSH 7029 Copper**
- **NIOSH 7030 Zinc**
- **NIOSH 7046 Barium**
- **NIOSH 7048 Cadmium**
- **NIOSH 7074 Tungsten**
- **NIOSH 7102 Beryllium**
- **NIOSH 7082 and 7105 Lead**
- **NIOSH 7300, 7301, and 7303 Elements**
- **NIOSH 7701 Lead**
- **NIOSH 7704 Beryllium**
- **NIOSH 7900 Arsenic**
- New - **NIOSH 7306 Elements**

Preloaded Solu-CAP Cassette Inserts

Description	Cat. No.	Qty.
Preloaded 37-mm Solu-CAP with cellulose acetate dome sealed to 0.8-µm MCE filter in 2-piece SKC cassette with support, *requires a sample pump (pp. 8 and 14-21) and SureSeal Cassette Opener (p. 104)*	225-8517	50

No Sample Losses!

100% of Sample is Contained in Domed Insert



Eliminate sample loss from:

- ✕ Excessive filter loading during collection
- ✕ Filter transfer in the lab
- ✕ Cassette wall losses

Perfect partners to Solu-CAP – AirChek TOUCH or XR5000 Sample Pump

see pages 8-10 or 14-15

References

Harper, M. and Ashley, K., "Acid-Soluble Internal Capsules for Closed-Face Cassette Elemental Sampling and Analysis of Workplace Air," Jnl. of Occup. and Env. Hyg., 10:6, 297-306 (http://doi.org/xj6)

Ashley, K. and Harper, M., "Analytical Performance Issues: Closed-Face Filter Cassette (CFC) Sampling – Guidance on Procedure for Inclusion of Material Adhering to Internal Sampler Surfaces," Jnl. of Occup. and Env. Hyg., 10:D29-D33 (http://doi.org/wv3)

Certified BestChek Asbestos Cassettes

The Highest Standard for Cassette Reliability

SKC Certified BestChek Filters in Carbon-filled Polypropylene Cassettes

All SKC preloaded asbestos filters include cellulose supports.

Diameter (mm)	Filter Specifications	Cassette Description		Cat. No.	Qty.
25	MCE, 0.8 µm	with cowl, banded		225-321	50
25	MCE, 0.8 µm	with cowl, banded, with stand-up plug in outlet end		225-321A	50
25	MCE, 0.8 µm, black grid	with cowl, banded		225-326	50
25	MCE, 1.2 µm, black grid	with cowl, banded		225-1934	50
25	MCE, 0.45 µm* TEM analysis	with cowl, banded, with support and 5.0-µm diffuser pad		225-327	50

* *Available as microvacuum carpet cassette with nozzle; see below left*

ABOUT

The 5 Cs of Asbestos Cassettes

Only from SKC — BestChek® cassettes meet or exceed NIOSH, OSHA, and ASTM standards in Count, Clearing, Conductivity, Collection Area, and Construction.

Specify SKC BestChek Asbestos Cassettes — your assurance of reliability and accuracy.

For Preloaded Solu-CAPs
see page 89

Microvacuum Cassettes for Asbestos

- Nozzle for easy sampling of settled dust on surfaces
- Meets specifications of ASTM Methods D5755 and D5756
- Use with personal sample pump at 2 L/min

Carbon-filled polypropylene with cowl and nozzle, BestChek 25-mm, 0.45-µm MCE filter for TEM analysis
Cat. No. 225-322

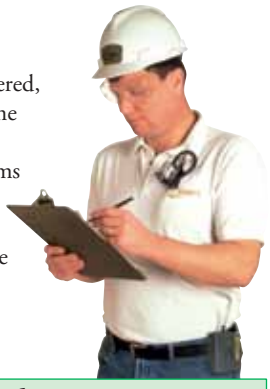
Styrene (non-conductive) with nozzle, 37-mm, 0.45-µm MCE filter, for TEM analysis
Cat. No. 225-9543

Asbestos Sampling Pumps

AirLite Personal Pump

Easy, Economical Asbestos Sampling

- Constant flows to 3000 ml/min
- Alkaline battery powered, over 10 hours run time
- Rugged
- Weighs only 340 grams (12 ounces)
- Simple operation with flow fault feature



See details and ordering on page 29.

Flite 3 Area Pump

Programmable High Flow Asbestos Pump

- Flows from 2 to 20 L/min
- Battery or AC operation, long run times
- Robust steel casing with handle, 2.24 kg (4.9 pounds)
- Programmable with flow fault feature

See details and ordering on page 28.

QuickTake 30

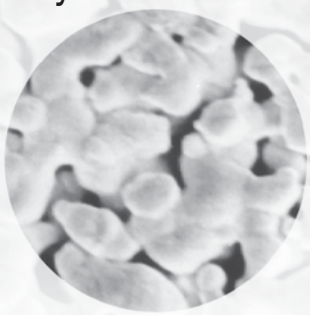
Li-Ion Powered High Flow Asbestos Pump

- Constant flows from 10 to 30 L/min
- 9+ hours run time for asbestos clearance *(see details on page 27)*
- Tough, compact case with handle, 2.2 kg (4.8 pounds)
- Programmable with flow fault feature
- Low-noise battery-powered alternative to vacuum pumps

See details and ordering on pages 26-27.

Silver Membrane Filters

Specified for X-ray Diffraction Analysis



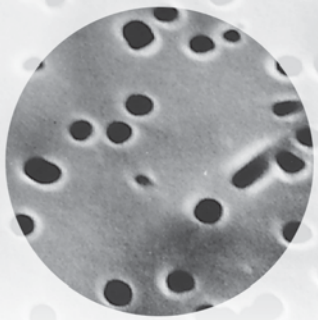
- **Chemically inert, high temperature resistant**
  - Autoclave and reuse repeatedly without loss of performance
- **99.97% pure inorganic metallic silver**
- **Uniform porosity and thickness, smooth surface**
  - Ideal for NIOSH X-ray diffraction methods for crystalline silica, lead sulfide, boron carbide, and chrysotile asbestos
- **Hydrophilic and bacteriostatic**

Diameter (mm)	Pore Size (µm)	Cat. No.	Qty.
25	0.8	**225-1803**	**50**
25	0.45	**225-1802**	**50**
37	0.8	**225-1801**	**25**
47	0.8	**225-1804**	**25**

Additional diameter and pore size silver membrane filters are available as a special order.

Polycarbonate Membrane Filters

Ideal for Microscopy



- **Chemically resistant, thermally stable,† and strong**
- **Thin, transparent, non-staining, and smooth**
  - Ideal for light and electron microscopy
  - Exceptional background for sample observations
- **Hydrophobic, with exceptionally low tare weight**
- **Biologically inert**

Diameter (mm)	Pore Size (µm)	Support Pad‡	Notes	Cat. No.	Qty.
25	0.4	No		**225-1608**	**100**
25	0.8	No	use with IOM *(p. 108)*	**225-1601**	**100**
37	0.4	No		**225-1609**	**100**
37	0.8	No		**225-1602**	**100**
47	0.4	No		**225-1610**	**100**
47	0.8	No		**225-1603**	**100**

‡ *Filter supports available on page 103*

† *Maximum operating temperature is 140 C (284 F).*

Preloaded Polycarbonate Filters

All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

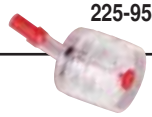
Diameter (mm)	Pore Size (µm)	Support Pad	Cassette Description	Cat. No.	Qty.
25	0.8	Yes	3-piece conductive, with cowl, banded	**225-1604**	**50**

Microvacuum Cassette with Polycarbonate Filter

All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

Diameter (mm)	Pore Size (µm)	Support Pad	Cassette Description	Cat. No.	Qty.
37	0.4	Yes	3-piece styrene (non-conductive) with nozzle; microvacuum*	**225-9542***	**ea**

* *Available in a Carpet Sampling Cassette Kit; see page 142*



For size-selective samplers
see pages 106-117

For filter sampling accessories
see pages 104-105

Tech Tips

- *A typical filter has a rough side and a shiny side. The shiny side is easier to read under a microscope; expose the shiny side when collecting samples for microscopic analysis. The rough side holds dust more effectively; expose the rough side for gravimetric sampling.*
- *Filter pore size ratings are based on liquid filtration ratings. Filters will retain much smaller particles from air (e.g., a 0.8-µm liquid rated filter will retain > 50% of particles as small as 0.08 µm).*

For sample pumps
see pages 8-9 and 14-23

Accu-CAP Cassette Inserts

Capture the Entire Sample for Gravimetric Analysis

- Meet specifications of new NIOSH Method 0501
- Ensure entire sample is captured and analyzed
- Fit inside a 37-mm, 2-piece SKC cassette with support pad
- Static-dissipative plastic dome on PVC filter contains entire sample
  - No cassette rinsing or wiping required
  - Prevents loss of sample during transport
  - No particles dislodged from filter during analysis preparation
- Ideal for sampling total dust (NIOSH 0500 and 0501) and carbon black (NIOSH 5000)

For Support Pads and Cassette Openers
see pages 103-104

Use Accu-CAP® cassette inserts to meet NIOSH 0501 requirements for inclusion of all wall deposits in the sample. Accu-CAP features a static-dissipative plastic dome sealed to a quality PVC filter. The user preweighs the Accu-CAP, places it between the inlet and outlet sections of a two-piece 37-mm SKC-manufactured cassette with support pad, samples, removes Accu-CAP from the cassette, and postweighs it. **Accu-CAP effectively contains 100% of sampled particulate!**

SKC recommends using AirChek Series Pumps
see pages 8-10, 14-15, and 18-21

Accu-CAP is Easy to Use

Prepare SKC 2-piece cassette with support pad.

Insert weighed Accu-CAP.

Complete cassette assembly. After sampling, remove Accu-CAP from cassette and weigh.

Accu-CAP Cassette Inserts

Description	Cat. No.	Qty.
37-mm Accu-CAP with plastic dome sealed to 5.0-µm pore size PVC filter, *requires 37-mm cassettes (p. 97), support pads (p. 103), a sample pump (pp. 8-10, 14-15, 18-21), and SureSeal Cassette Opener (p. 104)*	225-8516GLA	60

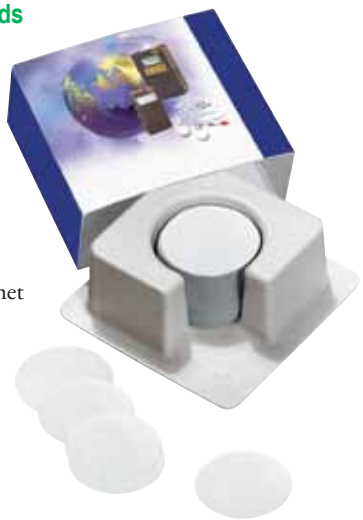
References
Ashley, K. and Harper, M., "Analytical Performance Issues: Closed-Face Filter Cassette (CFC) Sampling – Guidance on Procedure for Inclusion of Material Adhering to Internal Sampler Surfaces," Jnl. of Occup. and Env. Hyg., 10:D29-D33 (http://doi.org/wv3)

NIOSH Method 0501, www.cdc.gov/niosh/docs/2003-154/pdfs/0501.pdf

NIOSH Method 0501 Backup Report, www.cdc.gov/niosh/docs/2003-154/pdfs/bud/0501_5100_bud.pdf

GLA-5000 PVC Membrane Filters

- **Suitable for multiple NIOSH/OSHA/ASTM air sampling methods**
  - Silica, metals, dust (total and respirable)
  - Meet OSHA Method ID-215 (V.2) for hexavalent chromium
- **Low tare weight and moisture pickup for gravimetric stability**
  - ≤ 0.5% after 24 hours at 48% RH and 50 C (122 F)
- **Preloaded 25 and 37-mm cassettes available**
  - 25-mm cassettes are convenient for sampling inside a welding helmet *(see About at far right)*
- **Available in Accu-CAP Cassette Inserts**
- **Both gravimetric and chemical analysis on the same filter using NIOSH 7300 or 7301 for metals (elements)**



PVC Filters

Diameter (mm)	Pore Size (µm)	Support Pad†	Cat. No.	Qty.
25	5.0	No	225-5-25‡	100
37	5.0	Yes	225-5-37-P	100
			225-80601K	1000
37	5.0	No	225-5-37	100
47	5.0	No	225-5-47	100

† *Filter supports available on page 103* ‡ *Recommended for use with IOM and Button Samplers; see pages 108-109*

Accu-CAP PVC Filter Inserts — *see page 92*

Clear plastic capsules heat-sealed to a filter; fit between parts of a two-piece SKC cassette with support pad; prevent cassette wall losses; ideal for gravimetric determinations for NIOSH 0500 and 5000

Diameter (mm)	Pore Size (µm)	Cat. No.	Qty.
37	5.0	225-8516GLA	60

Matched-weight PVC Filters

Diameter (mm)	Filter Specifications	Description	Cat. No.	Qty.
37	5.0 µm, matched-weight within 25 µg	Filter pairs only*	225-8222*	50
37	5.0 µm, matched-weight within 25 µg	2-piece clear styrene, banded	225-8201	50
37	5.0 µm, matched-weight within 25 µg	3-piece clear styrene, banded	225-8202	50

* *Not preloaded in cassettes*

Preloaded PVC Filters

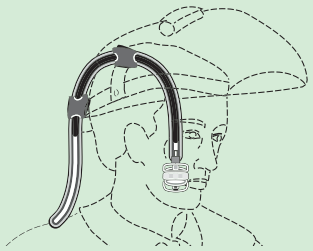
All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	5.0 µm	2-piece clear styrene, banded	225-8214	50
25	5.0 µm	3-piece clear styrene, banded	225-8215	50
37	5.0 µm	2-piece clear styrene, banded	225-802	50
37	5.0 µm	3-piece clear styrene, banded	225-803	50
37	5.0 µm, preweighed 5 decimal	2-piece clear styrene, banded	225-8204	12
			225-8205	100
37	5.0 µm, preweighed 5 decimal	3-piece clear styrene, banded	225-8208	12
			225-8209	100

ABOUT

PVC Cassette for Welding

Use 25-mm preloaded PVC filter Cat. No. 225-8214 or 225-8215 for sampling welder exposure to hexavalent chromium as specified in OSHA ID-215 (V.2). The smaller cassette fits more easily under a welder's helmet. For ultimate comfort, use the Helmet Adapter. *See below.*



Helmet Adapter*

Ideal for welders or workers who wear a helmet with face shield. Effectively holds a filter cassette or sample tube in the breathing zone regardless of visor position.

Cat. No. 225-600

* *Developed in Canada by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail du Québec)*

For cassette blanks
see page 97

PTFE Membrane Filters

Aerosol Sampling in Aggressive Chemical Environments

- Hydrophobic
- Low background for interference-free chemical determinations
- Strong and resistant to acids, bases, and solvents
- 13-mm filter meets NIOSH Method 5517 specifications
- Low tare mass for accurate gravimetric analysis
- Temperature resistant to 260 C (500 F) — autoclavable
- Ideal for aerosol sampling, especially in environments also containing water vapor

PTFE filters are the versatile choice for size-selective samplers. The material's unique properties make it ideal for gravimetric, chemical, and/or microscopic analysis of sample particulate. PTFE filters are used for aerosol sampling, air venting, and gas filtration.

Tech Tips

- *Back pressure on PTFE filters can vary within the same lot.*
- *Filter pore size ratings are based on liquid filtration ratings. Filters will retain much smaller particles from air (e.g., a 0.8-µm liquid rated filter will retain > 50% of particles as small as 0.08 µm).*
- *A typical laminated PTFE filter features two sides: the smooth membrane side and the rough laminate support side. The smooth side is easier to read under a microscope, therefore, expose the smooth membrane side to the air when collecting samples for microscopic analysis. The rough side holds dust more effectively, so expose the rough laminate support side for gravimetric sampling.*

For size-selective samplers
see pages 108-117

For Sample Pumps
see pages 8-10 and 14-15

PTFE Membrane Filters

Diameter (mm)	Pore Size (µm)	Support Pad‡	Notes	Cat. No.	Qty.
13	5.0	No	unlaminated	**225-17-03**	**100**
25	0.5	No	with laminated PTFE support	**225-2708**	**100**
25	1.0	No	with laminated PTFE support	**225-2714**	**100**
25	2.0	No	with laminated PTFE support	**225-2726**	**100**
25	3.0	No	with PMP support ring	**225-1711†**	**50**
25	5.0	No	unlaminated	**225-1728**	**50**
37	0.3	No	for *Anthrax*/SARS, laminated spun-bound polyester; *see preloaded below*	**225-1722**	**100**
37	0.45	Yes	on polypropylene support	**225-17-04**	**100**
37	1.0	Yes	on polypropylene support	**225-17-01**	**100**
37	1.0	Yes	with laminated PTFE support	**225-2705**	**50**
37	2.0	Yes	with laminated PTFE support	**225-27-07**	**50**
37	2.0	No	with PMP support ring	**225-1709**	**50**
37	5.0	Yes	unlaminated	**225-17A**	**50**
37	10.0	No	unlaminated	**225-1729**	**100**
47	0.5	No	with laminated PTFE support	**225-2753**	**50**
47	2.0	No	with PMP support ring	**225-1747**	**50**
47	2.0	No	with laminated PTFE support	**225-2748**	**50**
47	5.0	No	unlaminated	**225-1724**	**100**
47	60.0	No	unlaminated	**225-1755**	**100**

† *Recommended for use with the Button Sampler; see page 109* ‡ *Filter support pads available on page 103*

Preloaded PTFE Membrane Filters

All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

Diameter (mm)	Filter Specifications	Cassette Description/Notes	Cat. No.	Qty.
25	PTFE, 1.0 µm, with laminated polypropylene support pad	2-piece black conductive, goblet style	**225-1725**	**50**
37	PTFE, 0.3 µm, laminated with spun-bound polyester with cellulose support; for *Anthrax*/SARS	3-piece clear styrene, banded	**225-1723**	**50**
37	PTFE, 1.0 µm, with cellulose support	3-piece clear styrene, banded	**225-1715**	**50**
37	PTFE, 2.0 µm, with cellulose ring	2-piece opaque plastic, banded	**225-1713**	**50**

Diesel Particulate Matter Cassettes

Suitable for DPM and Carbon Nanotubes and Fibers

DPM Cassette — Preloaded Quartz Filters with Submicron Impactor

- Meets NIOSH Method 5040 specifications
- Preloaded in specially designed cassette with internal size-selective impactor
  - Screens particles ≥ 1 micron
  - Contains two quartz filters: one for sample collection and one for dynamic blank
- Use for elemental carbon analysis of DPM (NIOSH 5040) or for carbon nanotubes and carbon nanofibers *(NIOSH CIB 65, www.cdc.gov/niosh/docs/2013-145)*

Only from SKC

Diameter (mm)	Filter Specifications	Cassette Description	Notes	Cat. No.	Qty.
37	2 heat-treated quartz*	1 piece with impactor, tamper-evident sealed, single use†	NIOSH 5040 analysis, average sample deposition area is 8.04 cm^2	**225-317**	**10**

** Limited shelf-life* *† Requires 1/4-inch ID tubing or Filter Cassette/Cyclone Holder; see p. 104*

Preloaded Quartz Filters Without Submicron Impactor

- An economical choice when no interfering respirable dusts are present
- Meets NIOSH 5040 specifications
- Preloaded into standard 37-mm, 3-piece clear styrene cassette

All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

Dia. (mm)	Filter Specifications	Cassette Description	Notes	Cat. No.	Qty.
25	Heat-treated Tissuequartz, support pad	3-piece clear styrene, banded	Meets NIOSH NEAT 2.0 protocol for NIOSH 5040 analysis	**225-401-25**	**50**
37	Heat-treated quartz, support pad	3-piece clear styrene, banded	NIOSH 5040	**225-401**	**50**

Quartz Depth Filters

For Elemental/Organic Carbon, DPM, and Trace-level Contaminants

Quartz Filters

- Heat treated to reduce trace organics
- Binder free
- Low metal background

Diameter (mm)	Description	Cat. No.	Qty.
25	Type R-100	**225-1824#**	**100**
25	Tissuquartz	**225-1825¥**	**100**
37	Tissuquartz	**225-1822¥**	**25**
37	Type R-100	**225-1827#**	**100**
47	Tissuquartz	**225-1823¥**	**25**
47	Tissuquartz	**225-1811¥**	**100**
47	Type R-100	**225-1830#**	**100**
102	QM-A	**225-1808†**	**100**

 # 380 µm thick *¥ 432 µm thick* *† 450 µm thick*

Tech Tips

DPM Cassettes and Cyclones

▶ *Use a cyclone with the DPM Cassette in environments where it is necessary to scrub out large non-respirable particles that could quickly clog the impactor plate inside the cassette. Any cyclone that can be attached securely to the DPM Cassette can be used. However, the SKC GS-1 Cyclone is equivalent to the 10-mm nylon cyclone used by U.S. federal compliance officers at this time.*

DPM Cassette shown with GS-1 Cyclone Cat. No. 225-105 in holder Cat. No. 225-1
See page 110

ABOUT

Quartz Depth Filters

Q: What is the difference between Type R-100 and Tissuquartz depth filters?

A: Type R-100 filters meet NIOSH requirements: 99.97% retention efficiency for 0.3-µm dioctylphthalate (DOP) particles up to a 200-mg filter loading.

Tissuquartz has a typical retention efficiency of 99.90% for 0.3-µm DOP particles at 32 L/min per 100 cm^2 filter media.

Glass Fiber Depth Filters

- High-temperature tolerant — autoclavable
- Chemical and pH resistant; biologically inert
- Liquid nominal pore size of 1.0 µm
- High particle retention
- Made of binder-free borosilicate glass fiber for purity
- Available with binder for excellent wet strength, easier handling, and filter integrity

Ideal for gravimetric analysis

SKC quality Glass Fiber Depth Filters are used where high flow rate and micron/submicron filtration is required. Glass Fiber Filters are suitable for both liquid and air filtration. Select from binder-free filters for purity that is ideal for analytical and gravimetric determinations or filters with binder for strength in long-duration, high-pressure, or wet applications.

Dia. (mm)	Pore Size (µm)Δ	Description	Cat. No.	Qty.
13	1.0	binder free, A/E	**225-16**	**500**
25	1.0	binder free, A/E	**225-702†**	**500**
25	1.0	acrylic binder, 50 ml thick	**225-703**	**100**
25	1.6	binder free, GF/A	**225-58F**	**100**
37	1.0	binder free, A/E	**225-7**	**500**
37	1.0	binder free, A/B	**225-701**	**100**
37	—	PTFE coated	**225-705**	**100**
47	1.0	binder free, A/E	**225-7047** **225-714**	**100** **500**
90	1.0	Ultra pure	**225-712**	**25**
8 x 10 inches	1.0	binder free, A/E	**225-7-07**	**100**

Δ *Liquid nominal (see About at above left)*

† *Recommended for use with IOM and Button Samplers; see pages 108-109*

Preloaded Glass Fiber Filters

All SKC preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 104.

Dia. (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
37	Glass fiber, A/E, 1.0 µm,Δ cellulose support	2-piece clear plastic, banded	**225-709**	**50**
37	Glass fiber, A/E, 1.0 µm,Δ cellulose support	3-piece clear plastic, banded	**225-706**	**50**

Δ *Liquid nominal; see About at above left*

ABOUT Depth Filter Pore Size Rating

The pore size rating for depth filters is commonly termed "nominal" or approximate. This is due to the method for determining pore size. Depth filters are made of intertwined fibers or sintered particles. These form irregular openings through which air passes, but most particles do not. Pore size testing for depth filters is usually achieved by passing liquid containing particles of a known size through the filter. If an acceptable number of particles are trapped, that particle size becomes the "liquid nominal," which is typically stated as, "Filter removes > xx% of particles ≥ x µm."

ABOUT Glass Fiber Filter Types

Type A/E Glass Fiber

- For gravimetric analysis of air pollutants and testing dissolved/suspended wastewater solids
- High flow rates, wet strength, and dirt (solids) holding capacities

Type A/B Glass Fiber

- High dirt-loading capacity with thicker glass
- Manufactured of the highest quality borosilicate glass microfibers

Cellulose Depth Filters

- Ideal for gravimetric sampling methods
- 100% pure, ashless cellulose fiber
  - Type 40: ashless, quantitative
  - Type 4: qualitative

Dia. (mm)	Pore Size (µm)	Description	Cat. No.	Qty.
37	—	Type 40	**225-18A**	**500**
		Type 4	**225-18B**	**500**

SureSeal Cassette Blanks

Certified Leak-free

All SureSeal cassettes are inspected to meet a **vacuum leak test** of < 1 inch Hg decay per 30 seconds when subjected to 24 inches Hg vacuum, and a pressure decay of < 1 psi per 30 seconds when subjected to 5 psi pressure. *Require the use of a SureSeal Cassette Opener; see page 104*

Diameter (mm)	Description	Cat. No.	Qty.
25 	2 piece, standard; styrene, clear	**225-2-25LF** **225-2258**	**50** **100**
25 	3 piece, standard; styrene, clear	**225-3-25LF** **225-2259**	**50** **100**
25 	Middle ring only; styrene, clear, 1/2 inch	**225-300R**	**50**
25	2 piece, goblet style; polypropylene, opaque white; solvent-resistant[Δ]	**225-8481**	**50**
25 	3 piece, goblet style; polypropylene, opaque white; solvent-resistant[Δ]	**225-8585**	**50**
25 	2 piece, goblet; polypropylene, conductive black	**225-2257**	**50**
25 	3 piece, 2-inch middle cowl; polypropylene, conductive black	**225-3-23**	**50**
25 	3 piece, 1/2-inch middle ring; polypropylene, conductive black	**225-329**	**50**
37 	2 piece, standard; styrene, clear	**225-2LF** **225-2050LF** **225-2250**	**10** **50** **250**
37 	3 piece, standard; styrene, clear	**225-3LF** **225-3050LF** **225-3250**	**10** **50** **250**

Diameter (mm)	Description	Cat. No.	Qty.
37 	Middle ring only; styrene, clear, 1/2 inch	**225-304**	**50**
37 	2 piece, standard; styrene, opaque brown	**225-4**	**50**
37 	3 piece, standard; styrene, opaque brown	**225-8451**	**50**
37	2 piece, standard; polypropylene, opaque white; solvent-resistant[Δ]	**225-8483**	**50**
37	3 piece, standard; polypropylene, opaque white; solvent-resistant[Δ]	**225-45** **225-45A**	**10** **50**
37 	2 piece, standard; polypropylene, conductive black	**225-308**	**50**
37 	3 piece, standard; polypropylene, conductive black ***Static free – ideal for cyclones!***	**225-309**	**50**
47 	2 piece, standard; polypropylene, conductive black	**225-8496**	**16**
47 	3 piece, standard; polypropylene, conductive black	**225-8497**	**16**

Δ Compatible with most solvents; for a solvent compatibility list, visit www.skcinc.com or contact SKC

Standard of Good Practice

Minimize cassette wall losses during sampling with a cyclone. NIOSH suggests the use of a static-dissipative (conductive) black polypropylene filter cassette such as Cat. No. 225-309. *Ashley, K., Harper, M., Journal of Occupational and Environmental Hygiene 10:3, 2013, pp. D29-D33, http://doi.org/wv3*

Coated Filter Selection Guide

Chemical	Method∞	Preloaded Filter; Coating (in 37-mm cassettes)	Cat. No.*	Qty.
Acetic anhydride	OSHA 82	2 Glass filters; 1-(2-pyridyl) piperazine §	225-9009 §	10
Acetic anhydride	OSHA 102	2 Glass filters; veratrylamine and di-n-octyl phthalate	225-9010 †	10
4-Aminobiphenyl	OSHA 93	2 Glass filters; sulfuric acid	225-9004	10
Aniline	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Arsenic, volatile compounds	OSHA ID-105	1 MCE filter and cellulose pad; sodium carbonate	225-9001	10
Benzidine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
Bromine, chlorine	NIOSH 6011	1 **25-mm** PTFE pre-filter and polypropylene support; 1 **25-mm** specially cleaned silver membrane and polypropylene support **(in 25-mm cassette)**	225-9006	5
Crotonaldehyde	OSHA 81	2 Glass filters; 2,4-dinitrophenylhydrazine and phosphoric acids §	225-9019 §	10
o-Dianisidine	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
3,3'-Dichlorobenzidine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
Diisocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42 ‡	1 Glass filter and cellulose support; 1-(2-pyridyl)piperazine ‡§	225-9013 §† 225-9002 ‡§	10 10
Diphenylamine	OSHA 78	2 Glass filters; sulfuric acid	225-9004	10
Fluorides	OSHA ID-110 NIOSH 7902 ASTM D4765	1 MCE filter and cellulose pad; sodium carbonate	225-9001 #	10
Fluorides, particulate	NIOSH 7906	2 Nitrocellulose filters; 1 coated with sodium carbonate, 1 uncoated	225-9031	10
Glutaraldehyde	OSHA 64	2 Glass filters; 2,4-dinitrophenylhydrazine and phosphoric acid §	225-9003 §	10
Hydrazine	OSHA 108	2 Glass filters; sulfuric acid	225-9012	10
Hydrofluoric acid	NIOSH 7906	2 Nitrocellulose filters; 1 coated with sodium carbonate, 1 uncoated	225-9031	10
Hydrogen bromide	NIOSH 7907	2 Quartz filters; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen chloride	NIOSH 7907	2 Quartz filters; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen peroxide	OSHA 1019/ NON 57•	2 **25-mm** Quartz filters; titanium oxysulfate hydrate **(in 25-mm cassette)**	225-9030 •	10
Isocyanates	ASTM Σ	1 PTFE filter; 1 glass filter impregnated with MAMA (ISO-CHEK Sampling System, *see p. 99*)	225-9022 Σ 225-9022A Σ	12 36
Isocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42 ‡	1 Glass filter and cellulose support; 1-(2-pyridyl)piperazine ‡§	225-9013 §† 225-9002 ‡§	10 10
Isocyanates (HDI, MDI, TDI, IPDI, HDI-BT, HDI-IC)	OR-OSHA 1010▼	1 **13-mm** Glass filter; MAMA **(in 13-mm Swinnex holder)** §	225-9029 §▼	5
Isocyanates, organic	MDHS 25/3 (U.K.)	1 **25-mm** A/E glass filter; methoxyphenyl piperazine ◊§	Special order	5
n-Isopropylaniline	OSHA 78	2 Glass filters; sulfuric acid	225-9004	10
Maleic anhydride	OSHA 86	2 Glass filters; veratrylamine §	225-9021 §	10
Maleic anhydride	■	1 **25-mm** Glass filter; veratrylamine ◊§	225-9028 ◊§	10
Mercaptans (methyl-, ethyl-, n-butyl-, phenyl-)	NIOSH 2542 OSHA 26	1 Glass filter; mercuric acetate §	225-9007 §	10
4,4'-Methylene bis (2-chloroaniline) (MOCA)	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
Methylene bisphenyl (MDI)	OSHA 47 ‡	1 Glass filter and cellulose support; 1-(2-pyridyl)piperazine ‡§	225-9013 §† 225-9002 ‡§	10 10
4,4'-Methylenedianiline	OSHA 57 Ω NIOSH 5029	2 Glass filters; sulfuric acid	225-9004	10
1-Naphthylamine, 2-naphthylamine	OSHA 93	2 Glass filters; sulfuric acid	225-9004	10
Nitric acid	NIOSH 7907	2 Quartz filters; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Nitrobenzene	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Ozone	OSHA ID-214	2 Glass filters; nitrite-impregnated §	225-9014 §	10
Phenylenediamine (o-, m-, p-)	OSHA 87	2 Glass filters; sulfuric acid	225-9004	10
Phosphine	OSHA 1003	1 Glass filter; 1 polyester filter coated with mercuric chloride §	225-9018 †§	10
Phosphoric acid	NIOSH 7908	1 Quartz filter♠	225-9033	10
Sulfur dioxide	NIOSH 6004 (modified)	1 MCE pre-filter and support/1 cellulose filter and support; sodium carbonate	225-9005	10
Sulfuric acid	NIOSH 7908	1 Quartz filter♠	225-9033	10
2,4-Toluenediamine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
2,6-Toluenediamine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
o-Tolidine	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
o-Toluidine	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Toluidine (o-, m-, p-)	OSHA 73	2 Glass filters; sulfuric acid	225-9004	10
1,3,5-Triglycidyl isocyanurate (TGI)	OSHA PV2055	1 Glass filter; hydrobromic acid	225-9027	10
Valeraldehyde	OSHA 85	3 Glass filters; 2,4-dinitrophenylhydrazine and phosphoric acid §	225-9020 §	10
m-Xylenediamine (m-XDA, p-XDA)	OSHA 105	2 Glass filters; sulfuric acid	225-9004	10

Tech Tips

Coated Filters for Diisocyanates

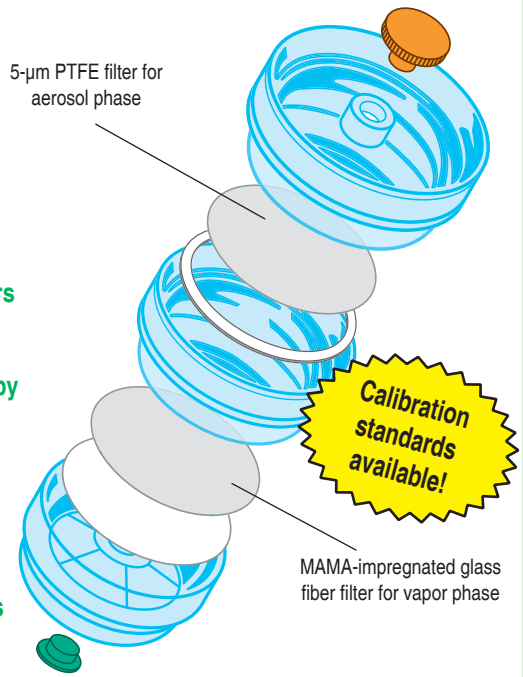
While meeting the specifications of OSHA Methods 42 and 47, Coated Filter Cat. No. 225-9002 contains a higher than specified loading of reagent to increase stability and shelf-life. Coated Filter Cat. No. 225-9002 traps both vapor and aerosol phases. SKC also offers Coated Filter Cat. No. 225-9013 that contains the specified reagent loading for OSHA 42 and 47 but has a freezer shelf-life of only three months.

* *Coated filters have a limited shelf-life.*
† *Custom order due to very limited shelf-life*
Δ *ASTM D5836 and D5932 for 2,4-TDI, 2,6-TDI only*
◊ *Filters only; not preloaded in cassettes*
§ *Storage below 4 C (39.2 F) required*
¥ *Also requires Sorbent Tube Cat. No. 226-15, see page 38*
Ω *OSHA 57 is an update of NIOSH 5029, which called for a single filter.*
‡ *See Tech Tips above.*
\# *Collects both vapor and aerosol phases of fluorides. Patented in Canada by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail du Québec), Canada Patent No. 1,299,114*
Σ *Meets multiple ASTM methods, see page 99*
∞ *The methods listed are the most widely used. Additional methods may be listed in the Sampling Guide. See pages 143-211.*
• *Also requires Sorbent Tube Cat. No. 226-193-UC or 226-199-UC for simultaneous, separate sampling of peracetic acid; see page 42*
▼ *Also requires Impinger Cat. No. 225-36-1, see page 67*
■ *For inhalable TLV; analysis by OSHA 86*
♠ *A coated filter is not needed for this method, as sulfuric acid and phosphoric acid are non-volatile acids and are present in the air as an aerosol.*

ISO-CHEK

Simultaneous and Separate Collection of Isocyanate Phases

- **Accurately samples diisocyanates: HDI, MDI, IPDI, HMDI, 2,4-TDI, and 2,6-TDI**
- **Meets the specifications of several methods**
  - ASTM D5932 for 2,4 and 2,6-TDI
  - ASTM D6561 for HDI
  - ASTM D6562 for HDI
- **The only filter-based system that simultaneously traps and separates both monomers and oligomers**
  - For better determinations of control strategies
- **Decreases sample preparation and analysis time by 40% compared to other methods**
  - Premade calibration standards are available
- **Highly stable — low temperature storage and transport not required**
- **Highly sensitive analysis provides detection limits below current regulated exposure levels**
  - Ideal for occupational sampling and environmental surveys
  - Requires only a 15-minute sample time
- **Round-robin proficiency testing for ISO-CHEK labs ensures accurate, consistent analysis**
  - Search "laboratories" at www.skcinc.com



Exploded view of ISO-CHEK Filter Cassette (Cassette in image is tinted for clarification.)

Suitable for most isocyanates, the patented# ISO-CHEK Sampling System employs a two-stage filter arrangement that results in the simultaneous collection and separation of vapor from aerosol at the point of collection. The filter that collects the vapor phase is impregnated with 9-(N-methyl-aminomethyl) anthracene (MAMA), a highly stable reagent that minimizes storage and handling requirements.

Description	Cat. No.	Qty.
ISO-CHEK Sampling System with Derivatizing Reagent,†* preloaded clear cassettes and jars of Derivatizing Solution (MOPIP in toluene)	225-9023 225-9023A	4 10
ISO-CHEK Sampling Cassettes,* preloaded clear cassettes for isocyanates, *requires Derivatizing Solution; see below*	225-9022 225-9022A	12 36

Accessories	Cat. No.	Qty.
Derivatizing Solution,†* 5 ml of MOPIP in toluene, in jars	225-9050	12
Jars, 37 mm with PTFE-lined cap	225-8377	36
Calibration Standard,‡ MAMA-HDI, 1 gram	225-9053	ea
Calibration Standard,‡ MAMA-HMDI, 1 gram	225-9056	ea
Calibration Standard,‡ MAMA-IPDI, 1 gram	225-9054	ea
Calibration Standard,‡ MAMA-MDI, 1 gram	225-9062	ea
Calibration Standard,‡ MAMA-2,4-TDI and 2,6-TDI, 1 gram	225-9052	ea
Calibration Standard Set,‡ HDI, MDI, IPDI, 2,4-TDI, 2,6-TDI, 1 gram each	225-9055	set
Packaging Kit, materials for shipping 10 packages of 10 samplers and jars	225-9059	ea

* *Limited shelf-life*
† *Hazmat shipping charges for air shipments only, ground shipments exempt*
‡ *Limited shelf-life, freezer storage recommended; refrigerated shipping not required*
\# *U.S. Patent No. 4,961,916; see About at above right*

the ISO-CHEK Advantage!

- ☑ **Simultaneous collection and separation of phases at the point of collection**
  Less time-consuming and more accurate analysis of each phase
- ☑ **Reagent is stable at room temperature.**
- ☑ **1 L/min flow efficiently captures aerosol phase isocyanates compared to denuder collectors.**
- ☑ **No handling precautions**
  No broken glass or splashing impinger liquid

ABOUT

ISO-CHEK Development
ISO-CHEK was developed and patented by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail du Québec).

For ISO-CHEK analytical laboratories
www.skcinc.com
Search "laboratories"

Gelatin Filters

Maintain Viability of Collected Microorganisms

ABOUT

Why Use Gelatin Filters?

Sampling microbes with traditional filter materials has been known to reduce culturability due to desiccation of the microbes. The high-moisture content of gelatin filters helps to maintain microorganism viability for sampling periods up to 30 minutes. In addition, studies with T3 viruses have shown gelatin filters to be the most suitable for sampling viruses (low passage and high detection sensitivity) due to their complete solubility.

- **Absolute retention rate**
  - 99.9995% for *Bacillus subtilis var.* niger spores‡
  - 99.94% for T3 phages (coli phages)‡
  - 99.9% T1 phages (coli phages)‡
- **High moisture content**
  - Maintain microbe viability for short sampling periods
- **Completely water soluble**
  - Dissolve easily when placed on agar
  - Provide the solubility required for virus sampling
- **Pre-sterilized by gamma irradiation**
- **Ideal for monitoring in pharmaceutical plants**
- **Can be used to monitor in areas where disinfectants or antibiotics are present**

The unique properties of gelatin filters provide unequalled bacteria retention levels for quantitative analysis. Sampling with gelatin filters is easy, efficient, and can provide information about relative changes in microorganism concentration throughout the day. Gelatin filters dissolve easily when placed on agar, allowing for a gentle transition from sample medium to growth medium. **For maximum culturability and superior collection of inhalable-size bioaerosols, combine 25-mm gelatin filters with the SKC Button Sampler,** ***see below.***

Reference

Haferkorn, R., et al., "Comparative Studies on Detection Methods for Bacteriophages in Aerosols and on the Retentive Capability of Filters and Impingers for Bacteriophage Aerosols," Arch. Hyg., Munich 152, 1968, pp. 97-106

Dia. (mm)	Support Pad	Notes	Cat. No.	Qty.
25	No	water soluble	225-9551†*	50
37	No	water soluble	225-9552*	50

† *Recommended for use with IOM and Button Samplers; see pages 108-109*

* *Limited shelf-life; storage at 4 to 8 C (39.2 to 46.4 F) recommended. Avoid temperatures < 4 C (39.2 F), moisture, and chemical vapors.*

‡ *At inlet velocities of 0.25 m/s, 0.3 m/s (80% RH), and 0.3 m/s (50% RH), respectively*

For sample pumps
see pages 8-10 and 14-15

Gelatin Filters with the Button Sampler

Autoclavable Inhalable Sampler

The sterile, high-moisture properties of gelatin filters combine with the unique features of the Button Sampler for maximum microorganism survivability and superior collection of inhalable-size bioaerosols. The autoclavable Button Sampler's unique inlet contains evenly spaced holes that act as sampling orifices for multi-directional sampling. The proximity of the gelatin filter to the inlet minimizes transmission losses and provides for equal distribution of particles and low intersample variation for viable and non-viable analyses. ***For more information on the Button Sampler, see page 109.***

Description		Cat. No.
Button Sampler Pump Kit includes Button Sampler, standard AirChek XR5000 Sample Pump, single charger, 0.9 meter (3 feet) of Tygon tubing, and calibration adapter, *requires a 25-mm filter*	100-240 V	210-4121

VersaTrap Spore Trap Cassette

Traps Smaller Mold Spores Using Higher Flows

- **High collection efficiency from 5 to 30 L/min**
  - VersaTrap captures *Aspergillus* and *Penicillium* mold spores as small as 1.5 µm at 30 L/min
- **A standard collection method for mold spore count and genus identification**
- **Easy analysis — ASTM Method D7391-09**
  - Positioning notches and flat edges provide for easy alignment on microscope stage
  - Uniform, well-defined rectangular deposition
- **Optimized slide adhesive**
  - Optically clear and tested for superior adhesion
- **SureSeal certified leak-free cassettes for sample integrity**
- **Unique serial number on each cassette for sample traceability**

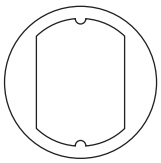
VersaTrap® spore trap cassettes provide sampling versatility needed to capture mold spores and other particles ranging from 1.5 to 3.9 µm. Sampling is as easy as selecting the flow rate that will target the desired particle size *(see table below)*, calibrating a pump to the flow rate, and collecting the sample.

VersaTrap Design

The narrow slit inlet focuses particles toward the clear glass slide that is coated with a fully optimized sticky substrate. Targeted size particles are effectively held in a well-defined rectangular footprint. Each slide is encased in a SureSeal certified leak-free cassette to ensure sample integrity.

VersaTrap Makes Analysis Easy

- Slides easily removed from the cassette
- Positioning notches and flat edges for fast, easy alignment
- Well-defined rectangular footprint for accurate analysis using standard equipment
- Unique serial numbers for sample traceability



High Flows + Low Cut-points + No Particle Bounce =

High Collection Efficiency

Flow Rate (L/min)	VersaTrap 50% Cut-point (µm)
30	1.5
25	1.7
20	1.9
15	2.3
10	2.8
5	3.9

Description	Cat. No.	Qty.
VersaTrap Spore Trap Cassettes, 37 mm, *limited shelf-life*	225-9820	10
	225-9821	50
VersaTrap Wall Adapters, for sampling in wall cavities	225-9822	5

For a list of microbiological laboratories, go to www.skcinc.com/catalog/infopage.php?id=6000.

the VersaTrap Advantage!

- ☑ **Uniform particle deposition**
  Uniform rectangular deposition provides for accurate analysis using standard equipment.
- ☑ **High collection efficiency at flows between 5 and 30 L/min**
  Target specific size particles for true versatility. *See table below left for more information.*
- ☑ **Unique serial numbering for sample traceability**
- ☑ **Positioning notches and flat edges on slide**
  Fast, easy alignment on microscope stage

Tech Tips

▶ *VersaTrap cassettes can be operated at 30 L/min to trap the smallest Penicillium/Aspergillus spores that other spore traps do not. VersaTrap provides a 150-liter sample at 30 L/min in only 5 minutes.*

QuickTake 30 Pump Ideal for Spore Traps

see pages 26-27

More Information

- *Visit www.skcinc.com and search "1649."*
- *See www.astm.org for spore trap analysis method ASTM D7391-09.*

www.skcinc.com

Cassette and Filter Holders

SKC Filter Cassette Holder — Reinforced to Prevent Tube Kinking

The lightweight SKC Filter Cassette Holder attaches firmly to the collar for sampling in the breathing zone. Its special design securely holds a two or three-piece 37-mm cassette with or without cyclone, 25-mm cassette with cowl, or DPM Cassette with GS-1 Cyclone. The Filter Cassette Holder includes 0.9 meter (3 feet) of 1/4-inch ID Tygon tubing and a 25-mm adapter ring (cassette in photo **not** included).

Cat. No. **225-1**

Specialty Filter Holders

13-mm Swinnex

- 2-section polypropylene with silicone seal
- Reusable
- Autoclavable with filter in place
- Specified in NIOSH Method 5503 for PCBs

Cat. No. 225-32 ..... **pk/10**

Replacement silicone gaskets
Cat. No. 225-3201 ..... **pk/100**

25-mm Delrin - In Line

- 2 sections, in line with stainless steel support
- Broad chemical compatibility and strength
- Useful for low pressure applications

Cat. No. 225-1109 ..... **pk/6**

25-mm Delrin - Open-face

- Open-face with stainless steel support
- Lightweight and corrosion-resistant
- Includes ¼-inch ID hose barb adapter

Cat. No. 225-1107 ..... **pk/6**

47-mm Polycarbonate

- Lightweight polycarbonate is ideal for air monitoring applications
- Opens and closes easily without disturbing the filter
- Autoclavable

Cat. No. 225-4702 ..... **ea**

47-mm Savillex PFA

- Includes ¼-inch ferrule nuts and wrench set
- Replace filters without disconnecting lines
- Operate at -200 to 260 C (-328 to 500 F)

Cat. No. 225-1712 ..... **ea**

47-mm Polypropylene

- Ideal for vacuum and pressure air sampling applications
- Can be used with pressures up to 100 psig

Cat. No. 225-1147 ..... **ea**

More Information

See Pump Calibration and Sampling with Filters and Cyclones videos at
www.skcinc.com/catalog/infopage.php?id=9080

Filter Supports

Various materials are used to support filters during sampling. Cellulose support pads feature a smooth surface and uniform airflow distribution. Porous plastic pads are impervious to most solvents. Use stainless steel screens when cellulose or plastic will interfere with analysis.

Diameter (mm)	Support Material	Cat. No.	Qty.
25	Cellulose pad	225-28	100
25	Stainless steel screen, wide mesh	225-2625	ea
25	Polypropylene pad (porous plastic)	225-2901	100
37	Cellulose pad	225-27 225-2700	100 500
37	Cellulose spacer ring	225-23	25
37	Polypropylene pad (porous plastic)	225-2902	100
37	Stainless steel screen, wide mesh	225-26	ea
37	Stainless steel screen, fine mesh	225-2637	ea
47	Cellulose pad	225-2903	100
47	Stainless steel screen, wide mesh	225-2647	2

For Cassette Blanks
see page 97

Cassette Shrink Bands

Specifically designed for use with sampling cassettes, SKC Cassette Shrink Bands are self-sealing, provide a smooth writing surface for sample identification, and make tampering evident.

Fit Cassette Diameter (mm)	Color	Cat. No.	Qty.	Cat. No.	Qty.
25	White	225-2503	100	225-2503A	1400
25	Clear	—	—	225-2510	1400
25	Yellow	—	—	225-2514	1400
37	White	225-25	100	225-25A	1000
37	Clear	225-2509	100	225-2509A	1000
37	Orange	225-2504	100	225-2504A	1000
37	Yellow	225-2507	100	225-2507A	1000
37	Red	225-2508	100	225-2508A	1000
37	Black	—	—	225-2515A	1000

Tech Tips

- *Consider your application before selecting tubing.*
  - ***Tubing attached to the sampling media outlet*** *does* ***not*** *contact the sample; therefore, the tubing used is not critical. Select the tubing best suited for the media and pump.*
  - ***Tubing attached to the sampling media inlet for gas/vapor sampling*** *contacts the sample during specialized applications such as bag sampling. Inert PTFE tubing is recommended because it prevents adsorption of the sample on the tubing's inner surface.*
  - ***Tubing attached to the sampling media inlet for particulate sampling*** *contacts the sample during specialized applications such as microvacuum sampling. Tygon tubing is typically used, as PTFE tubing can cause sample loss in the tubing due to static effect.*

Tubing for Connecting Pump and Media

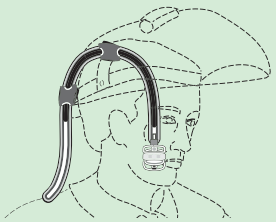
Description/Applications	ID mm (in)	OD mm (in)	Cat. No.	Meters (feet)
Tygon, sampling trains	4.76 ($^3/_{16}$)	7.94 ($^5/_{16}$)	225-1346	3 (10)
Tygon, sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	6.35 ($^1/_4$)	9.53 ($^3/_8$)	225-13-4A 225-13-4 225-1345	1 (3.3) 3 (10) 15 (50)
Tygon, for calibrating DCS/DPS	7.94 ($^5/_{16}$)	14.29 ($^9/_{16}$)	225-1349	3 (10)
Tygon, for calibrating QuickTake Pump	9.53 ($^3/_8$)	12.7 ($^1/_2$)	225-1351 225-1352	3 (10) 15 (50)
Latex Rubber, black, sampling trains	4.76 ($^3/_{16}$)	7.94 ($^5/_{16}$)	226-03-003	3.7 (12)
Latex Rubber, black, sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	6.35 ($^1/_4$)	9.53 ($^3/_8$)	226-03-004	3.7 (12)
Latex Rubber, amber, sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	6.35 ($^1/_4$)	9.53 ($^3/_8$)	225-1347	3 (10)
Polyurethane, reinforced, sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	6.35 ($^1/_4$)	11.9 ($^{15}/_{32}$)	225-1350	3 (10)
Spring Tubing Supports, use with $^5/_{16}$-inch OD tubing to prevent kinking, pk/5			225-1348	17.00

Sampling Accessories

SKC Filter Cassette Holder

The lightweight SKC Filter Cassette Holder attaches firmly to the collar for sampling in the breathing zone. Its special design securely holds a 2 or 3-piece 37-mm cassette with or without cyclone, 25-mm cassette with cowl, or DPM Cassette with GS-1 Cyclone. The Filter Cassette Holder includes 0.9 meter (3 feet) of 1/4-inch ID Tygon tubing and a 25-mm adapter ring (cassette in photo **not** included).

Cat. No. 225-1



Helmet Adapter*

Ideal for welders or workers who wear a helmet with face shield. Holds a filter cassette or sample tube in the breathing zone regardless of visor position.

Cat. No. 225-600

* *Developed in Canada by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail du Québec)*

Filter Handling Kit

Includes SureSeal Cassette Opener, filter lifter, and non-serrated flat-tip forceps in a convenient carry case

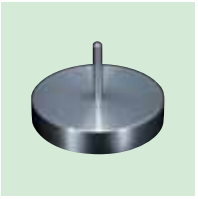
Cat. No. 225-8372

Glass Jars

Sturdy 37-mm glass jars with PTFE-lined caps are ideal for transport and solvent extraction of filter samples in the field or the lab.

Cat. No. 225-8377.....**pk/36**
Cat. No. 225-8376.....**pk/8**

Stainless Steel Filter Lifter



Speeds removal of filters from cassettes without damage

Cat. No......225-13-7

SureSeal Cassette Opener

The SureSeal Cassette Opener is a sturdy stainless steel crowbar with extended handle that makes opening 25 or 37-mm cassettes easy. *Required for all SureSeal Cassettes*

Cat. No...... 225-13-5A

Calibration Jars

Rugged polypropylene SKC Calibration Jars feature a screw cap and barbed fitting for easy connection.

Standard Size, for GS Cyclones, aluminum PPIs, and low-volume PUF tubes
Cat. No......225-111

Large Size fits 20.3-cm (8-inch) length x 8.3-cm (3.25-inch) diameter devices
Cat. No......225-112

Forceps

Non-serrated flat tips for delicate membranes
Cat. No......225-8371

Serrated pointed tips
Cat. No......225-13-1

PTFE-coated pointed tips to avoid contaminants when sampling for hexavalent chromium
Cat. No......225-1344

Sampling Labels

Identify samples with sample number, date, flow rate, pump number, time on, and time off

Cat. No. 225-1370.....**pk/500**

Tubing, Collar Clip, and Cable Tie

For attachment of a sampling cassette to the collar; includes 0.9 meter (3 feet) of 1/4-inch ID Tygon tubing and one alligator clip attached to a nylon cable tie

Cat. No......225-13-8

Collar Clip and Cable Ties Only
Cat. No. 225-13-6.....**pk/10**
Cat. No. 225-13-6A.....**pk/25**

Cassette Adapters

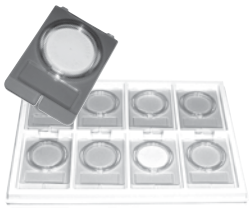
PVC Luer taper adapters connect a cassette to 1/4-inch ID tubing.

Cat. No. 225-13-2..... **pk/10**
Cat. No. 225-132A **pk/250**

Nickel-plated Brass
Cat. No. 225-13-3..... **pk/10**

Sampling Accessories

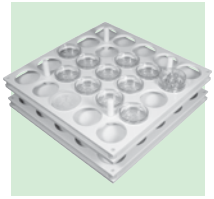
Filter-Keeper Filter Transport and Storage



Minimize sample loss with static-dissipative plastic Filter-Keepers. The clamshell design locks the periphery of filters into place away from any surface. Eight Filter-Keepers can be kept in a numbered Filter-Keeper Archiving Tray that contains an area for labeling.

Description	Cat. No.	Qty.
25-mm Filter-Keepers include labels	225-8301	100
25-mm Filter-Keepers with 6 Archiving Trays include labels	225-8302	48
37-mm Filter-Keepers include labels	225-8303	100
	225-8303A	10
37-mm Filter-Keepers with 6 Archiving Trays include labels	225-8304	48
Archiving Trays Only	225-8305	6

Kasset-Kaddy



Each Kasset-Kaddy tray securely holds twenty-five 37-mm cassettes for convenient transport or storage. The polypropylene trays measure 25.4 x 25.4 cm (10 x 10 inches) to fit commercially available desiccators and ovens

Cat. No. 225-8321.....pk/2

Petri Dish Slides

Easily transport filters up to 47 mm in diameter with Petri Dish Slides. The rectangular base fits most microscope stages

Cat. No. 225-2-01.....pk/100

Filter Transport Case

Conductive plastic case securely holds 25-mm filters for transport.

Cat. No. 225-67

Personal Exposure Vest

- Channel system prevents tubing snags/kinks
- Media held securely in breathing zone
- Consistent pump/media placement eliminates chance of error
- Configurable snap-on pockets *(sold separately)*
  - Locate in any of 6 positions around vest
  - Allows use of up to 6 instruments
- Even weight distribution for comfort
- Safety yellow and ANSI Class 2 compliant
- Breathable polyester mesh
  - Self-extinguishing/fire-resistant coating

Description	Cat. No.
Personal Exposure Vest with adjustable straps, *requires Snap-on Pockets below*	
Small - Large	223-600
XL - 3XL	223-601
Snap-on Pockets, form fitted for specific pump types	
AirChek 52, 2000, XR5000*	223-602
Universal XR Series	223-603

** Also fits 3M NoisePro Dosimeter*

Personal Exposure Vest for safe, comfortable sampling

For size-selective samplers
see pages 106-117

The SKC Particle Size-

Use this convenient guide to help select

Select a 50% Cut-point or Classification	< 1 µm	< 0.25 to > 2.5 µm	2.5 µm					3.5 µm		4 µm			
	Sub-micron	Ultrafine, Fine, and > PM2.5	PM2.5					Respirable		Respirable			
Select a Flow Rate (L/min)	1.7 or 2	9	2	3	4	10	10	2.8	3.7	2	2.5	2.75	4 and 8
SKC Size-selective Samplers	DPM Cassette	Sioutas Impactor	PEM	PMI	PEM	IMPACT	PEM	Aluminum Cyclone	GS-3 Cyclone	PPI	Aluminum Cyclone	GS-3 Cyclone	PPI
Main Feature/ Benefit	Ideal for DPM and nano-particles	Samples ultrafine, fine, and > PM2.5 particles simultaneously	Referenced in EPA IP-10A	High collection efficiency	Referenced in EPA IP-10A	High flow for increased sensitivity	Referenced in EPA IP-10A	Specified in NIOSH 7500 and 0600	Conductive plastic	Closest match to ISO/CEN curve	Specified in NIOSH 7500 and 0600	Conductive plastic	High flow for enhanced sensitivity
Page	95	117	114	115	114	116	114	111	110	112	111	110	112

Diesel Particulate Matter (DPM) Cassette
Page 95

Sioutas Personal Cascade Impactor Ultrafine/Fine/> PM2.5
Page 117

IMPACT PM2.5/PM10/Coarse Sampler
Page 116

Personal Modular Impactor (PMI) PM2.5/PM10/Coarse Sampler
Page 115

Parallel Particle Impactor (PPI)
Reusable and disposable models available
Respirable and Thoracic
Page 112

For sample pumps see pages 8-10, 14-15, and 18-19

selective Sampler Guide

sampling devices to meet your applications.

Select a 50% Cut-point or Classification	10 µm						100 µm		Particles < 10 µm but > 2.5 µm	
	Thoracic or PM10						Inhalable		PM Coarse	
Select a Flow Rate (L/min)	2	2	3	4	10	10	2	4	3	10
SKC Size-selective Samplers	PPI	PEM	PMI	PEM	PEM	IMPACT	IOM	Button Sampler	PMI	IMPACT
Main Feature/ Benefit	Closest match to ISO/CEN curve	Referenced in EPA IP-10A	High collection efficiency	Referenced in EPA IP-10A	Referenced in EPA IP-10A	High flow for increased sensitivity	Meets U.S. international standards	Low-level PM sampling	High collection efficiency	High flow for increased sensitivity
Page	112	114	115	114	114	116	108	109	115	116

Respirable Dust Aluminum Cyclone
Page 111

GS-3 Respirable Dust Cyclone
Page 110

Button Inhalable Sampler
Page 109

IOM Inhalable Sampler
Page 108

Personal Environmental Monitor (PEM) PM2.5/PM10 Sampler
Page 114

For electronic real-time particulate monitors
see pages 128

Professionals choose the authentic IOM!

IOM Sampler

A Gold Standard for Personal Inhalable PM Sampling

Filter Heads

Although the Single Hole and Seven Hole heads may have been replaced by the IOM in some MDHS methods, they are still popular.

Single Hole "Lead Head"

Cat. No. 225-52

Seven Hole Head

Cat. No. 225-50

Asbestos Head

The 25-mm Asbestos Head is a cowled aluminum sampler designed for use with a gridded filter as per HSG 248 for asbestos fibers.

Cat. No. 225-54A

Meets U.S. and international standards

- ACGIH sampling criteria for inhalable particulate
- ISO/CEN health-related fractions of bioaerosols
- Preferred sampler for HSE Method MDHS 14/4
- NIOSH 5700 for particulate formaldehyde
- Australian standard for inhalable particulate
- OSHA-equivalent method for particulates not otherwise regulated (PNOR)‡

Small and lightweight

- Plastic model weighs less than 55 grams (2 ounces)

Maintains sample integrity

- Removable 25-mm cassette system eliminates filter handling
- Cassette and filter are weighed as a single unit to include all collected particles in analysis

Stainless steel cassette available for chemical analysis

- Autoclavable for bioaerosol sampling

Worker wearing the IOM Personal Inhalable Sampler

Sample Time:	*Varies*
Sample Rate:	*2 L/min*
Sample Pump:	*Universal XR or AirChek Series*
Sample Media:	*25-mm filters†*
Tubing:	*1/4-inch ID*

‡ *Reference: OSHA letter November 8, 2011; contact SKC for a copy*

Choose the original IOM Sampler for optimal performance! The patented* IOM Personal Inhalable Sampler houses a reusable 25-mm filter cassette that holds a specified filter for the collection of inhalable particles. When attached to a personal sample pump operating at 2 L/min and clipped near a worker's breathing zone, the IOM effectively traps particles up to 100 µm in aerodynamic diameter. This collection method closely simulates how airborne workplace particles are inhaled through the nose and mouth. Both the plastic cassette and the filter are pre and postweighed as a single unit for gravimetric analysis. Alternatively, the stainless steel cassette can be used for chemical analysis.

Description	Cat. No.
IOM Sampler and cassette,† in conductive plastic, with transport clip and cover	**225-70A**
IOM Sampler and cassette,† in stainless steel, with transport clip and cover	**225-76A**
IOM Sampler,† in conductive plastic, with stainless steel cassette, transport clip, and cover	**225-79A**

* *U.S. Patent No. 4,675,034* † *A 25-mm filter is required for sampling with the IOM; see below.*

MultiDust Foam Discs

Separates and Collects Two PM Fractions

Use with a 25-mm filter in the IOM Sampler for simultaneous sampling of respirable and inhalable PM.

Cat. No. 225-772 .....pk/10
Cat. No. 225-772-50.....pk/50

25-mm Filters for IOM Sampler

The IOM Sampler requires a 25-mm filter for sampling. Select from the filters below to meet your application.

Description	Cat. No.	Qty.
PVC, 5.0 µm, 25 mm	**225-5-25**	**100**
Glass Fiber, 25 mm	**225-702**	**500**
MCE, 0.8 µm, 25 mm	**225-1930**	**100**
Polycarbonate, 0.8 µm, 25 mm	**225-1601**	**100**
Gelatin, sterilized, 25 mm	**225-9551**	**50**

Accessories

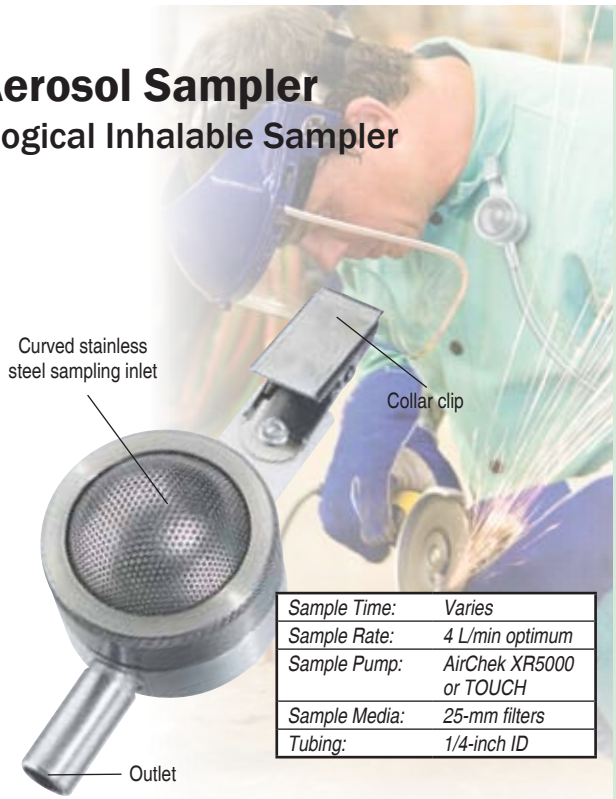
Description	Cat. No.
Cassette assembly, in conductive plastic, with transport clip and cover	**225-71A**
Cassette assembly, in stainless steel, with transport clip and cover	**225-75A**
Transport Clip and Cover	**225-72A**
IOM Calibration Adapter	**391-01**

IOM Plastic Cassette with Transport Clip and Cover Cat. No. 225-71A

Button Aerosol Sampler

Chemical or Biological Inhalable Sampler

- 4 L/min flow rate enhances sensitivity
- Closely follows the ACGIH/ISO sampling criteria for inhalable particulate mass
- Inlet design reduces oversampling of very large particles and sensitivity to wind direction/velocity
- Suitable for area or personal sampling
- Stainless steel construction reduces electrostatic effects
- Suitable for collecting bioaerosols for viable or non-viable analysis
  - Autoclavable



Sample Time:	*Varies*
Sample Rate:	*4 L/min optimum*
Sample Pump:	*AirChek XR5000 or TOUCH*
Sample Media:	*25-mm filters*
Tubing:	*1/4-inch ID*

The patented* reusable SKC Button Aerosol Sampler features a porous curved-surface inlet designed to improve the collection characteristics of inhalable dust (< 100-µm aerodynamic diameter), including bioaerosols for viable or non-viable analysis. The conductive stainless steel inlet contains evenly spaced holes that act as sampling orifices for multi-directional sampling and low sensitivity to wind direction and velocity. The proximity of the filter to the inlet minimizes transmission losses and provides for equal distribution of particle loading and low intersample variation. The Button Sampler follows closely the ACGIH/ISO sampling criteria for inhalable particulate mass at 4 L/min. A convenient conductive plastic transport case is available for shipping samples to a laboratory for analysis.

Description		Cat. No.
Button Sampler, *requires a 25-mm filter; see below*		225-360
Button Sampler Pump Kit includes Button Sampler, standard XR5000 Sample Pump, single charger, 0.9 meter (3 feet) of Tygon tubing, and calibration adapter, *requires a 25-mm filter; see below*	100-240 V	210-4121
Abrasive Blasting Kit includes Button Sampler and protective shield, *requires a 25-mm filter; see below*		225-367
Accessories		
Protective Shield, for abrasive blasting environments		225-366
Button Sampler Calibration Adapter		225-361
Filter Transport Case, for 25-mm filters, conductive plastic		225-67

* *U.S. Patent Nos. 5,954,845 and 5,958,111*

Recommended 25-mm Filters for Button Sampler

The Button Sampler requires a 25-mm filter for sampling. SKC recommends pore sizes greater than 1 micron to lower back pressure and enhance sample time with personal sample pumps. Select from the filters below to meet your application.

Description	Cat. No.	Qty.
PVC, 5.0 µm, 25 mm	225-5-25	100
Glass Fiber, 25 mm	225-702	500
MCE, 1.2 µm, 25 mm	225-1912	100
PTFE,† 3.0 µm, 25 mm	225-1711	50
Gelatin, sterilized, 25 mm	225-9551	50

† *Back pressure on PTFE filters can vary within the same lot.*

Tech Tips

Sampling Bioaerosols with the Button Sampler

▶ *For growth cultures, use the Button Sampler with a sterile gelatin filter to help maintain microorganism viability.*

Recommended Pumps for Button Sampler
AirChek TOUCH or AirChek XR5000
see pages 8-10 or 14-15

More Information
www.skcinc.com

GS-3 Respirable Dust Cyclone

Listed in OSHA Final Silica Rule

Operates at 2.75 L/min to conform to the ISO 7708 standard
- Listed in OSHA rule for silica
- Meets ACGIH respirable TLVs
- Higher flow rate increases sensitivity for lower concentrations

Unique design overcomes issues experienced with the 10-mm nylon cyclone
- Tangentially arranged inlets decrease particle loss caused by impaction
- Multiple inlets eliminate ambient wind speed and orientation effects

Conductive plastic eliminates electrostatic effects
- Safe for underground mine use

Sample Time:	*Varies*
Sample Rate:	*2.75 L/min for 4-µm cut-point* (ISO 7708 standard) (3.7 L/min for 3.5-µm cut-point† - 1971 OSHA standard)*
Sample Pump:	*Universal XR or AirChek Series*
Sample Media:	*25 or 37-mm filters in 3-piece cassettes*
Tubing:	*1/4-inch ID*

Use the lightweight 10-mm GS-3 Cyclone with a 25 or 37-mm three-piece filter cassette. *See Tech Tip at above left.*

Description		Cat. No.
GS-3 Cyclone with bowl adapter, cassette adapter, and grit pot	**37 mm**	**225-100**
	25 mm	**225-103**

* *Calibrated at U.K. Health and Safety Laboratory; visit www.skcinc.com/prod/225-100.asp to view the collection efficiency curve*
† *Determined using experimental data obtained at flows from 2 to 4 L/min*

GS-1 Respirable Dust Cyclone

Equivalent to 10-mm Nylon Cyclone Without Static Concerns

2 L/min flow rate provides sharp size selection at 4 µm
- Meets ISO 7708 standard, OSHA rule for silica, and ACGIH respirable TLVs

Use at 1.7 or 2 L/min with DPM Cassette for MSHA DPM compliance sampling
- Screens out large particles to prevent DPM Cassette impactor and filter overload

Conductive plastic construction
- Eliminates electrostatic effects experienced with the 10-mm nylon cyclone
- Safe for underground mine use

Sample Time:	*Varies*
Sample Rate:	*2 L/min for 4-µm cut-point‡ (ISO 7708 Standard) 3 L/min for 3.5-µm cut-point† (1971 OSHA Standard) 1.7 or 2 L/min with DPM Cassette (MSHA DPM sampling)*
Sample Pump:	*Universal XR or AirChek Series*
Sample Media:	*DPM Cassette or 37-mm filters in 3-piece cassettes*
Tubing:	*1/4-inch ID*

Use the lightweight 10-mm GS-1 Cyclone with a standard 37-mm three-piece filter cassette or the SKC DPM Cassette.

Description	Cat. No.
GS-1 Cyclone includes bowl adapter, 37-mm cassette adapter, and grit pot	**225-105**

‡ *Trakumas, S., et al., "Performance Assessment of Personal Respirable Cyclone Samplers," AIHce Presentation 191, 2003*
† *Determined using experimental data obtained at flows from 2 to 4 L/min*

Tech Tips

Traditionally, respirable dust sampling with a cyclone has been performed using a clear styrene cassette. ***NIOSH now suggests that conductive black polypropylene cassettes are a better option*** *for this application to minimize cassette wall losses (Journal of Occ. and Env. Hygiene, 10:3, 2013, pp. D29-D33). For conductive black polypropylene cassettes, see page 90.*

GS Cyclones Accessories/ Replacement Parts

Replacement Cassette Adapter 37 mm..... **Cat. No. 225-102** 25 mm..... **Cat. No. 225-101**
Filter Cassette/Cyclone Holder, *see p. 102 for details* **Cat. No.**.....**225-1**
Standard-size Multi-purpose Calibration Jar, *see p. 104 for details* **Cat. No.**.....**225-111**
Replacement Grit Pots, pk/25 **Cat. No.**..... **P225012**

More Information

Gautam, M. and Sreenath, A., "Performance of a Respirable Multi-inlet Cyclone," Jnl. of Aerosol Science (U.K.), Vol. 28, No. 7, 1997, pp. 1265-1281

Kar, K. and Gautam, M., "Orientation Bias of the Isolated 10 mm Nylon Cyclone at Low Stream Velocity," AIHA Journal, Vol. 56, 1995, pp. 1090-1098

www.skcinc.com

Respirable Dust Aluminum Cyclone

Specified in NIOSH Respirable Dust Methods

- **Operates at 2.5 L/min to conform to the ISO 7708 standard**
  - Meets requirements in the OSHA rule for silica
  - Meets ACGIH respirable TLVs
- **Specified in NIOSH Method 7500 for silica and NIOSH 0600 for respirable particulates**
- **Eliminates adverse electrostatic effects**
- **Small and lightweight**
  - 6.6 x 3.8 cm (2.6 x 1.5 inches)
- **Used with an open-face three-piece cassette for more even particle deposition on the filter**
  - Available in 25 or 37 mm
  - Inserts into middle ring of cassette

Sample Time:	*Varies*
Sample Rate:	*2.5 L/min for 4-µm cut-point* (2.8 L/min for 3.5-µm cut-point†)*
Sample Pump:	*Universal XR or AirChek Series*
Sample Media:	*25 or 37-mm filters in 3-piece cassettes*
Tubing:	*1/4-inch ID*

The SKC Aluminum Cyclone is a lightweight respirable dust sampler that is placed into the middle ring of a three-piece cassette loaded with the appropriate filter *(see Tech Tips at right)*. When attached to a sample pump, respirable particles collect on the filter and larger particles fall into the grit pot to be discarded. Available in 25 or 37 mm, the SKC Aluminum Cyclone provides sharp size selection of the respirable fraction. The SKC Aluminum Cyclone eliminates the electrostatic problems associated with nylon (non-conductive) cyclones and allows the cyclone to sample particles more efficiently.

ACGIH, NIOSH, the European Standard Committee (CEN), and the OSHA rule on silica specify a respirable collection efficiency curve with a median cut-point of 4 µm. A leading aerosol research organization calibrated the SKC Aluminum Cyclone. Results showed that using the cyclone at a flow rate of 2.5 L/min* provided the optimum match to the respirable curve specified in the ISO 7708 standard.

Cassette Holder

The lightweight SKC Filter Cassette Holder is designed for attachment to a worker's collar and will accommodate either two or three-piece 37-mm cassettes with or without a cyclone, 25-mm cassette with cowl, or DPM Cassette with a GS-1 Cyclone.

Cat. No. 225-1

Easy-to-use Calibration Adapter

The aluminum calibration adapter fits both the 25 and 37-mm Aluminum Cyclones and allows standard 1/4-inch ID Tygon tubing to be attached for simple calibration.

Cat. No. 225-01-03

Description		Cat. No.
Cyclone‡ with grit pot	**25 mm**	**225-01-01**
	37 mm	**225-01-02**
Accessories		
Calibration Adapter, 25/37 mm		**225-01-03**
Filter Cassette Holder, 25/37 mm		**225-1**
Replacement Grit Pots, pk/25		**P225011**
Replacement O-rings, for 37-mm cyclones, pk/5		**P22501**

* *As previously published, a flow rate of 2.6 L/min will yield a 4-µm 50% cut-point, however, a 2.5 L/min flow rate will provide a better match over the entire curve.*

† *Determined using experimental data obtained at flows from 2 to 4 L/min*

‡ *Three-piece cassettes are required for use with SKC Aluminum Cyclones; see filter cassettes on pages 88-96.*

Tech Tips

- *A cyclone will not sample optimally if it is influenced by electrostatic charge. SKC cyclones are constructed of conductive plastic or aluminum that eliminates the static problem associated with non-conductive nylon cyclones.*
- *Cleaning cyclones before sampling prevents deviation in the collection efficiency curves.*
- *The cyclone grit pot must be in place during sampling for size selection to occur. Do **not** remove the grit pot during calibration and sampling.*
- *When calibrating size-selective samplers such as cyclones, use the sampler's calibration adapter. If an adapter does not exist, use the multi-purpose calibration jar with the smallest volume. See page 104.*

Plastic Cyclone

The SKC Plastic Cyclone is designed to sample respirable dust as per MDHS 14/4 and the ISO/CEN criteria. The static-dissipating cyclone features a snap-together cassette system and is used at a 2.2 L/min flow rate with a 25 or 37-mm cyclone cassette. Cyclones include a grit pot. The Plastic Cyclone is also suitable for MDHS 10/2 and 91.

Description	Cat. No.
Plastic Cyclone with 25-mm plastic cassette	**225-69**
Plastic Cyclone with 37-mm plastic cassette	**225-69-37**
Filter Transport Cassette for 25-mm filters	**225-67**
Cassette, 25 mm	**225-62**
Cassette, 37 mm	**225-62-37**

Parallel Particle Impactors (PPIs)

Designed for a Precise Match to the ISO 7708 Standard

- **Collection efficiency precisely matches ISO 7708 standard**

- **Two sampler configurations available**
  - **Reusable** conductive aluminum samplers
  - **Disposable** anti-static plastic samplers designed for one-time use, pre-assembled with:
    - Filter, support pad, and impaction substrates for chemical analysis
    - Substrates only for gravimetric analysis (add your own weighed filter)

- **Sampling options:**
  - **8 L/min respirable model:** Enhanced sampling sensitivity for TLV-TWA silica and other compounds with low target concentrations, such as respirable manganese. Ideal for short-term task monitoring
  - **4 L/min respirable model:** Provides higher flow option and use of intrinsically safe personal pumps
  - **2 L/min respirable model:** Standard TWA sampling
  - **2 L/min thoracic model:** Metalworking fluids (NIOSH Method 5524) or TLV-TWA sulfuric acid or cotton dust sampling

- **Performance published in *Journal of Physics* and submitted to OSHA docket on silica**

ABOUT
Using PPI Samplers on Welders

Several professionals report that they prefer using PPI Samplers.

- Smaller and more comfortable, PPIs fit easily under a welding helmet.
- Welders are often in awkward positions, which can cause a cyclone to tip and larger particles in the grit pot to land on the filter. This is not a problem for PPIs!

The PPI 4-in-1 Advantage

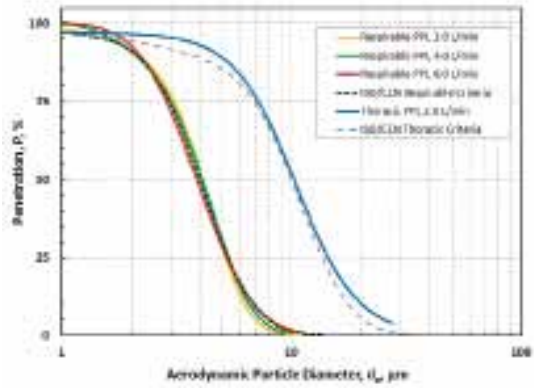
Only the patented‡ SKC Parallel Particle Impactor (PPI) has the power of four impactors in one small sampler to provide a precise match to the ACGIH/ISO/CEN (7708:1995) thoracic or respirable conventions: a job no other single personal impactor can do alone!

Sample Rate:	*2, 4, or 8 L/min*
Sample Pump:	*Universal XR or AirChek Series; Leland Legacy for 8 L/min*
Sample Media:	*37-mm filter (requires support and impaction substrates)*
Tubing:	*1/4-inch ID*

Reduce Particle Buildup/Bounce Effects

Disposable pre-oiled porous plastic impaction substrates reduce the negative effects of particle buildup and bounce on sample accuracy by firmly trapping larger particles. Unlike other samplers, SKC PPI sampling efficiency does not depend on collected particle type. In addition, PPI Samplers can be inverted without larger particles invalidating results.

‡ *U.S. Patent No. 7,073,402*



Comparison of PPI Samplers' performance with thoracic and respirable conventions

Parallel Particle Impactors (PPIs)

Available in Reusable Aluminum or Disposable Plastic

Reusable Aluminum PPI Samplers

Select the PPI for the desired convention, choose an application-appropriate filter and support, and order impaction substrates.

Description	Cat. No.	Qty.
Reusable PPI Samplers, *require substrates, filters, and supports*		
Respirable PPI (red), 8 L/min, aluminum	225-383	ea
Respirable PPI (orange), 4 L/min, aluminum	225-382	ea
Respirable PPI (gold), 2 L/min, aluminum	225-380	ea
Thoracic PPI (blue), 2 L/min, aluminum	225-381	ea

Impaction Substrates, *four required for each sample for Reusable Aluminum PPI models*	Cat. No.	Qty.
Porous Plastic Discs,† 9.53-mm (3/8-inch) diameter, pre-oiled, ready to use, disposable	225-388	200

Disposable Plastic PPI Samplers**

Select the PPI for the desired convention. Choose from models preloaded with filter and support or load your own.

Description	Cat. No.	Qty.
Preloaded Disposable PPI Samplers contain four porous plastic disc impaction substrates, one 37-mm cellulose support, and one collection filter as noted		
Respirable PPI (red), 8 L/min, plastic, with 5.0-µm PVC filter	225-3841	ea
Respirable PPI (orange), 4 L/min, plastic, with 5.0-µm PVC filter	225-3871	ea
Respirable PPI (gold), 2 L/min, plastic, with 5.0-µm PVC filter	225-3851	ea
Thoracic PPI (blue), 2 L/min, plastic, with 0.8-µm MCE filter	225-3861	ea
Disposable PPI Samplers contain four porous plastic disc impaction substrates, *require collection filter and support; see information below and select based on application*		
Respirable PPI (red), 8 L/min, plastic	225-384	ea
Respirable PPI (orange), 4 L/min, plastic	225-387	ea
Respirable PPI (gold), 2 L/min, plastic	225-385	ea
Thoracic PPI (blue), 2 L/min, plastic	225-386	ea

Filters for User-loaded PPI Samplers	Cat. No.	Qty.
PVC Filters, 37 mm, 5.0-µm pore size	225-5-37	100
PTFE Filters,* 37 mm, 2.0-µm pore size for metalworking fluids (NIOSH 5524)	225-27-07	50
MCE Filters, 37 mm, 0.8-µm pore size	225-5	100

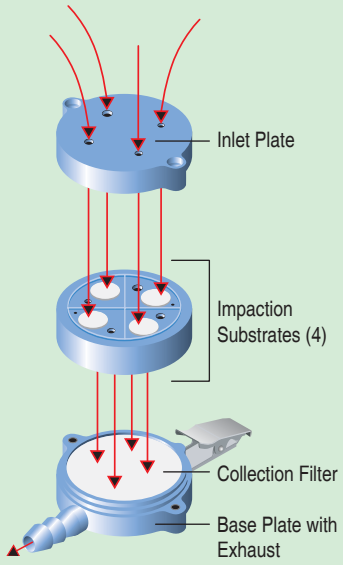
Filter Supports for User-loaded PPI Samplers	Cat. No.	Qty.
Support Pads, cellulose, 37 mm	225-27	100
Stainless Steel Screen, 37 mm, wide mesh	225-26	ea

Accessory	Cat. No.	Qty.
Calibration Adapter, for Disposable PPI Samplers only	225-389	ea

* *Back pressure on PTFE filters can vary within the same lot.*
** *Designed for one-time use*
† *Limited shelf-life*

Standard of Good Practice

Before and after sampling, weigh filters in a weighing room using the same analytical balance and conditions each time. With this good practice in mind, SKC does not supply PPI Samplers loaded with preweighed filters. Contact a laboratory to request preloaded, preweighed PPI samplers for higher accuracy.



Reusable PPI shown

Personal Environmental Monitor (PEM)

Choice of Flows for PM10 and PM2.5 in Indoor Air

Pumps for sampling with the PEM

- *2 or 4 L/min flow rates, see pages 8-10 or 14-15*
- *10 L/min flow rate and 24-hour sampling, see pages 22-23*

- **Referenced in EPA Method IP-10A**
  - For particles in indoor air
- **Small and unobtrusive**
  - Can be connected to a personal sample pump and worn in the breathing zone
- **Suitable for LEED Green Building sampling**

The Personal Environmental Monitor is a small, lightweight impaction device used with a personal sample pump to provide effective sampling of PM10 and PM2.5 in indoor air. Personal exposure is determined through gravimetric analysis for particle mass and chemical analysis for specific compounds.

Sample Time:	*Varies*
Sample Rate:	*2, 4, or 10 L/min*
Sample Pump:	*Universal XR, AirChek Series, or Leland Legacy*
Sample Media:	*37-mm PTFE filters**
Tubing:	*3/16-inch ID*

How the PEM Works

The PEM consists of three major parts: cap, impaction ring assembly, and base. A 37-mm after-filter is inserted in the base and the PEM assembled. When used with a personal sample pump at the required flow rate, aerosol is accelerated through a number of nozzles in the cap. Through inertia, particles larger than the 50% cut-point of the sampler impact onto a greased impaction ring and can be discarded after sampling. Particles smaller than the 50% cut-point pass through the impactor and collect on the 37-mm after-filter. Six models of PEM are available for the collection of PM10 or PM2.5 at three different flow rates.

PEM Applications

- Childhood asthma studies
- Green Building certification
- IAQ studies
- School zone investigations

Data Interpretation

Particulates as PM2.5

▶ ***LEED Green Buildings***
Indoor Air Maximum Concentration: 15 µg/m³

Source: LEED for New Construction Rating System v4 (U.S. Green Building Council, http://www.usgbc.org)

Cut-point	Model	Flow Rate	Cat. No.
2.5 µm		2 L/min	**761-203**
		4 L/min	**761-203A**
		10 L/min	**761-203B**
10 µm		2 L/min	**761-200**
		4 L/min	**761-200A**
		10 L/min	**761-200B**
Accessories			
PEM Calibration Adapter			**761-202**
After-filter, 37-mm, 2.0-µm PTFE* with PMP support ring, pk/50			**225-1709**

* *Back pressure on PTFE filters can vary within the same lot.*

Personal Modular Impactor (PMI)

Personal PM10, PM2.5, or PM Coarse Sampling at 3 L/min

- **Models available for PM10, PM2.5, or PM Coarse $_{(10\text{-}2.5)}$ sampling**
- **Use with any constant flow pump at 3 L/min**
- **Disposable ready-to-use pre-oiled impaction discs — no cleaning or greasing**
  - Reduce particle bounce for high collection efficiency
- **Compact and lightweight — only 71 grams (2.5 ounces)!**
  - Ideal for personal or micro-environmental sampling
- **Closely follows PM2.5 or PM10 as defined by EPA *(see right)***
- **Convenient modular design for easy operation**
  - Removable filter cassette for easy media changes
  - Convenient clip for mounting sampler in the breathing zone
- **PMI PM10 model is easily converted with accessory ring to measure PM Coarse**

Sample Time:	*Varies*
Sample Rate:	*3 L/min*
Sample Pump:	*Universal XR or AirChek Series*
Sample Media:	*37-mm filter (requires impaction substrate)*
Tubing:	*1/4-inch ID*

The patented* SKC single-stage Personal Modular Impactors are designed for the highly efficient collection of PM10, PM2.5, or PM Coarse $_{(10\text{-}2.5)}$. The samplers are easy to use with a removable filter cassette and pre-oiled impaction disc. The 25-mm pre-oiled impaction disc mounts directly on top of the filter cassette and reduces particle bounce for high collection efficiency. A 25-mm filter may be used as an alternative impaction substrate for chemical analysis of particles. The PMI Coarse model includes a second filter cassette to allow collection of particles < 10 µm but larger than 2.5 µm.

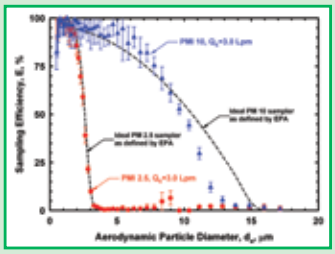
PMI Sampler	Cat. No.	Qty.
Personal Modular Impactor includes impactor and filter cassette with support screen, *requires collection media and impaction substrate sold separately; see below*		
PM2.5 (gold)	225-352	ea
PM10 (silver)	225-350	ea
PM Coarse includes 2 filter cassettes and filter retainer	225-351	ea
Recommended Collection Filters		
Quartz Filters, 37 mm, Tissuquartz, 432 µm thick	225-1822	25
PTFE Filters,† 37 mm, 2.0-µm pore size, with PMP support ring	225-1709	50
PTFE Filters,† 37 mm, 1.0-µm pore size, with laminated PTFE support	225-2705	50
Recommended Impaction Substrate, *required for sampling; limited shelf-life*		
Pre-oiled Porous Plastic Discs,‡ 25 mm, ready to use, disposable	225-355	25
	225-355A	50
Accessories		
PM Coarse Ring includes filter cassette, adapts a PMI 10 to a PMI Coarse	225-3512	ea
Replacement Filter Cassette	225-356	ea
PMI Cassette Opener	225-357	ea
Forceps, stainless steel, non-serrated flat tips, *see p. 104*	225-8371	ea
Filter-Keepers, 37 mm, for filter transport, *see p. 105*	225-8303	100
	225-8303A	10
PMI Calibration Adapter	225-358	ea
Filter Retainer, secures filter in impaction substrate position on top of cassette	225-354	ea

* *U.S. Patent No. 7,334,453* † *Back pressure on PTFE filters can vary within the same lot.*
‡ *A 25-mm filter may be used as an alternative impaction substrate for chemical analysis.*

ABOUT

PMI Performance

The graph below demonstrates the high sampling efficiency of the PMI PM2.5 and PM10 Samplers when compared to the EPA PM2.5 and PM10 criteria curves. *For more information, see the Modular Impactor Poster Presentation at www.skcinc.com/instructions/Modular_Impactors_Poster.pdf.*



10 L/min IMPACT Single-stage Impactor
see page 116

Data Interpretation

Particulates as PM10

▶ ***LEED Green Buildings***
Indoor Air Maximum Concentration: 50 µg/m³

Health Care Facilities have a maximum of 20 µg/m³

Source: LEED for New Construction Rating System v4 (U.S. Green Building Council, http://www.usgbc.org)

IMPACT Sampler

For PM10, PM2.5, or PM Coarse Sampling at 10 L/min

- Ideal for environmental PM sampling and indoor air studies
- Use with Leland Legacy or any pump at 10 L/min
- Compact design
- Higher flow rate provides increased sensitivity
- Convenient operation
  - Removable filter cassette for fast media changes
  - Disposable ready-to-use pre-oiled impaction discs reduce particle bounce — no cleaning or greasing
  - Included rain cover protects sampler during outdoor use
  - Optional quick-mount bracket secures sampler virtually anywhere

Sample Time:	*Varies*
Sample Rate:	*10 L/min*
Sample Pump:	*Leland Legacy*
Sample Media:	*47-mm filter (requires impaction substrate)*
Tubing:	*3/8-inch ID*

The patented‡ SKC IMPACT single-stage inertial impactor is designed for the efficient collection of PM10, PM2.5, or PM Coarse $_{(10\text{-}2.5)}$ in ambient air. A sample pump operating at 10 L/min draws particulate matter (PM) through the impactor; larger particles are captured on a disposable pre-oiled impaction disc while smaller particles collect on a 47-mm filter. IMPACT media changes are as easy as removing the filter cassette and replacing it with one already loaded. The impaction disc fits into the top of the cassette. IMPACT's higher flow rate requirement provides increased sensitivity for low levels of PM. Go to *www.skcinc.com/instructions/Modular_Impactors_Poster.pdf* for sampling efficiency data.

IMPACT Sampler	Cat. No.	Qty.
IMPACT Sampler includes filter cassette, calibration adapter, and rain cover for sampler; *requires collection media and impaction substrate sold separately; see below*		
PM2.5	225-392	ea
PM10	225-390	ea
PM Coarse includes 2 filter cassettes	225-3911	ea
Collection Filters for IMPACT Sampler (not supplied with IMPACT or DPS System) *Select a filter based on your application; required for sampling*		
Quartz Filters, 47 mm, Tissuquartz, 432 µm thick	225-1823	25
PTFE Filters,§ 47 mm, 2.0-µm pore size, with PMP support ring	225-1747	50
Impaction Substrate		
Impaction Discs, 37 mm, pre-oiled, ready to use, disposable, *required for sampling; limited shelf-life*	225-395 225-395A	25 50
Accessories		
Replacement Filter Cassette	225-396	ea
Filter Cassette Opener	225-397	ea
Mounting Bracket	225-399	ea
PM Coarse Ring includes filter cassette, adapts IMPACT PM10 to an IMPACT PM Coarse	225-3912	ea
Petri Dish Slide, for filter transport	225-2-01	100
Calibration Adapter	225-394	ea

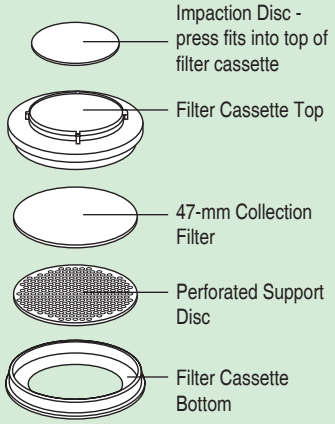
‡ *U.S. Patent No. 7,334,453*

§ *Back pressure on PTFE filters can vary within the same lot.*

IMPACT and the Leland Legacy Sample Pump

While IMPACT can be used with any pump at 10 L/min, partnering IMPACT with the Leland Legacy sample pump provides a highly efficient sampling system. The quiet, fully programmable Leland Legacy pump can provide a constant 10 L/min flow rate for 24 hours, making it ideal for environmental monitoring or indoor air studies. *For more information on the Leland Legacy Sample Pump, see pages 22-23. IMPACT and the Leland Legacy Sample Pump are both included in the DPS System on pages 24-25.*

Convenient All-in-one Filter Cassette

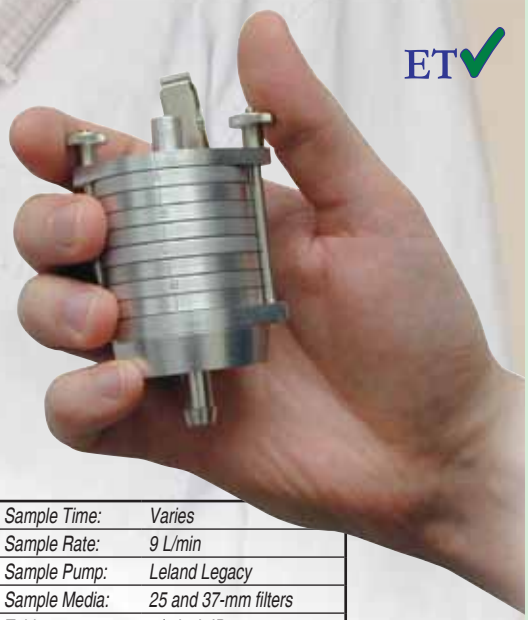


For a deployable particulate sampling system featuring the IMPACT Sampler, see the DPS System on pages 24-25.

Sioutas Personal Cascade Impactor

Separates Ultrafine, Fine, and > 2.5-µm Particles Simultaneously

- **Precise particle separation**
  - Particle size cut-points: 2.5 µm, 1.0 µm, 0.50 µm, and 0.25 µm
  - The only personal impactor that efficiently samples ultrafine, fine, and > 2.5-µm particles simultaneously
  - Maintains high collection efficiency even at high particle concentrations
- **Optimized at a 9 L/min flow rate with low pressure drop for 24-hour sampling**
  - Improves analytical sensitivity
  - Minimizes non-detectable samples
- **Preserves unstable compounds**
  - Chemically inert collection substrate
  - No impaction grease to contaminate sample
- **Minimal particle bounce and internal wall losses**
- **Suitable for indoor and outdoor sampling****
- **Size-fractionated samples can be analyzed gravimetrically, chemically, and microscopically**
- **Small and lightweight**
  - Suitable for personal or area sampling



Sample Time:	*Varies*
Sample Rate:	*9 L/min*
Sample Pump:	*Leland Legacy*
Sample Media:	*25 and 37-mm filters*
Tubing:	*3/8-inch ID*

Leland Legacy Sample Pump

The compact, portable, and battery-operated Leland Legacy Sample Pump provides 9 L/min flow rate for optimum Sioutas Impactor performance.

For more information, see pages 22-23.

The patented† Sioutas Personal Cascade Impactor* separates and collects airborne particles in five size ranges: > 2.5 µm, 1.0 to 2.5 µm, 0.50 to 1.0 µm, 0.25 to 0.50 µm, and < 0.25 µm. When used with PTFE filters,‡ the Sioutas Impactor is highly efficient at collecting particles without using impaction grease or substrate coatings and at retaining unstable compounds for size-fractionated chemical analysis.

Use the Sioutas Impactor with the Leland Legacy Sample Pump at 9 L/min to ensure precise particle separation at the specified cut-points. Particles above each cut-point are collected on a 25-mm filter in the appropriate stage with particles less than 0.25 µm collecting on the 37-mm after-filter *(optional)*. The small, lightweight Sioutas Impactor simply clips to a worker's collar or lapel for personal sampling and is also suitable for area sampling.

Description	Cat. No.
Sioutas Personal Cascade Impactor	**225-370**
Tubing, Tygon, 9.53-mm (3/8-inch) ID, fits Sioutas Impactor and Leland Legacy pump, 3 meters (10 feet)	**225-1351**

Filters for Sioutas Impactor

Description	Cat. No.	Qty.
After-filter, PTFE,‡ 37 mm, 2.0 µm *(optional)*	**225-1709**	**50**
Collection Filter (filter for 4 stages), PTFE,‡ 25 mm, 0.5 µm, *required*	**225-2708**	**100**

* *Developed by Dr. Constantinos Sioutas of the University of Southern California in partnership with the Mickey Leland National Urban Air Toxics Research Center (NUATRC)*

† *U.S. Patent No. 6,786,105 (University of Southern California)*

‡ *Back pressure on PTFE filters can vary within the same lot.*

** *Requires special provisions; see product operating instructions*

the Sioutas Impactor Advantage!

Choose the Sioutas Personal Impactor for the highly efficient collection of airborne particles in five size ranges:

- ☑ > 2.5 µm
- ☑ 1.0 to 2.5 µm
- ☑ 0.50 to 1.0 µm
- ☑ 0.25 to 0.50 µm
- ☑ < 0.25 µm

Recent epidemiological studies show that ultrafine, fine, and > 2.5-µm particles may have greater pulmonary inflammatory potency than larger particles and associate increased morbidity and mortality with increased exposure to these particles. The Sioutas Impactor is the only personal impactor that precisely separates and collects ultrafine, fine, and > 2.5-µm particles simultaneously.

More Information

Misra, C., et al., "Development and Evaluation of a Personal Cascade Impactor Sampler (PCIS)," Journal of Aerosol Science, 33, 2002, pp. 1027-1047

ABOUT

Monitoring Exposure to CNTs and CNFs

In its Current Intelligence Bulletin 65: *Occupational Exposure to Carbon Nanotubes (CNTs) and Nanofibers (CNFs),* NIOSH recommends use of a respirable mass-based airborne concentration measurement to monitor worker exposure to all types of CNTs and CNFs until additional data are available. A reasonable estimate of worker respirable exposure to CNTs/CNFs at the NIOSH REL (1 µg/m³, 8-hour TWA) can be determined as elemental carbon (EC) by NIOSH Method 5040.

SKC Bioaerosol Samplers

Personal, Area, and Surface Sampling

Fast Find! Sampler Guide

SKC Bioaerosol Sampler Guide

Use the guide below to determine the sampler that meets your applications.

Sampler	Principle of Operation	Flow Rate (L/min)	Contaminants	Sampler Advantages	Page
Button Sampler 	Filtration using porous membrane	4 (optimum)	Fungi (viable and non-viable), endotoxins, and bacteria	• Superior collection uniformity • Low sensitivity to ambient conditions • Sample suitable for viable and non-viable analysis • Personal bioaerosol sampling	119
BioStage Single-stage Impactor 	Impaction onto culture media	28.3	Fungi (viable) and bacteria	• SureLock positive seal • Organisms remain intact and viable • Cost-effective and reusable • Time-proven collection method • Meets NIOSH Methods 0800 and 0801	120
BioSampler 	Collection into swirling liquid	12.5 (sonic flow)	Fungi (viable and non-viable), endotoxins, viruses, and bacteria	• Maintains constant collection efficiency over 8 hours • Reduces particle bounce and re-aerosolization; preserves viability • Many analysis options	122
Sterile Swab Kit 	Wipe sample	N/A	Fungi (viable and non-viable) and bacteria	• Easy to use • Suitable for growth cultures • Non-destructive • Collects surface contaminants	124
Carpet Sampling Cassette 	Filtration using porous membrane	10 (optimum)	Fungi (total) and fibers	• Easy to use • Suitable for high flows to enhance detection • Microvacuum nozzle for efficient sampling in carpeting	124
Stick-to-it 	Lift tape surface sample	N/A	Fungi (total), pollen, and fibers	• Ensures consistent sample area • Serialized for sample identification • Includes transport case for mailing to lab	124
VersaTrap Spore Trap Cassette 	Impaction onto sticky glass slide	15 (optimum)	Fungi (total), pollen, and fibers	• Reduces particle bounce • Prevents sample loss and blurring • Allows direct quantitative analysis • Enumeration of fungal spores with low culturability	125

Button Aerosol Sampler

Autoclavable, Personal Filter Sampler for Bioaerosols

- **4 L/min flow rate enhances sensitivity**
- **Follows closely the ACGIH/ISO sampling criteria for inhalable particulate mass**
- **Inlet design reduces oversampling of very large particles and sensitivity to wind direction/velocity**
- **Stainless steel construction reduces electrostatic effects**
- **Small, lightweight for personal sampling; ideal for area sampling**
- **Can collect bioaerosols for viable or non-viable analysis**
  - Autoclavable

Sample Time:	*Varies*
Sample Rate:	*4 L/min optimum*
Sample Pump:	*AirChek XR5000 or TOUCH*
Sample Media:	*25-mm filters*
Tubing:	*1/4-inch ID*

The patented* Button Aerosol Sampler provides superior collection of inhalable particles, including bioaerosols such as bacteria and fungal spores for viable or non-viable analysis. Its high collection efficiency is due to its unique features:

- **Porous curved-surface inlet** improves collection characteristics of inhalable particles (< 100-µm aerodynamic diameter).
- **Stainless steel inlet** reduces electrostatic effects and contains evenly spaced holes that act as sampling orifices for multi-directional sampling and low sensitivity to wind direction and velocity.
- **Filter proximity to the inlet** minimizes transmission losses and provides equal distribution of particles and low intersample variation.

The Button Sampler follows closely the ACGIH/ISO sampling criteria for inhalable particulate mass when operated with a sample pump at 4 L/min.

Selecting a Filter for Bioaerosol Sampling

Use the Button Sampler with a 25-mm gelatin filter to maintain the survival of stress-sensitive microorganisms during short sampling periods for viable analysis *(see information above right)*. For non-viable analysis, use a 25-mm MCE or PVC filter.

Description	Cat. No.	Qty.
Gelatin, sterilized	225-9551	50
MCE, 1.2 µm	225-1912	100
PVC, 5.0 µm	225-5-25	100

Description		Cat. No.
Button Sampler, *requires a 25-mm filter; see above*		225-360
Button Sampler Pump Kit includes Button Sampler, standard AirChek XR5000 Sample Pump, single charger, 0.9 meter (3 feet) of Tygon tubing, and calibration adapter, *requires a 25-mm filter; see above*	100-240 V	210-4121
Accessories		
Button Sampler Calibration Adapter		225-361
Filter Transport Case, for 25-mm filters, conductive plastic		225-67

* *U.S. Patent Nos. 5,954,845 and 5,958,111*

ABOUT

Using Gelatin Filters with the Button Sampler

For maximum microorganism survivability and superior collection of inhalable-size bioaerosols, use sterile gelatin filters with the SKC Button Sampler. The Button Sampler features a unique inlet and proximity of the filter to the inlet to minimize transmission losses and provides for equal distribution of particles and low intersample variation. The Button Sampler is autoclavable, making it ideal for applications requiring pre-sterilization. Combining the Button Sampler with the nurturing properties of gelatin filters creates a sampler that is most efficient at collecting inhalable bioaerosols for viable or non-viable analysis.

More Information

Clark Burton, N., Grinshpun, S., Reponen, T., "Physical Collection Efficiency of Filter Materials for Bacteria and Viruses," Annals of Occup. Hyg., Sept. 2006, pp. 1-9

Aizenberg, V., Reponen, T., Grinshpun, S., Willeke, K., "Performance of Air-O-Cell, Burkard, and Button Samplers for Total Enumeration of Airborne Spores," AIHA Journal, Vol. 61, Dec. 2000, pp. 855-864

Adshikari, A., et al., "Performance of the Button Sampler for Outdoor Bioaerosol Collection," abstract from American Assoc. of Aerosol Research Conf., NC, 2002

BioStage

Single-stage Viable Cascade Impactor

- **Easy to use**
- **Corrosion-resistant aluminum**
  - Autoclavable
- **Collected organisms remain intact and viable**
- **SureLock positive seal ensures sample integrity**
- **Uses standard-size agar plates**
- **Easy setup and calibration**
- **Proven viable sampling**
  - Meets ACGIH recommendations for bioaerosol sampling
  - Meets NIOSH Method 0800 and 0801 requirements
  - Studies show performance equivalent to Andersen N-6 and similar samplers‡

The SKC BioStage® viable cascade impactor meets NIOSH requirements and ACGIH recommendations for sampling indoor and outdoor mold and bacteria *(see PDB # 1512)*. The BioStage comprises an inlet cone, precision-drilled 400-hole impactor stage, and a base that holds a standard-size agar plate. A high flow pump, such as the QuickTake 30 *(see page 121)*, pulls microorganisms in air through the holes (jets) where they are collected on the agar surface. Testing demonstrates that BioStage provides performance equivalent to the industry-standard Andersen N-6. What sets BioStage apart from other samplers is its SureLock positive seal (instead of bulky spring clamps) that ensures sample integrity.

SureLock seal for sample integrity — only from SKC!

	BioStage
Jet Classification Stage	400 holes (0.25-mm diameter)
Sample Rate	28.3 L/min
Median Cut-point (D_{50})	0.6 µm
Sample Media	90 to 100-mm agar plates
Analysis	Colony culture†
Tubing	1/4-inch ID

Description	Cat. No.
BioStage* single-stage cascade impactor; *available in pump kit, see p. 121*	**225-9611**
Accessories	
Calibration Adapter for BioStage, allows tubing to connect to BioStage inlet	**P33100**
Mounting Bracket for QuickTake 30, holds BioStage in place on pump during sampling	**228-9531**

* *Requires microbiological media supplied by analytical laboratories; for a lab list, go to www.skcinc.com and search on "laboratories"*

ABOUT

MRSA

Methicillin-resistant *Staphylococcus aureus* (MRSA) infections occur typically in hospitals, elder and child care facilities, gyms, schools, and jails. A 2008 IAQA presentation** recommends a viable cascade impactor (such as the SKC BioStage) with ChromAgar for sample times of 2 to 5 minutes for sampling MRSA in air and sterile swabs *(see page 124)* for sampling MRSA on surfaces where the superbug can live for weeks to months.

Single-stage impactor with spring clamps

Single-stage BioStage with SureLock seal

webinar
www.skcinc.com

VIDEO
www.skcinc.com

References

† *Macher, J., "Positive-hole Correction of Multiple-jet Impactors for Collecting Viable Microorganisms," AIHA Journal, 50 (11), 1989, pp. 561-568*

‡ *Samimi, B. and Shufutinsky, A., "Comparison of the Thermo-Andersen N6, the Aerotech A6, the SKC BioStage, and the SKC Micro-media Viable Samplers in Collecting Airborne Fungal Spores," AIHce 2005, San Diego, CA, Final Program, p. 43*

** *Dobranic, J., "Superbugs in Our Communities - An Introduction for the IEQ Professional," EMSL, IAQA Conference, Tampa, FL, 2008*

BioStage Pump Kit

Complete Viable Mold and Bacteria Sampling Kit

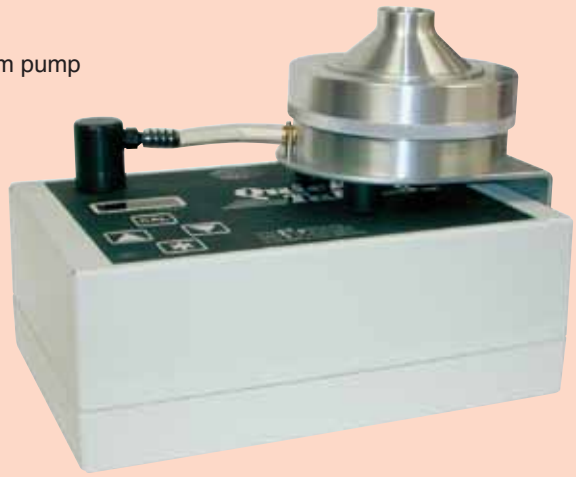
SKC combines the high-performance BioStage Viable Cascade Impactor with the power of the QuickTake 30 Sample Pump$^{\Delta}$ for a complete viable mold/bacteria sampling kit *(see PDB # 1512)*. With your BioStage Pump Kit and fresh agar plates from your laboratory, you are ready to sample!

What does the kit include?

- BioStage Viable Cascade Impactor *(see page 120)*
- QuickTake 30 Sample Pump, 10 to 30 L/min constant flow *(see pages 26-27)*
- AC charger/adapter
- Mounting bracket with inlet adapter designed to mount BioStage directly on the pump
- Calibration adapter
- Rotameter
- Tubing
- Deluxe carry case

Why use BioStage with the QuickTake 30 pump?

- Constant flows from 10 to 30 L/min
- Mounting bracket designed for BioStage to be mounted directly on the pump
- No noisy, hot, and AC-powered vacuum pump
  - *QuickTake 30 is low noise and battery powered*
- Powerful Li-Ion battery provides up to 4-hour run times at 28.3 L/min



QuickTake 30 Pump Applications

The QuickTake 30 Pump included in the BioStage Pump Kit can be used with many other samplers, including:

- **Spore trap cassettes**
- **Asbestos cassettes**
- **Filter cassettes**
- **Wall cavity samplers**
- **Microvacuum cassettes**
- **Any viable cascade impactor within the flow range**
- **Any sampler requiring constant flows from 10 to 30 L/min within stated back pressure**

Description		Cat. No.
BioStage Pump Kit-DC includes BioStage,* QuickTake 30 sample pump, AC charger/adapter, mounting bracket with inlet adapter, calibration adapter, rotameter, tubing, and deluxe carry case	**100-240 V**	**228-9530K**

Δ *QuickTake 30 pump is **not** CE marked.*

* *Requires microbiological media supplied by analytical laboratories; for a lab list, go to www.skcinc.com and search on "laboratories"*

BioSampler

Collects Bioaerosols into Liquid for Maximum Viability

- Ideal for airborne bacteria, fungi, pollen, viruses, endotoxins, mycotoxins, and other fragments
- Constructed of quality glass
- Collection method ensures high rate of microorganism viability
- Extends sample time to over 8 hours with ViaTrap liquid
- Overcomes sampling problems with impinger samplers
- Inlet limits collection of particles to those that would pass through the human nose

The patented* BioSampler® is a highly efficient glass collection device used with a high-volume sonic flow pump to trap airborne microorganisms for analysis. Externally, BioSampler resembles an All-Glass Impinger (AGI-30); internally, BioSampler is specially designed to reduce particle bounce and maintain maximum viability.

BioSampler Analysis Options

- **Growth Culture Analysis** quantifies/characterizes airborne bacteria and fungi.
- **Microscopic Analysis** enumerates total airborne bacteria and fungi (provides limited identification).
- **Biochemical Assay** quantifies biological compounds based on reaction to a chemical.
- **Immunoassay** quantifies airborne allergens based on antibodies binding to a specific target antigen.
- **Polymerase Chain Reaction (PCR)** identifies bioaerosols by screening for a specific genus or species. *May require use of sterile water as collection liquid; check with laboratory.*

For a list of microbiological laboratories, visit www.skcinc.com and search on "laboratories."

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the BioSampler Advantage!

- ☑ Three tangential nozzles eject particles at an angle to the inner wall, reducing particle bounce and preserving microorganism integrity
- ☑ Patented swirling liquid collection method† minimizes re-aerosolization and gently entrains bioaerosols to preserve viability
- ☑ For highest efficiency, use with non-evaporating collection liquids that have a higher viscosity than water, such as ViaTrap® mineral oil.‡
- ☑ When used with ViaTrap, collection efficiency stays constant over an 8-hour sampling period.
- ☑ Complete glass construction allows easy cleaning, sterilizing, autoclaving, and reuse.
- ☑ Samples are suitable for five different analyses. *See above left.*

Sample Time:	*Up to 8 hours*
Sample Rate:	*Sonic flow through BioSampler nozzles (12.5 L/min)*
Sample Pump:	*Vac-U-Go/BioLite*
Sample Media:	*ViaTrap‡*
Tubing:	*1/4-inch ID and 3/8-inch ID*

Description			Cat. No.
BioSampler, three-piece glass including inlet section, outlet section, and collection vessel *(does not include ground joint cap)* *Inlet and outlet sections are a matched set.*	pk/4	20 ml 20 ml 5 ml	225-9595 225-9595K4 225-9593
BioSampler Collection Vessel (bottom) and ground joint cap, for transporting samples		20 ml 5 ml	225-9596 225-9596A
BioSampler Mini Kit includes 1 BioSampler, two 20-ml collection vessels (bottoms) with caps, 1 BioSampler case with mounting rod, and 1 ViaTrap‡ (120 ml)			225-9597
ViaTrap Collection Media,‡ special mineral oil for bioaerosol sampling		120 ml 500 ml 950 ml	225-9598A 225-9598 225-9599
Glass Trap, for area sampling to protect pump, can be used with or without sorbent, *see p. 67 for sorbent Cat. No. 225-22-02*			225-22

* *U.S. Patent No. 5,902,385 (device)* † *U.S. Patent No. 5,904,752 (method)* ‡ *May not be suitable for PCR analysis*

Complete BioSampler System

Ideal for Sampling Bacteria, Fungi, and Viruses

- **Includes all equipment and media for bioaerosol sampling**
- **Portable sonic flow pump**
  - Maintains ≥ 15 inches mercury downstream pressure
  - No additional critical orifice needed when used with BioSampler
  - Includes protective housing with handle, vacuum gauge, and valve
- **Mounting rod secures BioSampler**

Sampling with the BioSampler

The BioSampler is operated with a sonic flow pump, such as the Vac-U-Go Sampler or BioLite, that can maintain ≥ 15 inches mercury or 0.5 of an atmosphere of downstream pressure in the system. The BioSampler's three nozzles act as critical (sonic) orifices, each permitting 4.2 L/min of ambient air to pass through for a total flow rate of approximately 12.5 L/min.

Vac-U-Go BioSampler System

Description	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
Complete BioSampler System, 115 V, includes 1 BioSampler, two 20-ml collection vessels with caps, 1 case with mounting rod, 1 ViaTrap* (120 ml), 1 Vac-U-Go pump, tubing, adapters and rotameter	225-9594	
Complete BioSampler System, 230 V, includes 1 BioSampler with 20-ml collection vessel, no cap, and 1 additional 20-ml collection vessel with cap, 1 mounting bracket, 1 BioLite Pump (CE marked, includes UK and Euro plugs), tubing, adapter, and rotameter		228-9610KB

** May not be suitable for PCR analysis*

For a list of microbiological laboratories, visit www.skcinc.com/catalog/infopage.php?id=6000.

ABOUT

BioSampler Applications

Sample with the BioSampler to locate sources of biological contamination, identify/measure microorganism levels, evaluate effectiveness of control measures, or monitor bioaerosol releases. BioSampler is ideal for use in:

- Indoor air quality investigations
- Hospitals and veterinary clinics
- Agricultural dust studies
- Research
- Public buildings investigations
- Food handling industry
- Pulp and paper mills and wastewater treatment plants

Choose Your Pump

Vac-U-Go Pump 115 V

BioLite Pump 230 V, CE

More Information
www.skcinc.com

Sterile Surface Swab Kit

For Biological Sampling

The Sterile Surface Swab Kit is ideal for determining the relative degree and type of biological contamination in an area. This non-destructive method can be used safely on most surfaces and is ideal for irregular surfaces such as air return grills. The rayon tip is inert, non-toxic, and permits good sample retrieval and adsorption. Each kit includes 10 sterile swabs in transport tubes and 10 templates (5 x 10 cm).

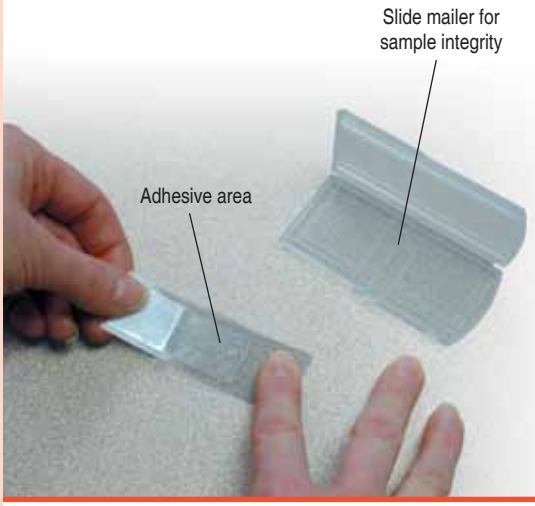
Sterile Surface Swab Kit*
Cat. No.....225-2402

Sterile Surface Swabs only,* pk/50
Cat. No.....225-2400

* *Limited shelf-life*

Stick-to-it Lift Tape

Surface Sampling of Biological Contaminants



- Easy to use, inexpensive slides
- Consistent sample area for better data interpretation
- Flexible plastic for sampling irregular surfaces
- Individually serialized for sample identification

Stick-to-it flexible plastic microscope slides feature an adhesive area for easy sampling. Identify the sample area, press slide adhesive to the surface, place slide in provided mailer, and send it to a laboratory for analysis.

Description	Cat. No.
Stick-to-it, pk/10	**225-9808**
Stick-to-it, pk/50	**225-9809**

Carpet Sampling Cassettes

Collection of Fungal Spores in Carpeting

- Nozzle for easy sampling of irregular surfaces/carpeting
- Collect fungal spores in settled dust using a high flow pump

Designed for the collection of fungal spores from carpets and other dusty areas, the Carpet Sampling Cassette contains a 0.4-µm pore size polycarbonate filter preloaded into a 37-mm cassette with an attached microvacuum nozzle. A high flow pump, such as the QuickTake 30 *(see pages 26-27)*, is used for sample collection at a recommended flow rate of 10 L/min. Samples are sent to a laboratory for analysis of fungal spores.

Sample Time:	*Varies*
Sample Rate:	*10 L/min (recommended)*
Sample Pumps:	*High-volume vacuum or QuickTake 30*
Tubing:	*1/4-inch ID and 3/8-inch ID*

Description	Cat. No.	Qty.
Microvacuum Carpet Sampling Cassette, 37-mm, 0.4-µm polycarbonate filter in banded styrene cassette with microvacuum nozzle	**225-9542**	**ea**
Carpet Sampling Cassette Kit includes 10 microvacuum carpet cassettes Cat. No. 225-9542, 10 x 10-cm disposable templates, Luer adapters, zip bags, and labels	**225-9540**	**ea**
Templates		
Disposable manila paper, 10 x 10 cm	**225-2415** **225-2415A**	**250** **10**

For Microvacuum Cassettes for asbestos, see page 142.

VersaTrap Spore Trap Cassette

Traps Smaller Mold Spores Using Higher Flows

- **High collection efficiency from 5 to 30 L/min**
  - Captures *Aspergillus* and *Penicillium* mold spores as small as 1.5 µm at 30 L/min *(see table below)*
- **A standard collection method for mold spore count and genus identification**
- **Easy analysis — ASTM Method D7391-09**
  - Positioning notches and flat edges provide for easy alignment on microscope stage
  - Uniform, well-defined rectangular deposition
- **Optimized slide adhesive**
  - Optically clear and tested for superior adhesion
- **SureSeal certified leak-free cassettes for sample integrity**
- **Unique serial number on each cassette for sample traceability**

VersaTrap Spore Trap Cassettes provide the sampling versatility you need to capture mold spores and other particles ranging from 1.5 to 3.9 µm. Sampling is as easy as selecting the flow rate that will target the desired particle size *(see table)*, calibrating a pump to the flow rate, and collecting the sample.

High Flows + Low Cut-points + No Particle Bounce =

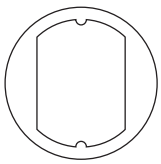
High Collection Efficiency

Flow Rate (L/min)	VersaTrap 50% Cut-point (µm)
30	1.5
25	1.7
20	1.9
15	2.3
10	2.8
5	3.9

VersaTrap Design

The narrow slit inlet focuses particles toward the clear glass slide that is coated with a fully optimized sticky substrate. Targeted size particles are effectively held in a well-defined rectangular footprint. Each slide is encased in a SureSeal certified leak-free cassette to ensure sample integrity.

VersaTrap Makes Analysis Easy



- Slides easily removed from the cassette
- Positioning notches and flat edges for fast, easy alignment
- Well-defined rectangular footprint for accurate analysis using standard equipment
- Unique serial numbers for sample traceability

Description	Cat. No.	Qty.
VersaTrap Spore Trap Cassettes, 37 mm, *limited shelf-life*	225-9820	10
	225-9821	50
VersaTrap Wall Adapters, for sampling in wall cavities	225-9822	5

More Information

See www.astm.org for spore trap analysis method ASTM D 7391-09. Visit www.astm.org/COMMIT/SUBCOMMIT/D2208.htm for additional guidance on bioaerosol sampling.

QuickTake 30 Pump Ideal for Spore Traps

see pages 26-27

Portable Instruments

Proven Performers from Technology Leaders

SKC is proud to offer innovative OEHS instruments from leading manufacturers such as Environmental Devices Corporation (EDC).

Portable Instruments for:

IAQ webinar www.skcinc.com

EDC

SPLIT2 Real-time Dust Monitor

Direct Read-out with Filter Option Using Any 2 L/min Pump

- **Economical, flexible, and direct reading**
- **Highly accurate**
  - ± 10% to NIOSH Method 0600 using SAE fine test dust
- **Reliable light-scattering technology**
- **Provides concurrent gravimetric sampling for different dust fractions when used with any 2 L/min sample pump**
  - Respirable dust with GS-3 Cyclone
  - Inhalable dust with IOM Sampler
  - Use gravimetric results to program monitor to correct for local dust characteristics
- **Compact and lightweight**
- **Programmable with easy-to-use 4-button keypad**
- **Easy-to-use software for flexible data management**
- **Alarms at hazardous concentrations**
- **DustComm Pro Software for downloading, basic trend analysis, and comprehensive graphical reporting**

Attach to a pump and actively monitor dust levels while collecting a gravimetric sample. SKC recommends using the AirChek 52 pump. See pages 18-19.

Performance Profile

Sensing Range: 0.01 to 200 mg/m³

Particle Size Range: 0.1 to 100 µm

Data Storage: 21,500 data points

Data Display: Concentration in mg/m³ and TWA, MAX, MIN, and STEL

Run Time: ≥ 8 hours on rechargeable NiMH battery

Dimensions/Weight: 18 x 8 x 4.5 cm (7.1 x 3.1 x 1.8 in); 0.78 kg (1.7 lbs)

The flexible SPLIT2 Real-time Dust Monitor provides personal or area respirable or inhalable dust monitoring. SPLIT2 is a direct-reading passive dust monitor that can become an active monitor/sampler by combining it with a 2 L/min sample pump and GS-3 Cyclone or IOM sampling head for concurrent real-time dust monitoring and gravimetric dust sampling.

Description	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
SPLIT2 Passive Monitor with accessories includes monitor, lapel bracket, zeroing accessory, calibration standard, computer cable, DustComm Pro Software, NiMH battery pack, AC charger/adapter, and carry case **110-240 V**	**770-300**	
SPLIT2 Monitoring Kit with IOM *(pump not included)* includes all items in Cat. No. 770-300, IOM adapter, and IOM Sampler with cassette and transport clip Cat. No. 225-70A, *see p. 108 for filters for IOM Sampler* **110-240 V**	**770-300K1**	
SPLIT2 Monitoring Kit with Cyclone *(pump not included)* includes all items in Cat. No. 770-300, GS-3 Cyclone adapter, and GS-3 Cyclone Cat. No. 225-103, *see p. 110 for preloaded filters* **110-240 V**	**770-300K2**	
SPLIT2 Passive Monitoring Kit with "IOM-style" Sensor Head includes all items in Cat. No. 770-300 and one-piece IOM-style sensor head		**770-300A**

SPLIT2 Monitors and accessories are available separately. Contact SKC for more information.

EDC

EPAM-5000

Direct Readout Plus Filter Sample for EPA PM Criteria

- **Fast, easy setup**
- **Interchangeable impactors**
- **Highly sensitive and accurate**
  - Accuracy is ± 10% filter gravimetric SAE fine dust test
- **Internal 1 to 4 L/min sample pump***
- **Unique aerodynamic particle-sizing real-time sensor**
  - Optional EPA FRM-style 47-mm filter cassette for gravimetric reference
- **High correlation to EPA PM10 methods and TEOM**
  - Ideal for saturation sampling
- **Wireless data transmission option transmits data up to 5 miles**
- **Ideal for ambient, environmental, and IAQ investigations**
- **DustComm Pro data analysis/reporting software included**
- **Wireless network software option available for Windows and Apple**

Performance Profile

Sensing Range: 0.001 to 20 and/or 0.01 to 200 mg/m³

Particle Size Range: 0.1 to 100 µm

Data Storage: 21,600 data points

Data Display: Concentration in mg/m³ and TWA, MAX, MIN, STEL, date, and time

Run Time: ≥ 24 hours on rechargeable battery; continuous on AC

Dimensions/Weight: 35.6 x 15.2 x 25.4 cm (14 x 6 x 10 in); 4.5 kg (10 lbs)

Description		Cat. No.
EPAM-5000 Monitor Kit with impactor (measures TSP without impactor), 110-240 V charger, DustComm Pro Software, computer cable, and manual, in a carry case C!	PM10 PM2.5 PM1.0	**770-203** **770-202** **770-201**
Accessories		
Calibration Standard		**770-207**
Filter Holder, 47 mm, for gravimetric sampling, *requires filter sold separately*		**770-215**
Impactors, interchangeable	10 µm 2.5 µm 1.0 µm	**770-206** **770-205** **770-204**
Filters for Gravimetric Analysis		
PTFE,† with PTFE support, 47 mm, 2.0-µm pore size, pk/50		**225-2748**
Quartz (Tissuquartz), 47-mm diameter, 432 µm thick, pk/25		**225-1823**

C! *Requires calibration with equipment sold separately; see accessories*

* *Pump has a variable flow rate designed for use at 4 L/min to achieve proper size selection.*

† *Back pressure on PTFE filters can vary within the same lot.*

For a lighter weight model with air station capabilities, see the EPAM-7500 on page 129.

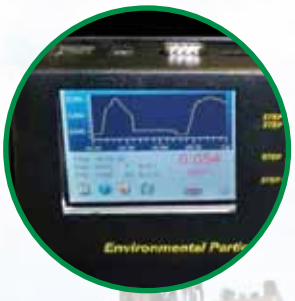
Contact SKC for EPAM-5000 optional equipment and accessories including solar panels.

EDC

EPAM-7500

Portable Direct-reading PM Monitor and Air Station

- **Two sampling techniques for ambient and indoor particulate matter measurement**
  - Sensitive IR optical light scattering for real-time measurement and graphical representation of PM profile
  - 47-mm FRM-style filter holder for concurrent gravimetric sampling for cross-calibration and further PM speciation
- **Measures temperature and relative humidity**
- **Optional accessories include:**
  - Wireless modem
  - Solar panel
  - External audible alarm
  - Remote sampling probe
  - Heating element for high-humidity areas
  - Ultrasonic wind speed and direction measurement
    - Wind speed, wind direction, barometric pressure, heat index, and GPS in one lightweight sensor; no moving parts
- **Interchangeable single-jet impactors for PM10, PM2.5, PM1.0, or respirable**
  - Sampling inlets for PM10, PM2.5, and TSP included with instrument
- **Programmable**
- **Measurements displayed simultaneously on graphical color touch screen**
- **Internal 90-dB pulse alarm — user-selectable threshold**
- **Long-life Li-Ion battery**
- **Datalogging**
  - Digital outputs include serial (RS-232), removable CF card, USB Type A and B, and ethernet port
  - DustComm Pro PC analysis/reporting software included



Color touch screen

Interchangeable impactor

Performance Profile

Sensing Range: 0.001 to 400 mg/m^3

Particle Size Range: 0.1 to 100 µm

Data Storage: 50,000 data points

Data Display: Concentration in mg/m^3 and TWA, MAX, MIN, STEL, date, time, temperature, and relative humidity

Run Time: ≥ 24 hours on rechargeable Li-Ion battery, continuous on AC or solar

Dimensions/Weight: 10.2 x 25.4 x 22.9 cm (4 x 10 x 9 in); 3.2 kg (7 lbs)

EPAM-7500 Applications

- *Particulate indoor air quality investigations*
- *Evaluation of dust suppression/engineering controls*
- *Walk-through IAQ surveys*
- *Dust generation monitoring*
- *Quantifications of particle migration*
- *Hot spot location and identification*
- *Hazardous waste site and fenceline monitoring*
- *Urban roadside air quality studies*

Ordering Information

The HAZ-SCANNER EPAM-7500 is a configurable item. **Contact SKC to custom order the EPAM-7500.**

EDC

HAZ-DUST I Real-time Particulate Monitor

Portable PM Survey Tool

- **Easy operation and instantaneous readings in mg/m³**
- **Highly sensitive — measures down to 0.01 mg/m³**
  - Monitors OSHA/NIOSH reference methods
- **Selectable dual measuring range feature**
  - Particulate concentration measurements between 0.01 and 20 mg/m³ and from 0.1 to 200 mg/m³
- **Easy-to-read digital display**
- **Low battery indicator**
- **Lightweight, rugged, and portable**
  - Optional tripod mounting
- **Optional datalogger with display and user-selectable alarm threshold**
- **Includes DustComm Pro Software for downloading, time vs. concentration profiling, and comprehensive graphical reporting**

The HAZ-DUST I is designed as a screening tool for IH, IAQ, and fenceline/perimeter monitoring of construction and other projects. HAZ-DUST I is factory calibrated for respirable particulate mass (50% cut-point of 4 µm) at ± 10% with SAE fine dust test. An alternative 10-µm cut-point calibration is available as a special order.

Performance Profile

Sensing Range: 0.01 to 200 mg/m³

Particle Size Range: 0.1 to 50 µm

Data Storage (with datalogger accessory): 21,500 data points

Data Display: Concentration in mg/m³

Run Time: > 8 hours on rechargeable NiMH battery

Dimensions/Weight: 23 x 7.6 x 3.8 cm (9 x 3 x 1.5 in); 0.6 kg (1.25 lbs)

Description		Cat. No.
HAZ-DUST I Monitor includes battery, charger, and carry case C!	110-240 V	770-1100
Accessories		
Datalogger, provides data storage, on-screen display of statistics, and user-selectable alarm threshold; includes analog signal cable, computer interface cable, and DustComm Pro Software, *printer required for hard copy reports*		770-113
Tripod Stand, adjustable stand and mounting plate for unattended monitoring		770-129
Calibration Standard, light-scattering device provides a constant value for verifying calibration		770-102
Zeroing Accessory, for pumping filtered air into the sensor for a zero reading in contaminated environments		770-130
Replacement Battery Pack, NiMH		770-108

C! *Requires calibration with equipment sold separately; see Accessories*

For a particulate monitor with an internal constant flow pump, see the HAZ-DUST IV on page 131.

EDC

HAZ-DUST IV Particulate Monitor

Personal Direct-reading Monitor with Concurrent Filter Sample

- **Immediate display of particle concentration in mg/m³**
- **Interchangeable sampling heads match OSHA-defined size-selective regions of the lungs**
  - Inhalable adapts to IOM Sampler
  - Thoracic impactor (included)
  - Respirable adapts to GS-3 Cyclone
- **Highly accurate**
  - ± 10% to filter gravimetric SAE fine test dust
  - NIST-traceable calibration
- **Operate without impactor for total dust measurement by NIOSH Method 0500**
- **Internal adjustable sample pump — 1 to 3.3 L/min**
- **In-line cassette directly behind sensor for concurrent filter sampling**
  - Use sample to correct data for local dust
- **Audible alarm with adjustable threshold**
- **Small and lightweight with miniature sensor**
- **DustComm Pro Software for downloading, basic trend analysis, and comprehensive graphical reporting**

Performance Profile

Sensing Range: 0.01 to 200 mg/m³

Particle Size Range: 0.1 to 100 µm

Data Storage: 21,500 data points

Data Display: Concentration in mg/m³ and TWA, MAX, MIN, STEL, date, and time

Run Time: > 8 hours on rechargeable NiMH battery

Dimensions/Weight: 14 x 8.3 x 7 cm (5.5 x 3.25 x 2.75 in); 0.68 kg (1.5 lbs)

Description	Cat. No.
HAZ-DUST IV Monitor includes monitor, thoracic impactor, in-line filter cassette, carry case, computer cable, battery charger, HAZ-DUST Media CD with instruction manual, and DustComm Pro Software C-H **110-240 V**	**770-4004**
HAZ-DUST IV Monitor Kit includes all items listed above plus GS Cyclone and adapter, IOM and adapter, calibration jar, and standard **110-240 V**	**770-4004K**
Size-selective Sampling Heads	
Inhalable Sampling Head and Adapter, IOM Sampler, mounts on HAZ-DUST IV sensor	**770-115A**
Thoracic Sampling Head, mounts on inlet or HAZ-DUST IV sensor	**770-4107**
Respirable Sampling Head, GS-3 Cyclone, mounts on HAZ-DUST IV sensor	**225-103**
Adapter for Respirable Cyclone, *required when using GS-3 Cyclone*	**770-313**
Recommended Filters	
Quartz Filter, 37 mm, for gravimetric analysis and elemental chemical analysis of carbon-based compounds, pk/25	**225-1822**
PVC Filter, 37 mm, for economical general gravimetric analysis only, pk/100	**225-5-37**
Accessories	
Calibration Standard for Monitor, for verifying span and optical sensor performance	**770-140**
Calibration Jar, for calibrating and setting pump flow when using respirable impactor	**225-112**
Zeroing Accessory, for clean-air zeroing of sensor when using inhalable impactor	**770-4202A**
Zeroing Filter, for use with respirable and thoracic impactors	**770-4102**

C-H *Requires calibration with equipment sold separately; see accessories*

EDC

AIR-AIDE Airborne Particulate Indoor Air Monitor

Portable Direct-reading Tool with Wireless Data Transmission

- High resolution and temperature stability
- Long-life air sample pump maintains accurate flow for particle separation
- Interchangeable size-selective impactors — choose PM10, PM2.5, PM1.0, or ISO respirable (4.0 µm)
- Built-in calibration factors for fine and coarse particulate matter
- NIST-traceable calibration
- Large data storage capacity
  - Run continuously up to 15 months without downloading
- On-screen programming of sampling and data storage parameters
- PC-based software included for downloading and graphing stored data
- User-defined audible alarm
- Location codes for tagging data
- Optional wireless data transmission to PC
- Includes DustComm Pro Software for graphical and statistical reporting

CE ETL

Performance Profile

Sensing Range: 0.001 to 20 mg/m³ (0.01 to 200 mg/m³- optional)

Particle Size Range: 0.1 to 100 µm

Data Storage: 21,600 data points

Data Display: Concentration in mg/m³ and TWA, MAX, MIN, STEL, date, and time

Run Time: ≥ 10 hours on rechargeable NiMH battery; continuous on AC

Dimensions/Weight: 7.6 x 15.2 x 23 cm (3 x 6 x 9 in); 2.3 kg (5 lbs)

Description		Cat. No.
AIR-AIDE Monitor Kit includes monitor (0.001 to 20 mg/m³), NiMH battery, charger/adapter (100-240 V), rotameter, impactor sleeve for TSP, DustComm Pro Software, cable, and instruction manual		770-600
Accessories		
Impactor Grease		770-211
Size-selective Impactors	PM10	770-606
	PM2.5	770-605
	PM1.0	770-604
	Respirable	770-603

Wireless data transfer radio modems and other accessories are available. Contact SKC.

HAZ-SCANNER IEMS

Indoor Environmental Monitoring Station

- **Direct reading**
- **Measures and displays data for up to 14 critical indoor air quality parameters**
  - **Standard IEMS configuration** measures 5 parameters including PM10 or TSP particulates, CO_2, CO, temperature, and relative humidity
  - **Add up to 9 optional interchangeable sensors and/or IEMS-specific meters**
    Choose from additional toxic gas sensors, PID for VOCs, or IEMS-specific meters for light intensity, sound/noise, atomic/nuclear radiation, ELF radiation, and air velocity
  - Available analog input port for alternative meter
- **Interchangeable size-selective impactors available for PM1.0, PM2.5, or PM4.0 (close approximation of respirable)**
- **In-line standard 37-mm or optional 25-mm gravimetric filter cassette provides concurrent filter sampling for chemical and biological analyses**
- **2 L/min internal sample pump**
- **Optional alarm indicator light and siren for user-defined threshold limits**
- **Removable handheld sensors for spot-checking remote areas**
- **Datalogging**
  - Real-time wireless data transmission and wireless network software options available
- **Easy-to-use graph and reporting software — compatible with PC and Mac**

Performance Profile

Sensing Range: 0.01 to 200 mg/m³ or 1 to 20,000 µg³

Particle Size Range: 0.1 to 100 µm

Data Storage: 36,000 data points

Data Display: MAX, MIN, TWA, STEL

Run Time: 8 hours on NiMH battery; continuous on AC

Dimensions/Weight: 17.8 x 10 x 28 cm (7 x 4 x 11 in); 2.7 kg (6 lbs)

HAZ-SCANNER IEMS Applications

- *Snapshot air profiles at schools*
- *LEED Green Building certifications*
- *Job task analysis*
- *Complement to regulatory compliance*
- *IEQ assessment*

For more information, go to www.skcinc.com and search "770-800."

Description	Cat. No.
HAZ-SCANNER IEMS includes NiMH battery and charger, HazComm Pro Software, cables, CD with instructions, and carry case	770-800

HAZ-SCANNER EPAS

Environmental Perimeter Air Station

- **Measures/documents trace-level (ppb) gas, particulates, and meteorological parameters in real time to U.S. and EU directives**
  - Configure up to 14 sensors with true simultaneous PM2.5 and PM10 readings
- **Two options to customize your perimeter air station**
  - **Basic Kit** measures 3 parameters; add up to 11 additional sensors/meters
  - **Build Your Own System Kit:** Add up to 14 additional sensors/meters
  - **Use the checklist on page 135** to configure your EPAS before contacting SKC
  - Ask an SKC representative about wireless, network, and power options
- **Can be configured to monitor PM10 and PM2.5 simultaneously!**
- **Wireless networking and datalogging capabilities**
  - Network up to 8 EPAS units to one central PC or Mac; wireless network software option available
- **Easily portable and deployable**
- **Battery, AC, or solar operation**
- **Easy-to-use graph and reporting software compatible with PC and Mac**
  - Export .csv file
  - User-adjustable alarm thresholds
  - Serial output
  - Cell phone alerts

The portable HAZ-SCANNER EPAS environmental perimeter air station is easily deployed as an ambient air quality monitor to scan, measure, and document critical EPA criteria pollutants including nitrogen dioxide, carbon monoxide, sulfur dioxide, ozone, carbon dioxide, particulates, VOCs, and more. The EPAS provides direct readings in real time with datalogging capabilities. The graph and reporting software is compatible with PC and Mac. ***Go to www.skcinc.com and search "EPAS".***

Measure up to 14 critical air parameters simultaneously with HAZ-SCANNER EPAS.

Ordering Information

The HAZ-SCANNER EPAS wireless environmental perimeter air station is a custom item. Build your own system to your specific applications with unique configurations and custom sensor calibrations. **Use the checklist on page 135 and contact SKC today.**

HAZ-SCANNER EPAS

Customize Your Perimeter Air Station

Create a HAZ-SCANNER EPAS to fit your applications. Use the convenient checklist below as a guide *before* contacting an SKC representative to build your EPAS today.

Start with:

❑ **EPAS Basic Kit**
- ✓ PM10 or TSP particulates
- ✓ Nitrogen dioxide
- ✓ Carbon monoxide
- ✓ Temperature
- ✓ Relative Humidity

Add up to 9 sensors/meters

or

❑ **EPAS Build Your Own System Kit**
Add up to 14 sensors/meters

Choose 1 additional particulate sensor for Basic Kit *(optional)*. Choose up to 2 for Build Your Own.

❑ PM1.0
❑ PM2.5
❑ PM10

Choose up to 6 interchangeable gas sensors (8 for Build Your Own).*

❑ Ammonia (GSS)
❑ Carbon dioxide (NDIR)
❑ Carbon monoxide (EC)
❑ Chlorine (EC)
❑ Ethylene oxide (EC)
❑ Hydrocarbon: methane-specific (NDIR)
❑ Hydrocarbons: non-methane (NDIR)
❑ Hydrogen chloride (EC)
❑ Hydrogen cyanide (EC)
❑ Hydrogen sulfide (EC)
❑ Nitric oxide (EC)
❑ Nitrogen dioxide (EC)
❑ Oxygen (EC)
❑ Ozone (metal oxide semiconductor)
❑ Phosphine (EC)
❑ Sulfur dioxide (EC)
❑ VOCs (PID)

Choose up to 4 EPAS-specific optional meters or meteorological sensors.*

❑ Temperature
❑ Rain gauge (tipping bucket)
❑ Solar radiance (photodiode)
❑ Barometric pressure (piezo resistive)*
❑ Wind speed/direction (3-cup anemometer/vane)
❑ Relative humidity (RH)
❑ Dew point temperature (software calculation)
❑ Sound/Noise (Type 2 SLM)
❑ Atomic/Nuclear radiation (Geiger counter)

* *Barometric pressure sensor applies to both the gas sensor count and the meter count.*

Contact your SKC representative today for a quote on your custom configured station!

For EPAS instrument, sensor, and meter specifications, visit www.skcinc.com and search "EPAS."

Formaldehyde Multimode Monitor

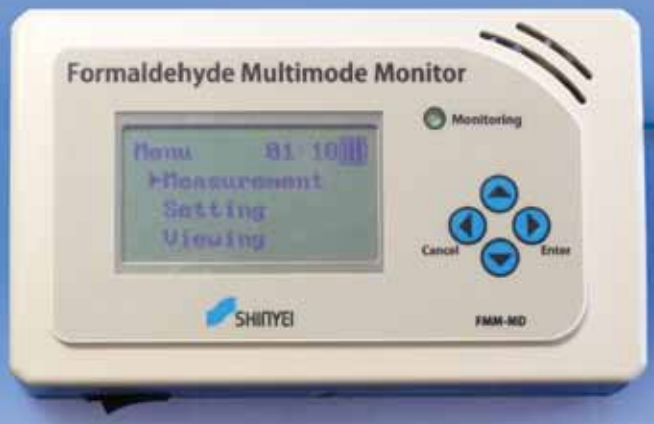
Passive, Short-term, and Continuous Formaldehyde Measurement

- **Highly accurate**
- **Detection range: 20 to 1000 ppb**
- **Accuracy is ± 10% at 40, 80, and 160 ppb**
- **Lightweight, portable base unit**
  - Uses photoelectric photometry to read absorbance change in sensor cartridge
  - Automatically re-zeros between readings
- **Reusable* colorimetric sensor cartridge**
- **Displays concentration in ppb or µg/m³**
- **One-week continuous operation from alkaline batteries**
  - AC adapter for extended measuring periods
- **Power save feature**
- **Datalogging – download data to PC using included USB cable and Data Filing Software**
  - Generate graphical reports
- **Multiple monitoring configurations**
  - Hang sensor for stand-alone passive
  - Short-term (30-minute) passive
  - Continuous passive (reads every 30 minutes)

ABOUT

Formaldehyde Multimode Monitor Technology

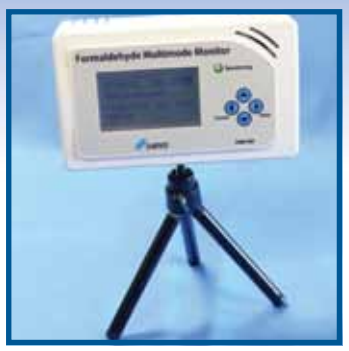
The reusable* sensor cartridge contains a porous glass insert treated with ß-diketone. Formaldehyde diffuses from an area of high concentration (the air) to an area of low concentration (the sensor cartridge). A chemical reaction occurs between the formaldehyde and the ß-diketone in the cartridge, resulting in a yellowing of the porous glass. This reaction is measured by a photoelectric photometer inside the base unit with accurate readings to < 20 ppb formaldehyde without significant cross-sensitivity from typical background compounds.



Base unit

Insert sensor cartridge

Hang sensor cartridges for passive measurement in multiple locations.



Mount base unit with sensor cartridge on included tripod for short-term (30-minute) or continuous measurements.

Description		Cat. No.
Formaldehyde Multimode Monitor includes base unit with 5 sensor cartridges,† USB cable, Data Filing Software, two AA-size alkaline batteries, AC adapter, tripod, zero filter, and carry case		780-001
Replacement Formaldehyde Sensor Cartridges†	pk/5	780-002
	pk/10	780-003

* *Number of reuses is based on the length of exposure time and formaldehyde concentration during each measurement period.*

† *Limited shelf-life*

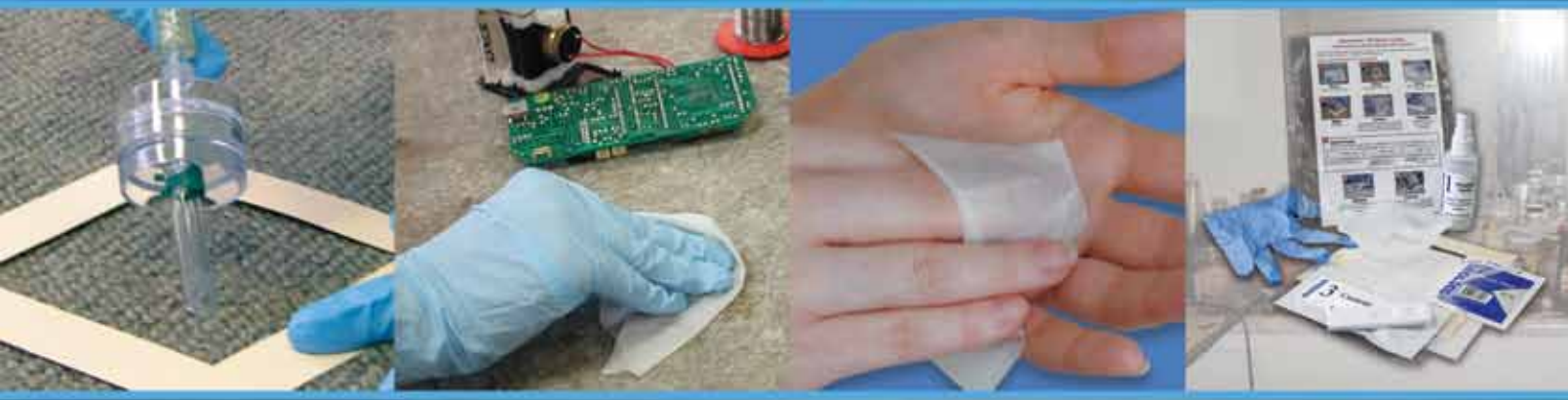
More Information

www.skcinc.com

Search "formaldehyde monitor"

SKC Surface/Dermal Sampling

A First Step in Hazard Identification



Sampling Kits for:

LeadCheck Sampling Swabs

Fast On-the-spot Lead Screening

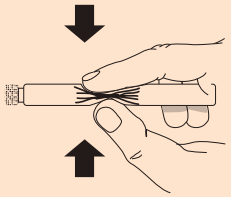
Tech Tips

CDC-NIOSH has released Effects of Skin Contact with Chemicals: What a Worker Should Know, a technical resource on dermal exposures. Visit www.cdc.gov/niosh/docs/2011-199/ to download the pdf.

Lead Testing in 3 Easy Steps

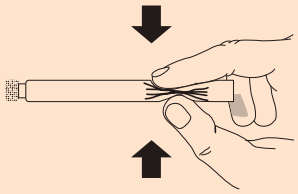
Step 1

Crush and shake



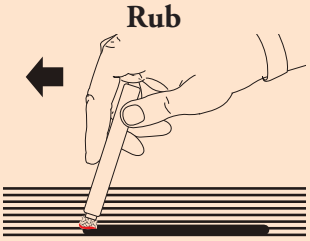
Step 2

Squeeze



Step 3

Rub



RED MEANS LEAD!

- **Fast and easy to use**
  - 3 easy steps
  - No instruments
  - Results in minutes
- **Convenient**
  - Use almost anywhere *(except skin)*
- **Inexpensive**
  - No instruments or analysis required
- **Easy to interpret**
  - Positive confirmation procedures in each kit
- **Sensitive lead kit**
  - Detects lead on 96.6% of surfaces tested
- **EPA-recognized instant lead detection test**

The LeadCheck Surface Sample Kit includes self-contained sampling swabs with all materials required for the rapid screening of lead on surfaces and in liquids. In April 2010, the EPA mandated testing for lead and use of lead-safe practices by contractors renovating, repairing, or painting structures built before 1978 (EPA RRP). The EPA has recognized the LeadCheck Kit as a tool to aid contractors in complying with the new mandate. LeadCheck swabs are easy to use: crush, shake, swab, and read the result. RED MEANS LEAD.

Simple, Inexpensive Test Kit Receives EPA Recognition

After rigorous testing, LeadCheck Swabs are now recognized by the EPA for use on drywall and plaster as well as on painted wood and metal. LeadCheck Kits provide a quick and simple way for certified renovators to test for lead and take steps toward compliance under the Renovation, Repair, and Painting Rule (RRP). Visit www.youtube.com and search for "LeadCheck" for instructional videos on using LeadCheck Swabs on drywall, plaster, painted wood, and metal surfaces.

Hazard	Sensitivity Solid Surface (µg)	Sensitivity Liquid (ppm)	Interferences	Cat. No.	Qty.
Lead (Pb)	< 1	2	No other metals react to give the same color response	225-2404 225-2404A	8 16

For safe lead detection on skin, see Full Disclosure on page 139.

FULL DISCLOSURE

Instant Detection of Lead on Skin and Surfaces

- **Completely safe surface and skin testing**
  - Reagents never touch the test surface
  - Testing skin allows direct evaluation of lead exposure
  - Suitable for testing both flat and irregular surfaces
- **Immediate color change — instant results**
  - Identifies lead contamination at ≥ 18 µg
  - Wipes can be sent to a lab for quantitative results
- **Easy to use**
- **Developed, tested, and patented* by CDC-NIOSH**
- **Meets NIOSH Method 9105 for Lead in Dust Wipes**

Full Disclosure® wipe sampling provides instant detection of lead on skin and surfaces. Unlike other lead sampling methods, Full Disclosure lead wipes are completely safe to use because no chemical touches the test site. Full Disclosure lead wipes are ideal for determining the effectiveness of lead removal, educating workers in industries where lead is an occupational hazard, spot-checking lead-contaminated work surfaces and break rooms, and helping to eliminate lead as a take-home toxic. Each Full Disclosure Kit contains everything needed to detect lead at or above 18 µg on skin and surfaces.

Description	Cat. No.
Full Disclosure Kit†# includes 11 pairs nitrile gloves, 10 wipes,‡ Disclosing SR powder, extraction solution, deionized water, 10 sheets of waxed paper, and instructions	550-001
Full Disclosure Kit# for Quantitative Analysis† includes all items in above kit, 10 sample collection bottles with labels, and 10 disposable templates	550-002

* *U.S. Patent No. 6,248,593*
† *Not designed for detecting lead in paint and paint chips, on painted surfaces, or embedded in material such as plastic; not suitable for lead chromate*
‡ *Wipes conform to ASTM E1792.*
\# *Limited shelf-life*

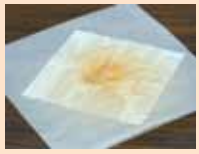
See Tech Note 1485 at www.skcinc.com for more information.

Three Easy Steps to Full Disclosure of Lead

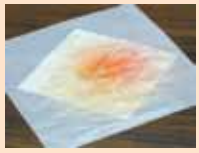
Step 1
Prepare the Solution

Step 2
Take the Sample

Step 3
Read the Results



Yellow to Orange = lead < 18 µg



Pink to Red = lead ≥ 18 µg

Data Interpretation

Lead on Surfaces

- Lead is considered a hazard at surface levels of:
  - ≥ *40 µg/ft² on floors*
  - ≥ *250 µg/ft² on interior window sills*

Source: TSCA Section 403 Residential Lead Standards (January 5, 2001 Federal Register)

Ghost Wipes

Sample Lead and Beryllium on Surfaces

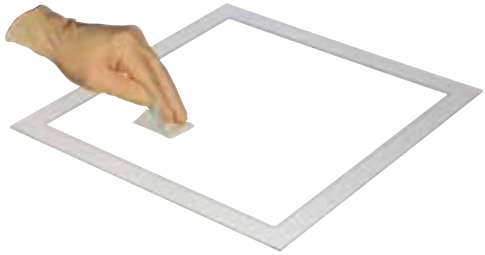
- **Robust for wiping even rough surfaces**
- **Readily and completely digested in hot water or acid solution**
- **Meet specifications for sampling lead and beryllium**
  - All ASTM E1792 specifications as required by U.S. EPA
  - AIHA policy on sampling materials for lead in surface dust
  - OSHA Method ID-125G, Addendum B
  - ASTM D7707 for beryllium
  - NIOSH 9102 Elements on Wipes, including nanomaterial

Robust Ghost Wipes hold together even when used on the roughest surfaces. In the lab, Ghost Wipes readily and completely dissolve during digestion for maximum recovery of target analyte(s). Ghost Wipes earn their name by dissolving so completely that there is no messy fibrous material to clog the sample uptake capillary or nebulizer. The Wipe Sample Test Kit below contains Ghost Wipes.

See below for ordering information and templates.

Wipe Sample Test Kit

Supplies for OSHA Wipe Tests



- **Contains materials to sample surface metals, pesticides, amines, radionuclides, corrosives, and dust**
- **Assists in evaluating hazard control effectiveness and cleaning regimens**
- **All you need for OSHA wipe sample methods (solvents not included)**

The Wipe Sample Test Kit provides the necessary supplies to sample surfaces for toxic materials that can gain entry into the body via ingestion or skin absorption. Each kit includes paper and glass fiber filters, sterile sample bags, latex gloves, cotton swabs, pH paper, cover slips, 25 Ghost Wipes for lead and other metals, 72 microslides, 20 sample containers, 3 dropper bottles, 25 paper templates (10 x 10 cm), marking pen, masking tape, clear tape, stainless steel forceps, and carry case. *Solvents are **not** included.*

Smear Tabs

Low-ash, acid-hardened paper Smear Tabs are designed for collecting samples on surfaces where dust and chemicals have settled. SKC Smear Tabs are specified in OSHA ID-145 for wipe sampling of particulate mercury, pk/100

Cat. No......**225-24**

Description	Cat. No.	Qty.
Ghost Wipes, moistened with deionized water, individually sealed packets, *require 10 x 10-cm (3.9 x 3.9-inch) template listed below*	**225-2414** **225-2413**	**200** **1000**
Wipe Sample Test Kit, *solvents are **not** included*	**225-2401A**	**ea**
Templates		
Disposable manila paper, 10 x 10 cm (3.9 x 3.9 inches)	**225-2415** **225-2415A**	**250** **10**
Disposable manila paper, 30.5 x 30.5 cm (1 x 1 foot)	**225-2416** **225-2416A**	**250** **10**

For metal in air determinations using NIOSH 7300, see page 89 for Solu-CAPs.

MethChek Immunoassay Wipe Kits

Sensitive Pre and Post-remediation Kits for ng-Level Detection

- Fast, reliable on-site results
- Indicates meth residue at ≥ 50 nanograms
  - Kits also available for indication at 100, 500, and 1500 nanograms
- Semiquantitative results
- Save money with multiple-test kits
- No shipping or lab fees
- Lightweight, portable
- Developed by CDC-NIOSH
- Safe for use on many surfaces, including animal fur

Make informed decisions in the field!

MethChek® Kits provide on-the-spot semiquantitative assessment of meth residue at the lowest state cleanup guideline of 50 ng/100 cm^2 (100, 500, and 1500-ng sensitivities also available). Simply wipe, extract, and read results. MethChek is an ideal post-assessment tool to determine the need for further cleaning before sending cleanup crews away.

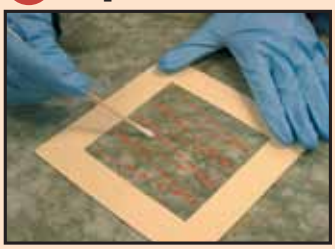
Description	Lower Limit of ID µg/100 cm^2	ng	Cat. No.	Tests
MethChek 50	0.05	50	560-004	12
			560-004A	1
			560-004B	3
MethChek 100	0.1	100	560-003	12
			560-003A	1
			560-003B	3
MethChek 500	0.5	500	560-002	12
			560-002A	1
			560-002B	3
MethChek 1500	1.5	1500	560-005	12
			560-005B	3

All-in-one MethChek Kits

MethChek Kits contain the following:

- Gauze pads or swabs
- Trays
- Templates
- Gloves
- Syringes (except MethChek 50)
- Pipettes
- Reagents
- Detection cartridges
- Bags
- Instructions and SDS

1 Wipe



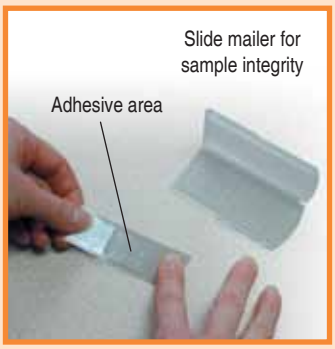
2 Extract

3 Read Results

Positive result with MethChek Kit

For MethChek instructional video, visit www.skcinc.com and click Technical Library, Presentations.

Sample Pumps
see pages 26-29



Stick-to-it Lift Tape

- Easy-to-use, inexpensive slides
- Consistent sample area for better data interpretation
- Flexible plastic for sampling irregular surfaces
- Individually serialized for sample identification

Stick-to-it flexible plastic microscope slides feature an adhesive area for easy sampling. Identify the sample area, press slide adhesive to the surface, place slide in provided mailer, and send to a laboratory for analysis.

Cat. No. 225-9808.....pk/10
Cat. No. 225-9809.....pk/50

Microvacuum Cassettes for Surface Sampling

Efficient Collection of Asbestos or Fungal Spores

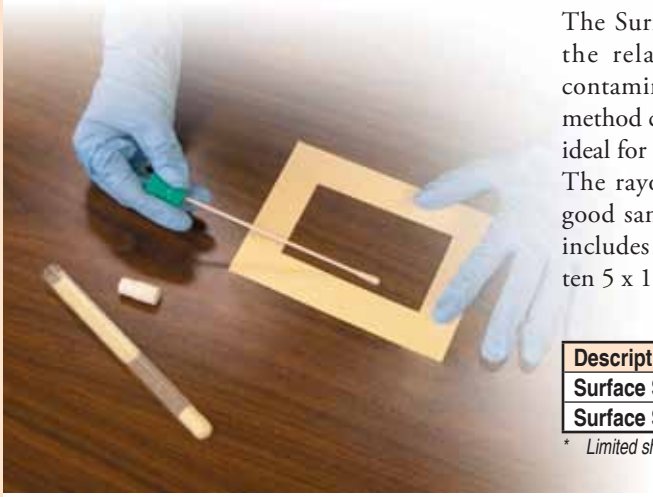
- Nozzle for easy sampling on irregular surfaces/carpeting
- Collect contaminants in settled dust using a high flow pump

Collect fungal spores or asbestos from carpets and other dusty areas using SKC Microvacuum Cassettes. SKC Microvacuum Cassettes are available with an MCE or polycarbonate filter and feature a microvacuum nozzle for sampling settled dust on surfaces as specified in ASTM Methods D5755 and D5756.

Microvacuum Cassettes for Asbestos or Fungal Spores				
Dia. (mm)	**Filter Specifications**	**Cassette Description**	**Cat. No.**	**Qty.**
25	0.45 µm MCE, BestChek, for TEM analysis	Carbon-filled polypropylene with cowl and nozzle	225-322	ea
37	0.45 µm MCE, for TEM analysis	Styrene (non-conductive) with nozzle	225-9543	ea
37	0.4 µm polycarbonate	Styrene (non-conductive) with nozzle	225-9542	ea
Templates	**Disposable manila paper,** 10 x 10 cm (3.9 x 3.9 inches)		225-2415	250
			225-2415A	10
	Disposable manila paper, 30.5 x 30.5 cm (1 x 1 foot)		225-2416	250
			225-2416A	10
Carpet Sampling Kit for Asbestos and Fungal Spores includes 10 microvacuum carpet cassettes Cat. No. 225-9542, 10 x 10-cm (3.9 x 3.9-inch) disposable templates, Luer adapters, zip bags, and labels			225-9540	ea

Sterile Surface Swab Kit

For Biological Sampling



The Surface Swab Kit is ideal for determining the relative degree and type of biological contamination in an area. This non-destructive method can be used safely on most surfaces and is ideal for irregular surfaces such as air return grills. The rayon tip is inert, non-toxic, and permits good sample retrieval and adsorption. Each kit includes 10 sterile swabs in transport tubes and ten 5 x 10-cm (1.97 x 3.94-inch) templates.

Description	Cat. No.	Qty.
Surface Swab Kit*	225-2402	ea
Surface Swabs Only*	225-2400	50

* *Limited shelf-life*

SKC Active Air Sampling Guide

The Essential Reference – In Print, Online, and Mobile

Welcome to the SKC Active Air Sampling Guide! Sampling information based on OSHA/NIOSH/ASTM/EPA/HSE methods for over 2500 compounds is now at your fingertips.

- **Easy to use**
  - Locate the chemical hazard of interest in the alphabetic listing to view:
    - Agency reference method
    - Method sampling parameters (agency standard, volume, flow rate, and time)
    - Analytical method
    - Collecting equipment listing and page reference
    - Reference number for online access to method summaries
- **Environmental methods are displayed in blue**
- **For Passive Samplers, see pages 68-86**
- **Available anywhere you are**
  - **Print:** See pages 144-211 in this catalog
  - **Online:** Access searchable guides at www.skcinc.com

Introduction

This guide includes most hazardous substances, including their current Workplace Exposure Limits at the time of printing (where applicable). For the most up-to-date version of this guide, please visit our website at www.skcltd.com. For a full list of Workplace Exposure Limits, please consult EH40, available from HSE books or www.hse.gov.uk. This guide should not be used as an alternative to obtaining a copy of EH40 and reading the full supplementary data it contains.

The following statements are taken directly from EH40 Workplace Exposure Limits.

Workplace Exposure Limits (WELs)

WELs are British occupational exposure limits and are set in order to help protect the health of workers. WELs are concentrations of hazardous substances in the air, averaged over a specified period of time, referred to as a time-weighted average (TWA). Two time periods are used: long-term (**8 hours**) and short-term (**15 minutes**).

Short-term exposure limits (STELs) are set to help prevent effects such as eye irritation, which may occur following exposure for a few minutes.

WELs and the Control of Substances Hazardous to Health Regulations 2002 (COSHH)

Substances that have been assigned a WEL are subject to the requirements of COSHH. These regulations require employers to prevent or control exposure to hazardous substances. For further information, go to www.hse.gov.uk/coshh. Under COSHH, control is defined as adequate only if a) the principles of good control practice are applied, b) any WEL is not exceeded, and c) exposure to asthmagens, carcinogens, and mutagens are reduced as low as is reasonably practicable.

The absence of a substance from the list of WELs does not indicate that it is safe. For these substances, exposure should be controlled to a level to which nearly all the working population could be exposed, day after day at work, without any adverse effects on health.

As part of the assessment required under regulation 6 of COSHH, employers should determine their own working practices and in-house standards for control of exposure. In some cases, there may be sufficient information available for employers to set an 'in-house' working standard, e.g., from manufacturers and suppliers of the substances, publications of industry associations, occupational medicine and hygiene journals, and other agencies such as NIOSH and OSHA.

		SAMPLING									
		WEL		Vol. (liter)		Rate (ml/min)		Time			
Chemical Hazard	Agency Reference	TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)	Analytical Method	SKC Collecting Equipment and Page No.
Acetaldehyde	MDHS 102	20 ppm (37 mg/m³)	50 ppm (92 mg/m³)			1000		8	15	HPLC	CF/CST 225-9003 or 40 ST 226-120
Acetaldehyde	MDHS 102	20 ppm (37 mg/m³)	50 ppm (92 mg/m³)	diffusive	diffusive	diffusive	diffusive			HPLC	PS 500-100 84
Acetic acid	MDHS 96			24		50		8		GC-FID	ST 226-01 38
Acetic anhydride	OSHA 102	0.5 ppm (2.5 mg/m³)	2 ppm (10 mg/m³)	7.5	7.5	50	500	2.5	15	GC-NPD	CF/CST 225-9010 64 C/HLD 225-1 102
Acetic anhydride	OSHA 82	0.5 ppm (2.5 mg/m³)	2 ppm (10 mg/m³)	0.75		50		15 min		GC-NPD	CF/CST 225-9009 C/HLD 225-1 102
Acetone	MDHS 88	500 pm (1210 mg/m³)	1500 ppm (3620 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Acetone	MDHS 96	500 pm (1210 mg/m³)	1500 ppm (3620 mg/m³)	2	0.75	20	50	100 min	15	GC-FID	ST 226-01 38
Acetonitrile	MDHS 88	40 ppm (68 mg/m³)	60 ppm (102 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Acetonitrile	MDHS 96	40 ppm (68 mg/m³)	60 ppm (102 mg/m³)	10		20 (50)		8 (3.3)		GC-FID	ST 226-09 38
o-Acetylsalicylic acid	MDHS 14/4	5 mg/m³		120		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Acrolein (acrylaldehyde)	NIOSH 2501	0.1 ppm (0.23 mg/m³)	0.3 ppm (0.7 mg/m³)	24	3	50	200	8	15	GC-NPD	ST 226-118 40
Acrolein (acrylaldehyde)	OSHA 52	0.1 ppm (0.23 mg/m³)		48	3	100	200	8	15	GC-NPD	ST 226-117 40
Acrylamide	MDHS 57/2	0.3 mg/m³		50	3	100	200	8	15	HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Acrylonitrile	MDHS 88	2 ppm (4.4 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Acrylonitrile	MDHS 96	2 ppm (4.4 mg/m³)		24		50		8		GC-FID	ST 226-01 38
Allyl alcohol	MDHS 88	2 ppm (4.8 mg/m³)	4 ppm (9.7 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Allyl alcohol	MDHS 96	2 ppm (4.8 mg/m³)	4 ppm (9.7 mg/m³)	10	3	20 (50)	200	8 (3.3)	15	GC-FID	ST 226-01 38
Aluminium alkyl compounds	OSHA ID-121	2 ppm		960		2000		8		AAS	F/CST 225-3-01 88 C/HLD 225-1 102
Aluminium metal (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Aluminium metal (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	IOM 225-70A 108 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
Aluminium oxides (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Aluminium oxides (respirable dust)	MDHS 14/4	4 mg/m³		1056		2000 (2200)		8		GR	IOM 225-70A 108 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
Aluminium salts, soluble	OSHA ID-121	2 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 88 C/HLD 225-1 102
2-Aminoethanol	MDHS 96	1 ppm (2.5 mg/m³)	3 ppm (7.6 mg/m³)	10		20		8		GC-FID	ST 226-10-04 38
Ammonia, anhydrous	NIOSH 6015	25 ppm (18 mg/m³)	35 ppm (25 mg/m³)	72	3	150	200	8	15	VAS	ST 226-10-06 38 F/CST 225-3-01 88
Ammonia, anhydrous	NIOSH 6016	25 ppm (18 mg/m³)	35 ppm (25 mg/m³)	48	3	100	200	8	15	IC	ST 226-10-06 38 F/CST 225-3-01 88
Ammonium chloride (fume)	MDHS 14/4	10 mg/m³	20 mg/m³	960	30	2000	2000	8	15	GR, IC-ECN	IOM 225-70A 108 FLT 225-1930 93
Ammonium sulphamate	MDHS 14/4	10 mg/m³	20 mg/m³	960	30	2000	2000	8	15	GR	IOM 225-70A 108 FLT 225-1930 93
Aniline	MDHS 96	1 ppm (4 mg/m³)		200		20	200		100	GC-FID	ST 226-10 38
Antimony & compounds (as Sb)	MDHS 91/2	0.5 mg/m³				2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
p-Aramid respirable fibres	MDHS 87	0.5 fibres/ml		Refer to method						PCM	FLT/CL 225-54A 102 FLT 225-1913 88
Aromatic carboxylic acid anhydrides *(see individual compounds)*	MDHS 62/2									HPLC	IOM 225-70A 108 FLT 225-58F 96 ST 226-35 38

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING WEL TWA (ppm)	WEL STEL (ppm)	Vol. (liter) TWA	Vol. (liter) STEL	Rate (ml/min) TWA	Rate (ml/min) STEL	Time TWA (hr)	Time STEL (min)	Analytical Method	SKC Collecting Equipment and Page No.
Arsenic & compounds (except arsine) as As	MDHS 91/2	0.1 mg/m³		240		2000		2		XRF	IOM 225-70A 108 FLT 225-1930 88
Arsine	NIOSH 6001	0.05 ppm (0.16 mg/m³)		10	3	20	200	8	15	AA-GF	ST 226-01 38
Asbestos (chrysotile alone)	MDHS *See HSG 248*		0.1	240	40	1000	4000	4	10	PCM	FLT/CL 225-54A 102 FLT 225-60F or FLT 225-1913 88
Asbestos, with crocidolite/amosite/mixtures	MDHS *See HSG 248*		0.1	240	40	1000	4000	4	10	PCM	FLT/CL 225-54A 102 FLT 225-60F or FLT 225-1913 88
Asphalt (petroleum fumes)	NIOSH 5042	5 mg/m³	10 mg/m³	360	60	1000	4000	6	15	GR	FLT 225-27-07 94 SP 225-27 103 F/CST 225-2LF 97
Azodicarbonamide	MDHS 92/2	1 mg/m³	3 mg/m³	960	30	2000	2000	8	15	HPLC	IOM 225-79A 108 FLT 225-58F 96 FLT 225-2708 94
Barium compounds (soluble) (as Ba)	MDHS 91/2	0.5 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Barium sulphate (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Barium sulphate (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F 96
Benzene	MDHS 72	1 ppm (3.25mg/m³)		2.5		5		8		TD, GC	ST 226-357 42
Benzene	MDHS 80	1 ppm (3.25mg/m³)		24		50		8		GC-ECD	ST 226-357 42
Benzene	MDHS 88	1 ppm (3.25mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Benzene	MDHS 96	1 ppm (3.25mg/m³)		10	3	20	200	8	15	GC-FID	ST 226-01 38
Benzyl butyl phthalate	MDHS 96	5 mg/m³		50		10		8		GC-FID	ST 226-35 √ 38
Benzyl chloride	MDHS 88	0.5 ppm (2.6 mg/m³)	1.5 ppm (7.9 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Benzyl chloride	MDHS 96	0.5 ppm (2.6 mg/m³)	1.5 ppm (7.9 mg/m³)	10	3	20	200	8	15	GC-FID	ST 226-01 38
Beryllium & compounds (as Be)	Contact SKC	0.002 mg/m³		960	120	2000	2000	8	60	AA	IOM 225-70A 108 FLT 225-1930 88
Bisphenol A	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Bornan-2-one	MDHS 88	2 ppm (13 mg/m³)	3 ppm (19 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Bornan-2-one	MDHS 96	2 ppm (13 mg/m³)	3 ppm (19 mg/m³)	10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Boron tribromide	OSHA CSI		1 ppm (10 mg/m³)		5		1000		5	IC	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
Bromacil (ISO)	OSHA CSI	1 ppm (11 mg/m³)	2 ppm (22 mg/m³)	50		1000		50		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Bromine	NIOSH 6011	0.1 ppm (0.66 mg/m³)	0.2 ppm (1.3 mg/m³)	250	15	1000	1000	4	15	IC	CF/CST 225-9006 64 C/HLD 225-1 102
Bromomethane	OSHA PV2040	5 ppm (20 mg/m³)	15 ppm (59 mg/m³)	3		50		1		GC-FID	ST 226-83 § 40
1,3-Butadiene	MDHS 53/2	10 ppm (22 mg/m³)		5	7.5	10	500	8	15	GC-FID	ST 900 mg 13X MOLECULAR SIEVE
1,3-Butadiene	MDHS 80	10 ppm (22 mg/m³)		24		50		8		GC-ECD	ST 226-358 42
1,3-Butadiene	MDHS 88	10 ppm (22 mg/m³)		diffusive	diffusive	diffusive	diffusive	8	15	GC-FID	PS 575-001 75
1,3-Butadiene	MDHS 96	10 ppm (22 mg/m³)		10		20		8		GC-FID	ST 226-09 38
Butan-1-ol	MDHS 72		50 ppm (154 mg/m³)	24		50		8		TD, GC	ST 226-358 42
Butan-1-ol	MDHS 80		50 ppm (154 mg/m³)	24		50		8		GC-ECD	ST 226-358 42
Butan-1-ol	MDHS 88		50 ppm (154 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Butan-1-ol	MDHS 96		50 ppm (154 mg/m³)	10	3	20-50	200	8	15	GC-FID	ST 226-01 38
Butan-2-ol	MDHS 72	100 ppm (308 mg/m³)	150 ppm (462 mg/m³)	24		50		8		TD, GC	ST 226-357 or ST 226-358 42
Butan-2-ol	MDHS 88	100 ppm (308 mg/m³)	150 ppm (462 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Butan-2-ol	MDHS 96	100 ppm (308 mg/m³)	150 ppm (462 mg/m³)	10	3	20-50	200	8(3.3)	15	GC-FID	ST 226-01 38
Butan-2-one (MEK)	MDHS 88	200 ppm (600 mg/m³)	300 ppm (899 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Butan-2-one (MEK)	MDHS 96	200 ppm (600 mg/m³)	300 ppm (899 mg/m³)	10	3	20-50	200	8(3.3)	15	GC-FID	ST 226-81A 39
Butane	OSHA CSI	600 ppm (1450 mg/m³)	750 ppm (1810 mg/m³)	10		20		8		TD, GC	ST 226-01 38
2-Butoxyethanol	MDHS 72	25 ppm	50 ppm	24		50		8		TD, GC	ST 226-358 42
2-Butoxyethanol	MDHS 80	25 ppm	50 ppm	24		50		8		GC-ECD	ST 226-358 42
2-Butoxyethanol acetate	MDHS 88	20 ppm (133 mg/m³)	50 ppm (332 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 75
n-Butyl acetate	MDHS 72	150 ppm (724 mg/m³)	200 ppm (966 mg/m³)	10	3	20	200	8	15	TD, GC	ST 226-358 38
n-Butyl acetate	MDHS 80	150 ppm (724 mg/m³)	200 ppm (966 mg/m³)	24		50		8		GC-ECD	ST 226-358 42
n-Butyl acetate	MDHS 88	150 ppm (724 mg/m³)	200 ppm (966 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
n-Butyl acetate	MDHS 96	150 ppm (724 mg/m³)	200 ppm (966 mg/m³)	10	3	20	200	8	15	GC-FID	ST 226-01 38
sec-Butyl acetate	MDHS 88	200 ppm (966 mg/m³)	250 ppm (1210 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
sec-Butyl acetate	MDHS 96	200 ppm (966 mg/m³)	250 ppm (1210 mg/m³)	10	0.75	20	50	8	15	GC-FID	ST 226-01 38
t-Butyl acetate	MDHS 72	200 ppm (966 mg/m³)	250 ppm (1210 mg/m³)	10	3	20	200	8	15	TD, GC	ST 226-358 38
t-Butyl acetate	MDHS 88	200 ppm (966 mg/m³)	250 ppm (1210 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
n-Butyl acrylate	MDHS 88	1 ppm (5 mg/m³)	5 ppm (26 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Butyl carbitol	OSHA PV2095	10 ppm (67.5 mg/m³)	15 ppm (101.2 mg/m³)	10		200		50 min		GC-FID	ST 226-01 38
n-Butyl chloroformate	ASTM D6209	1 ppm (5.7 mg/m³)		varies		225		varies		GC-MS	ST 226-131 45
Butyl lactate	OSHA PV2080	5 ppm (30 mg/m³)		10		200		8		GC-FID	ST 226-01 38
2-sec-Butylphenol	OSHA PV2128	5 ppm (31 mg/m³)		20		200		100 min		HPLC-UV	ST 226-95 40
Cadmium & compounds (except oxide fume & sulphide pigments)	MDHS 91/2	0.025 mg/m³		960	30	2000	2000	8	15	XRF	IOM 225-70A 108 FLT 225-1930 88
Cadmium oxide fume (as Cd)	MDHS 91/2	0.025 mg/m³	0.05 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Cadmium sulphide & pigments (as Cd)	MDHS 91/2	0.03 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Caesium hydroxide	MDHS 91/2	2 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Calcium carbonate (inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Calcium carbonate (respirable)	MDHS 14/4	4 mg/m³		1056		2000 (2200)		8		GR	IOM 225-70A 108 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
Calcium cyanamide	OSHA ID-121	0.05 mg/m³	1 mg/m³	960		2000		8		AA or AES	F/CST 225-3-01 or F/CST 225-3100 88 C/HLD 225-1 102
Calcium hydroxide	NIOSH 7020	5 mg/m³		240		1000		4		AA-F	F/CST 225-3-01 or F/CST 225-3100 88 C/HLD 225-1 102
Calcium oxide	NIOSH 7020	2 mg/m³		240		1000		4		AA-F	F/CST 225-3-01 or F/CST 225-3100 88 C/HLD 225-1 102
Calcium silicate (inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Calcium silicate (respirable)	MDHS 14/4	4 mg/m³		1056		2000 (2200)		8		GR	IOM 225-70A 108 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
Captan (ISO)	MDHS 94/2	5 mg/m³	15 mg/m³	240		2000 (500)		8		HPLC-UV	IOM 225-70A 108 FLT 225-58F 96 ST 226-35 38
Carbon black	MDHS 14/4	3.5 mg/m³	7 mg/m³	960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Carbon dioxide	OSHA ID-172	5000 ppm (9150 mg/m³)	30000 ppm (54000 mg/m³)	2-5	2-5	10-50	300	4-8	15	GC	SB 263-Series or SB 253-Series 56
Carbon dioxide (by portable GC)	NIOSH 6603	5000 ppm (9150 mg/m³)	30000 ppm (54000 mg/m³)							GC	SB 232-Series 55
Carbon disulphide	MDHS 96	5 ppm (15 mg/m³)		10	3	20 (50)	200	8 (3.3)	15	GC	ST 226-01 or ST 226-44 39
Carbon monoxide	OSHA ID-210	30 ppm (35 mg/m³)	200 ppm (232 mg/m³)	2-5	2-5	10-50	1000	varies	varies	GC	SB 252-Series or SB 253-Series or SB 262-Series or SB 263-Series 52
Carbon tetrachloride	MDHS 72	2 ppm (13 mg/m³)			12		200		60	TD, GC	ST 226-358 38
Carbon tetrachloride	MDHS 80	2 ppm (13 mg/m³)		24		50		8		TD, GC	ST 226-358 38
Carbon tetrachloride	MDHS 88	2 ppm (13 mg/m³)		diffusive	diffusive	diffusive	diffusive	5	15	GC-FID	ST 575-001 75
Carbon tetrachloride	MDHS 96	2 ppm (13 mg/m³)		10		20-50		8		GC-FID	ST 226-01 38
Cellulose (inhalable dust)	MDHS 14/4	10 mg/m³	20 mg/m³	960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Cellulose (respirable dust)	MDHS 14/4	4 mg/m³		1056		2000 (2200)		8		GR	IOM 225-70A 108 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
Chlorine	NIOSH 6011		0.5 ppm (1.5 mg/m³)	90	15	1000	1000	1.5	15	IC	CF/CST 225-9006 65
Chlorine dioxide	OSHA ID-202	0.1 ppm (0.28 mg/m³)	0.3 ppm (0.84 mg/m³)	120	7.5	500	500	4	15	IC-ECN	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
1-Chloro-2,3-epoxypropane (epichlorohydrin)	MDHS 72, 80	0.5 ppm (1.9 mg.m³)	1.5 ppm (5.8 mg/m³)	24		50		8		TD, GC	ST 226-358 42
1-Chloro-2,3-epoxypropane (epichlorohydrin)	MDHS 88	0.5 ppm (1.9 mg/m³)	1.5 ppm (5.8 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
1-Chloro-2,3-epoxypropane (epichlorohydrin)	MDHS 96	0.5 ppm (1.9 mg/m³)	1.5 ppm (5.8 mg/m³)	10		20-50		8		GC-FID	ST 226-01 38
1-Chloro-4-nitrobenzene	NIOSH 2005	1 mg/m³	2 mg/m³	96		200		8		GC-FID	ST 226-10 38
Chloroacetaldehyde	NIOSH 2015		1 ppm (3.3 mg/m³)		3		200		15	GC-ECD	ST 226-15GWS 38
2-Chloroacetophenone	OSHA CSI	0.05 ppm (0.32 mg/m³)		12		200		1		HPLC-UV	ST 226-47-01 38
Chlorobenzene	MDHS 72	1 ppm (4.7 mg/m³)	3 ppm (14 mg/m³)	10		20(50)		8(3.3)		TD, GC	ST 226-358 38
Chlorobenzene	MDHS 88	1 ppm (4.7 mg/m³)	3 ppm (14 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Chlorobenzene	MDHS 96	1 ppm (4.7 mg/m³)	3 ppm (14 mg/m³)	10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Chlorodifluoromethane	MDHS 96	1000 ppm (3590 mg/m³)		varies		varies		varies		GC-FID	ST 226-01 38
Chloroethane	MDHS 96	50 ppm (134 mg/m³)		3		50		1		GC-FID	ST 226-09 38
2-Chloroethanol	MDHS 96		1 ppm (3.4 mg/m³)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-81A 39
Chloroform	MDHS 80	2 ppm (9.9 mg/m³)		24		50		8		GC-ECD	ST 226-357 42
Chloroform	MDHS 88	2 ppm (9.9 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Chloroform	MDHS 96	2 ppm (9.9 mg/m³)		10		200		8		GC-FID	ST 226-01 38
Chloromethane	MDHS 96	50 ppm (105 mg/m³)	100 ppm (210 mg/m³)		0.5		100		5	GC-FID	ST 226-09 or ST 226-01 38
bis-Chloromethyl ether	OSHA 10	0.001 ppm (0.005 mg/m³)		50		500		100 min		GC-ECD	IMP 225-36-2 67 IT 225-22 67
Chloropyrifos (ISO)	MDHS 94/2	0.2 mg/m³	0.6 mg/m³	240		500		8		HPLC-UV	IOM 225-70A 108 FLT 225-58F 96 ST 226-35 38
Chromium & inorganic compounds	MDHS 91/2	0.5 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Chromium (VI) in chromium plating mist	MDHS 52/4	0.05 mg/m³		960	120	2000	2000	8	60	CLR	Chromic acid test kit 510-2000 and IOM 225-70A 108 FLT 225-9026
Chromium II & III compounds (as Cr)	MDHS 91/2	0.5 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Chromium VI compounds (as Cr)	MDHS 52/4	0.05 mg/m³		240	30	2000	2000	2	15	CLR	IOM 225-70A 108 FLT 225-9026
Cobalt & cobalt compounds (as Co)	MDHS 91/2	0.1 mg/m³		240		2000		2		XRF	IOM 225-70A 108 FLT 225-1930 88
Colophony	MDHS 83/3			960	30	2000	2000	8	15	GC-FID	CST 225-8050K (kit)
Copper dust & mists (as Cu)	MDHS 91/2	1 mg/m³	2 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Copper fume	MDHS 91/2	0.2 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Cotton dust	MDHS 14/4	2.5 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Cryofluorane (INN)	MDHS 96	1000 ppm (7110 mg/m³)	1250 ppm (8890 mg/m³)	3		20		2.5		GC-FID	ST 226-01 or ST 226-09 38
Cumene	MDHS 72, 80	25 ppm (125 mg/m³)	50 ppm (250 mg/m³)	24		50		8		TD, GC	ST 226-358 42
Cumene	MDHS 88	25 ppm (125 mg/m³)	50 ppm (250 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Cumene	MDHS 96	25 ppm (125 mg/m³)	50 ppm (250 mg/m³)	10		20	50	8	15	GC-FID	ST 226-01 38
Cyanamide	OSHA CSI	0.58 ppm (1 mg/m³)		10		100		100 min		HPLC-UV	ST 226-30-18 38

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Cyanides (except HCN, cyanogen & cyanogen chloride	NIOSH 7904	5 mg/m³		120		500		4		ISE	FLT 225-2705 94 CST 225-2LF 97 IMP 225-36-2 67 IT 225-22 67 C/HLD 225-1 102
Cyanogen chloride	OSHA CSI		0.3 ppm (0.77 mg/m³)		1		200		5	GC-NPD	ST 226-117 40
Cyclohexane	MDHS 88	100 ppm (350 mg/m³)	300 ppm (1050 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Cyclohexane	MDHS 96	100 ppm (350 mg/m³)	300 ppm (1050 mg/m³)	10		20		8		GC-FID	ST 226-01 38
Cyclohexanol	MDHS 88	50 ppm (208 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Cyclohexanol	MDHS 96	50 ppm (208 mg/m³)		10		20-50		8(3.3)		GC-FID	ST 226-01 38
Cyclohexanone	MDHS 88	10 ppm (41 mg/m³)	20 ppm (82 mh/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Cyclohexanone	MDHS 96	10 ppm (41 mg/m³)	20 ppm (82 mh/m³)	10		20	50	8	15	GC-FID	ST 226-01 38
Cyclohexylamine	OSHA PV2016	10 ppm (41 mg/m³)		20		200		100 min		GC-FID	ST 226-98 40
2,4-D (ISO)	NIOSH 5602	10 mg/m³	20 mg/m³	480		1000		8		GC-ECD	ST 226-58 39
Dialkyl phthalate C7-C9	OSHA 104	5 mg/m³		240		1000		4		GC-FID	ST 226-56 39
Diallyl phthalate	OSHA CSI	5 mg/m³		60		1000		1		GC-FID	ST 226-30-16 38
Diatomaceous earth (natural respirable dust)	MDHS 14/4	1.2 mg/m³		960 (1056)		2000 (2200)		8		GR	IOM 225-70A 108 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
Dibenzoyl peroxide	NIOSH 5009	5 mg/m³		90		1500		1		HPLC-UV	F/CST 225-3-01 88
Dibismuth tritelluride	MDHS 91/2	10 mg/m³	20 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Diboron trioxide	MDHS 14/4	10 mg/m³	20 mg/m³	960 (1056)		2000 (2200)		8		GR	IOM 225-70A 108 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
1,2-Dibromoethane	MDHS 88	0.5 ppm (3.9 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
1,2-Dibromoethane	MDHS 96	0.5 ppm (3.9 mg/m³)		10	3	20	200	8	15	GC-ECD	ST 226-01 38
Dibutyl hydrogen phosphate	NIOSH 5017	1 ppm (8.7 mg/m³)	2 ppm (17 mg/m³)	240		2000		2		GC-FPD	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Dibutyl phthalate	OSHA 104	5 mg/m³		240		1000		4		GC-FID	ST 226-56 38
2,2'-Dichloro-4,4'-methylene dianiline (MbOCA)	MDHS 75/2	0.005 mg/m³		100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
2,2-Dichloro-4,4'-methylene dianiline (MbOCA)	MDHS 75/2	0.005 mg/m³			200		2000		each 100 min	HPLC	IOM 225-70A 108 FLT 225-58F 96
1,3-Dichloro-5,5-dimethylhydantion			0.2 mg/m³	0.4 mg/m³							
Dichloroacetylene	OSHA CSI		0.1 ppm (0.39 mg/m³)		1		200		5	GC-FID	ST 226-01 38
1,2-Dichlorobenzene (ortho-dichlorobenzene)	MDHS 88	25 ppm (153 mg/m³)	50 ppm (306 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
1,2-Dichlorobenzene (ortho-dichlorobenzene)	MDHS 96	25 ppm (153 mg/m³)	50 ppm (306 mg/m³)	10	3	20	200	8	15	GC-FID	ST 226-01 38
1,4-Dichlorobenzene (para-dichlorobenzene)	MDHS 88	25 ppm (153 mg/m³)	50 ppm (306 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
1,4-Dichlorobenzene (para-dichlorobenzene)	MDHS 96	25 ppm (153 mg/m³)	50 ppm (306 mg/m³)	3		20		2.5		GC-FID	ST 226-01 38
1,1-Dichloroethane	MDHS 96	100 ppm		10	3	200	200	8	15	GC-FID	ST 226-01 38
1,2-Dichloroethane (ethylene dichloride)	MDHS 72, 80	5 ppm (21 mg/m³)		24		50		8		TD, GC	ST 226-358 42
1,2-Dichloroethane (ethylene dichloride)	MDHS 88	5 ppm (21 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
1,2-Dichloroethane (ethylene dichloride)	MDHS 96	5 ppm (21 mg/m³)		10	3	20	200	8	15	GC-FID	ST 226-01 38
1,2-Dichloroethylene cis:trans isomers 60:40	MDHS 88	200 ppm (806 mg/m³)	250 ppm (1010 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
1,2-Dichloroethylene cis:trans isomers 60:40	MDHS 96	200 ppm (806 mg/m³)	250 ppm (1010 mg/m³)	5		50		100 min		GC-FID	ST 226-01 38
Dichlorofluoromethane	MDHS 96	10 ppm (43 mg/m³)		3		20		2.5		GC-FID	ST 226-01 38
Dichloromethane	MDHS 72, 80	100 ppm (350 mg/m³)	300 ppm (1060 mg/m³)	24		50		8		TD, GC	ST 226-358 42
Dichloromethane	MDHS 88	100 ppm (350 mg/m³)	300 ppm (1060 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Dichloromethane	MDHS 96	100 ppm (350 mg/m³)	300 ppm (1060 mg/m³)	2	1.5	20	100	1.6	15	GC-FID	ST 226-01 38
Dicylopentadiene	MDHS 88	5 ppm (27 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Diethyl ether	MDHS 88	100 ppm (310 mg/m³)	200 ppm (620 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Diethyl ether	MDHS 96	100 ppm (310 mg/m³)	200 ppm (620 mg/m³)	3		20		2.5		GC-FID	ST 226-01 38
Diethyl phthalate	OSHA 104			240		1000		4		GC-FID	ST 226-56 38
Diethyl sulphate	MDHS 89	0.05 ppm (0.32 mg/m³)								GC-MS	ST 226-357 42
Diethylamine	MDHS 96	5 ppm (15 mg/m³)	10 ppm (30 mg/m³)	24	3	50	200	8	15	GC-FID	ST 226-10 38
Dihydrogen selenide (as Se)	OSHA CSI	0.02 ppm (0.07 mg/m³)	0.05 ppm (0.17 mg/m³)	480		1000		8		AA	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
Diisopropyl ether	MDHS 88	250 ppm (1060 mg/m³)	310 ppm (1310 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Diisopropyl ether	MDHS 96	250 ppm (1060 mg/m³)	310 ppm (1310 mg/m³)	3		20		2.5		GC-FID	ST 226-01 38
Diisopropylamine	OSHA CSI	5 ppm (21 mg/m³)		120		1000		1		GC-ECD	IMP 225-36-2 or IMP 225-36-1 67 IT 225-22 67
Dimethoxymethane	MDHS 88	1000 ppm (3160 mg/m³)	1250 ppm (3950 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Dimethoxymethane	MDHS 96	1000 ppm (3160 mg/m³)	1250 ppm (3950 mg/m³)	2		20		1.5		GC-FID	ST 226-01 38
Dimethyl ether		400 ppm (766 mg/m³)	500 ppm (958 mg/m³)							CLR	DT 810-161
Dimethyl phthalate	OSHA 104	5 mg/m³		240		1000		4		GC-FID	ST 226-56 38
Dimethyl phthalate	OSHA 104	5 mg/m³	10 mg/m³	240		1000		4		GC-FID	ST 226-56 39

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Dimethyl sulphate	MDHS 89	0.05 ppm (0.32 mg/m³)								GC-MS	ST 226-357 42
Dimethyl sulphate	MDHS 96	0.05 ppm (0.26 mg/m³)		12		50		4		GC-ECN	ST 226-114 40
N,N-Dimethylacetamide	MDHS 96	10 ppm (36 mg/m³)	20 ppm (72 mg/m³)	48		100		8		GC-FID	ST 226-10 38
Dimethylamine	MDHS 96	2 ppm (3.8 mg/m³)	6 ppm (11 mg/m³)							GC-FID	ST 226-10 38
2-Dimethylaminoethanol	OSHA CSI	2 ppm (7.4 mg/m³)	6 ppm (22 mg/m³)	24		200		8		GC-FID	ST 226-10-04 38
N,N-Dimethylaniline	MDHS 88	5 ppm (25 mg/m³)	10 ppm (50 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
N,N-Dimethylaniline	MDHS 96	5 ppm (25 mg/m³)	10 ppm (50 mg/m³)	24	3	50	200	8	15	GC-FID	ST 226-10 38
N,N-Dimethylethylamine	OSHA PV2096	10 ppm (30 mg/m³)	15 ppm (46 mg/m³)	40		100		40 min		GC-NPD	ST 226-18 38
Dimethylformamide	MDHS 88	5 ppm (15 mg/m³)	10 ppm (30 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
2,6-Dimethylheptan-4-one	MDHS 88	25 ppm (148 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
2,6-Dimethylheptan-4-one	MDHS 96	25 ppm (148 mg/m³)		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Dinitrobenzene (all isomers)	OSHA CSI	0.15 ppm (1 mg/m³)	0.5 ppm (3.5 mg/m³)	60		1000		1		HPLC-UV	ST 226-30-16 38
1,4-Dioxane	MDHS 88	20 ppm (73 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
1,4-Dioxane	MDHS 96	20 ppm (73 mg/m³)		10		20		8		GC-FID	ST 226-01 38
Diphenyl ether (vapour)	MDHS 88	1 ppm (7.1 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Diphenyl ether (vapour)	MDHS 96	1 ppm (7.1 mg/m³)		30		100		5		GC-FID	ST 226-35-01 38
Diphenylamine	OSHA 78	10 mg/m³	20 mg/m³	100		1000		100 min		HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
Diphosphorus pentasulphide	OSHA ID-128SG	1 mg/m³	2 mg/m³	960	30	2000	2000	8	15	IC	F/CST 225-802 93 C/HLD 225-1 102
Diphosphorus pentoxide	OSHA ID-111	1 mg/m³	2 mg/m³	480		1000		8		IC	F/CST 225-3-01 88 C/HLD 225-1 102
Dipropylene glycol methyl ether	MDHS 72	50 ppm (308 mg/m³)		24		50		8		TD, GC	ST 226-357 or ST 226-358 42
Dipropylene glycol methyl ether	MDHS 88	50 ppm (308 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Diquat dibromide (ISO)	OSHA CSI	0.5 mg/m³	1 mg/m³	120		1000		8		HPLC/UV	IOM 225-70A 108 FLT 225-58F 96
Disodium disulphite	OSHA ID-121	5 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 88 C/HLD 225-1 102
Disodium tetraborate (anhydrous)	OSHA ID-125G	1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 88 C/HLD 225-1 102
Disodium tetraborate (decahydrate)	OSHA ID-125G	5 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 88 C/HLD 225-1 102
Disodium tetraborate (pentahydrate)	OSHA ID-125G	1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 88 C/HLD 225-1 102
Disulphur dichloride	OSHA CSI		1 ppm (5.6 mg/m³)	480		1000		8		CLR	IMP 225-36-2 67 IT 225-22 67
6,6'-Di-tert-butyl-4,4'-thiodi-m-cresol	OSHA CSI	10 mg/m³	20 mg/m³	varies		varies		varies		HPLC-UV	F/CST 225-706 or CYC 225-69-35 111 FLT 225-7 96
2,6-Di-tert-butyl-p-cresol	OSHA PV2108	10 mg/m³		100		1000		100 min		GC-FID	ST 226-57 39
Diuron (ISO)	NIOSH 5601	10 mg/m³		240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Dusts (Inhalable)	MDHS 14/4			960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Dusts (Respirable)	MDHS 14/4			1056		2000 (2200)		8		GR	IOM 225-70A 108 FLT 225-58F 96 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
Emery (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Emery (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Endosulfan (ISO)	MDHS 94/2	0.1 mg/m³	0.3 mg/m³	240		500		8		HPLC-UV	IOM 225-70A 108 FLT 225-58F 96 ST 226-35 38
Enflurane	MDHS 80	50 ppm (383 mg/m³)		24		50		8		GC-ECD	ST 226-357 42
Enflurane	MDHS 88	50 ppm (383 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Ethane-1,2-diol (particulate)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Ethane-1,2-diol (vapour)	MDHS 88	20 ppm (52 mg/m³)	40 ppm (104 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Ethanethiol	NIOSH 2542	0.5 ppm (1.3 mg/m³)	2 ppm (5.2 mg/m³)	48	12	100	200	8	60	GC-FPD	F/CST 225-9007 65
Ethanol	MDHS 72	1000 ppm (1920 mg/m³)		24		50		8		TD, GC	ST 226-358 42
Ethanol	MDHS 88	1000 ppm (1920 mg/m³)		diffusive	diffusive	diffusive	diffusive	8	15	GC-FID	PS 575-002 75
Ethanol	MDHS 96	1000 ppm (1920 mg/m³)		1		50		20 min		GC-FID	ST 226-01 38
2-(Methoxyethoxy)ethanol	OSHA CSI	10 ppm (50.1 mg/m³)		6		100		1		GC-FID	ST 226-01 38
2-Ethoxyethanol	MDHS 72	2 ppm (8 mg/m³)		24		50		8		TD, GC	ST 226-357 42
2-Ethoxyethanol	MDHS 80	2 ppm (8 mg/m³)		24		50		8		GC-ECD	ST 226-357 42
2-Ethoxyethanol	MDHS 88	2 ppm (8 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
2-Ethoxyethanol	MDHS 96	2 ppm (8 mg/m³)		5		20		4		GC-FID	ST 226-01 38
2-Ethoxyethyl acetate	MDHS 72	2 ppm (11 mg/m³)		24		50		8		TD, GC	ST 226-357 42
2-Ethoxyethyl acetate	MDHS 80	2 ppm (11 mg/m³)		24		50		8		GC-ECD	ST 226-357 or ST 226-358 42
2-Ethoxyethyl acetate	MDHS 88	2 ppm (11 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Ethyl acetate	MDHS 72, 80	200 ppm	400 ppm	24		50		8		TD, GC	ST 226-357 or ST 226-358 42
Ethyl acetate	MDHS 88	200 ppm	400 ppm	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Ethyl acetate	MDHS 96	200 ppm	400 ppm	10		20		8		GC-FID	ST 226-01 38
Ethyl acrylate	MDHS 72	5 ppm (21 mg/m³)	10 ppm (42 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Ethyl acrylate	MDHS 88	5 ppm (21 mg/m³)	10 ppm (42 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Ethyl acrylate	MDHS 96	5 ppm (21 mg/m³)	10 ppm (42 mg/m³)	10		20		8		GC-FID	ST 226-01 38
Ethyl benzene	MDHS 72	100 ppm (441 mg/m³)	125 ppm (552 mg/m³)	24		50		8		TD, GC	ST 226-357 42

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Ethyl benzene	MDHS 80	100 ppm (441 mg/m³)	125 ppm (552 mg/m³)	24		50		8		GC-ECD	ST 226-357 42
Ethyl benzene	MDHS 88	100 ppm (441 mg/m³)	125 ppm (552 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Ethyl benzene	MDHS 96	100 ppm (441 mg/m³)	125 ppm (552 mg/m³)	12		50		4		GC-FID	ST 226-01 38
Ethyl cyanoacrylate	OSHA 55		0.3 ppm (1.5 mg/m³)	12		100		2		HPLC-UV	ST 226-98 40
Ethyl formate	MDHS 96	100 ppm (308 mg/m³)	150 ppm (462 mg/m³)	10		20		8		GC-FID	ST 226-01 38
Ethylamine	OSHA 36	2 ppm (3.8 mg/m³)	6 ppm (11 mg/m³)	10		200		50 min		HPLC-UV	ST 226-96 40
Ethylene oxide	MDHS 88	5 ppm (9.2 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-005 75
Ethylene oxide	MDHS 96	5 ppm (9.2 mg/m³)								GC-FID	ST 226-01 38
Ethylenediamine	NIOSH 2540	1 ppm (4.3 mg/m³)		10		100		1.7		HPLC-UV	ST 226-30-18 38
2-Ethylhexyl chloroformate			1 ppm (8 mg/m³)								
bis-2-Ethylhexyl phthalate (dioctyl phthalate)	MDHS 96	5 mg/m³	10 mg/m³	50		10		8		GC-FID	ST 226-36 ¶ 39
bis-2-Ethylhexyl phthalate (dioctyl phthalate)	OSHA 104	5 mg/m³		240		1000		4		GC-FID	ST 226-56 38
4-Ethylmorpholine	OSHA CSI	5 ppm (24 mg/m³)	20 ppm (96 mg/m³)	10		20		8		GC-FID	ST 226-10 38
Ferrous foundary particulate (inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Ferrous foundary particulate (respirable)	MDHS 14/4	4 mg/m³		1056		2200 (2000)		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Flour dust	MDHS 14/4	10 mg/m³	30 mg/m³			2000	2000	8	15	GR	IOM 225-70A 108 FLT 225-58F 96
Fluoride (inorganic as F)	Contact SKC	2.5 mg/m³		960	30	2000	2000	8	15	IC	IOM 225-70A 108 FLT 225-1930 88
Fluorine	OSHA CSI	1 ppm (1.6 mg/m³)	1 ppm (1.6 mg/m³)	480		1000		8		CLR	IMP 225-36-2 or 67 IMP 225-36-5 67 IT 225-22
Formaldehyde	MDHS 102	2 ppm (2.5 mg/m³)	2 ppm (2.5 mg/m³)	varies		varies		varies		HPLC	CF/CST 225-9003 or 40 ST 226-119 or ST 226-120
Formamide	OSHA CSI	20 ppm (37 mg/m³)	30 ppm (56 mg/m³)	10	1.5	100	100	100 min	100 min	GC-NPD	ST 226-10 38
Formic acid	NIOSH 2011	5 ppm (9.6 mg/m³)		24		200		2		IC-ECN	FLT 225-2708 94 CST 225-3-25LF 97 ST 226-10-03 38 C/HLD 225-1 102
2-Furaldehyde (furfural)	MDHS 72	2 ppm (8 mg/m³)	5 ppm (20 mg/m³)	24		50		8		TD, GC	ST 226-357 42
2-Furaldehyde (furfural)	NIOSH 2529	5 ppm (20 mg/m³)		5		20		4		GC-FID	ST 226-118 40
2-Furaldehyde (furfural)	OSHA 72	5 ppm (20 mg/m³)		180		1000		3		TD, GC	ST 226-81A 40
Glutaraldehyde	MDHS 102	0.05 ppm (0.2 mg/m³)	0.05 ppm (0.2 mg/m³)	varies		varies		varies		HPLC	CF/CST 225-9003 or 40 ST 226-120 ST 226-119 or
Glutaraldehyde	MDHS 102	0.05 ppm (0.2 mg/m³)	0.05 ppm (0.2 mg/m³)	diffusive	diffusive	diffusive	diffusive			HPLC	PS 500-100 84
Glycerol mist	NIOSH 600	10 mg/m³		375		2500		2.5		GR	CYC 225-01-02 111 FLT 225-5-37-P 93 CST 225-3LF 97 C/HLD 225-1 102
Grain dust	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Graphite (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Graphite (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Gypsum (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Gypsum (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Halogeno platinum compounds as Pt	MDHS 91/2	0.002 mg/m³		30		50		8		AAS	IOM 225-70A 108 FLT 225-1930 88
Halothane	MDHS 80	10 ppm (82 mg/m³)		24		50		8		GC-ECD	ST 226-357 or ST 226-358 42
Halothane	MDHS 88	10 ppm (82 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Hardwood dust	MDHS 14/4	5 mg/m³								GR	IOM 225-70A 108 FLT 225-58F 96
Heptan-2-one	MDHS 88	50 ppm (237 mg/m³)	100 ppm (475 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Heptan-2-one	MDHS 96	50 ppm (237 mg/m³)	100 ppm (475 mg/m³)							GC-FID	ST 226-01 38
Heptan-3-one	MDHS 88	35 ppm (166 mg/m³)	100 ppm (475 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 75
Heptan-3-one	MDHS 96	35 ppm (166 mg/m³)	100 ppm (475 mg/m³)							GC-FID	ST 226-01 38
n-Heptane	MDHS 72, 80	500 ppm (2085 mg/m³)								TD, GC	ST 226-357 42
n-Heptane	MDHS 88	500 ppm (2085 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
n-Heptane	MDHS 96	500 ppm (2085 mg/m³)								GC-FID	ST 226-01 38
Hexan-2-one	MDHS 88	5ppm (21 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Hexan-2-one	MDHS 96	5 ppm (21 mg/m³)		10		20		8		GC-FID	ST 226-01 38
n-Hexane	MDHS 72	20 ppm (72 mg/m³)		24		50		8		TD, GC	ST 226-357 42
n-Hexane	MDHS 80	20 ppm (72 mg/m³)		24		50		8		GC-ECD	ST 226-358 42
n-Hexane	MDHS 88	20 ppm (72 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
n-Hexane	MDHS 96	20 ppm (72 mg/m³)		4		20		3.3		GC-FID	ST 226-01 38
1,6-Hexanolactam (dust & vapour)	OSHA PV2012	10 mg/m³	20 mg/m³	100	15	1000	1000	8	15	HPLC-UV	ST 226-57 39
1,6-Hexanolactam (dust only)	MDHS 14/4	1 mg/m³	3 mg/m³	1056		2000 (2200)		8		GR	IOM 225-70A 108 FOAM 225-772 or CYC 225-69 111 FLT 225-58F 96
Hydrazine	MDHS 86/2	0.02 ppm (0.03 mg/m³)	0.1 ppm (0.13 mg/m³)	240		1000		4		IC-UV	CF/CST 225-9012 64 C/HLD 225-1 102
Hydrogen bromide	OSHA ID-165SG		3 ppm (10 mg/m³)	48	4.5	200	300	4	15	IC	ST 226-10-03 38
Hydrogen chloride (gas & aerosol mists)	OSHA ID-174SG	1 ppm (2 mg/m³)	5 ppm (8 mg/m³)	48	4.5	200	300	4	15	IC	ST 226-10-03 38

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Hydrogen cyanide	MDHS 56/3		10 ppm (11 mg/m³)	40	15	200	1000	3	15	ISE	IMP 225-36-2 67 IT 225-22 67 IOM 225-70A 108 FLT 225-1930£ 88
Hydrogen fluoride (as F)	Contact SKC	1.8 ppm (1.5 mg/m³)	3 ppm (2.5 mg/m³)		30		2000		15	ISE	IOM 225-70A 108 FLT 225-1930† 88
Hydrogen peroxide	OSHA ID-126SG	1 ppm (1.4 mg/m³)	2 ppm (2.8 mg/m³)	100		1000		100 min		DPP	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
Hydrogen sulphide	OSHA 1008	5 ppm (7 mg/m³)	10 ppm (14 mg/m³)							IC	ST 226-177 41
Hydroquinone	MDHS 98/3	0.5 mg/m³			30		2000		15	HPLC-UV	IOM 225-70A 108 FLT 225-58F 96 ST 226-35-03 39
4-Hydroxy-4-methylpentan-2-one	MDHS 88	50 ppm (241 mg/m³)	75 ppm (362 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
4-Hydroxy-4-methylpentan-2-one	MDHS 96	50 ppm (241 mg/m³)	75 ppm (362 mg/m³)	10		20		8		GC-FID	ST 226-01 38
2-Hydroxypropyl acrylate	OSHA PV2078	0.5 ppm (2.7 mg/m³)		10		100		100 min		GC-FID	ST 226-73 39
Indene	OSHA CSI	10 ppm (48 mg/m³)	15 ppm (72 mg/m³)	10		20		8		GC-FID	ST 226-110 40
Indium & compounds (as In)	MDHS 91/2	0.1 mg/m³	0.3 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Iodine	NIOSH 6005		0.1 ppm (1.1 mg/m³)	15		1000		15		IC	ST 226-67 39
Iodoform	OSHA CSI	0.6 ppm (9.8 mg/m³)	1 ppm (16 mg/m³)	10		100		100 min		GC-ECD	F/CST 225-706 96 C/HLD 225-1 102 ST 226-93 40
Iodomethane	MDHS 88	2 ppm (12 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Iodomethane	MDHS 96	2 ppm (12 mg/m³)		10		20		8		GC-FID	ST 226-01 38
Iron oxide (fume) (as Fe)	MDHS 91/2	5 mg/m³	10 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Iron salts (as Fe)	MDHS 91/2	1 mg/m³	2 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Isobutyl acetate	MDHS 72	150 ppm (724 mg/m³)	187 ppm (903 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Isobutyl acetate	MDHS 88	150 ppm (724 mg/m³)	187 ppm (903 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Isobutyl acetate	MDHS 96	150 ppm (724 mg/m³)	187 ppm (903 mg/m³)	10		20		8		GC-FID	ST 226-01 38
Isocyanates (all) (as -NCO)	MDHS 25/4	0.02 mg/m³	0.07 mg/m³	960		2000		8		HPLC	IOM 225-79A 108 FLT 225-9011 64
Isoflurane	MDHS 80	50 ppm (383 mg/m³)		24		50		8		GC-ECD	ST 226-357 42
Isoflurane	MDHS 88	50 ppm (383 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Isooctyl alcohol (mixed isomers)	MDHS 88	50 ppm (271 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Isopentane	MDHS 88	600 ppm (1800 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Isopentane	MDHS 96	600 ppm (1800 mg/m³)		varies		varies		varies		GC-FID	ST 226-01 38
Isopropyl acetate	MDHS 72		200 ppm (849 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Isopropyl acetate	MDHS 88		200 ppm (849 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Isopropyl acetate	MDHS 96		200 ppm (849 mg/m³)	9		50		3		GC-FID	ST 226-01 38
Isopropyl chloroformate			1 ppm (5.1 mg/m³)								
Kaolin (respirable dust)	MDHS 14/4	2 mg/m³		1056		varies		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Ketene	OSHA CSI	0.5 ppm (0.87 mg/m³)	1.5 ppm (2.6 mg/m³)	50	15	1000	1000	50 min	15	CLR	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
Lead & inorganic compounds	MDHS 91/2			960	30	2000	2000	8	15	XRF	IOM 225-70A 108 FLT 225-1930 88
Limestone (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Limestone (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Liquified petroleum gas	OSHA CSI	1000 ppm (1750 mg/m³)	1250 ppm (2180 mg/m³)							DET TB	DT 810-100A
Lithium hydride	MDHS 14/4	0.025 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Lithium hydroxide	OSHA ID-121		1 mg/m³	960		2000		8		AA or AES	F/CST 225-3-01 88 C/HLD 225-1 102
Machine made mineral fibre (MMMF) (except for ceramic refractory)	MDHS 59/2	5 mg/m³ & 2 fibres/ml		240		1000		8		GR + PCM	FLT/CL 225-54A 102 FLT 225-1913 88
Magnesite (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Magnesite (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Magnesium oxide (as Mg) (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Magnesium oxide (as Mg) (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Malathion	OSHA 62	10 mg/m³		60		1000		1		GC-FPD	ST 226-30-16 38
Maleic anhydride	MDHS 72	1 mg/m³	3 mg/m³	24		50		8		TD, GC	ST 226-357 42
Manganese & inorganic compounds	MDHS 91/2	0.5 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Manganese in welding fume	ISO 10882-1	0.5 mg/m³				750				GR	H/SET 225-6200 MINI 225-6201 CAL 225-6202 FLT 225-8050
Marble (total inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Marble (total respirable)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Mercaptoacetic acid	OSHA CSI	1 ppm (3.8 mg/m³)		120		1000		2		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Mercury & compounds (except alkyl compounds)	NIOSH 6009	0.02 mg/m³		48		200		4		AA	ST 226-17-1A 38 F/CST 225-3-01 88
Methacrylic acid	OSHA PV2005	20 ppm (72 mg/m³)	40 ppm (143 mg/m³)	24		100		4		HPLC-UV	ST 226-30-08 38

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Methanethiol	OSHA 26	0.5 ppm (1 mg/m³)		20		200		100 min		GC-FPD	F/CST 225-9007 67 C/HLD 225-1 102
Methanol	MDHS 72	200 ppm (266 mg/m³)	250 ppm (333 mg/m³)	24		50		8		TD, GC	ST 226-358 42
Methanol	MDHS 80	200 ppm (266 mg/m³)	250 ppm (333 mg/m³)	24		50		8		GC-ECD	ST 226-357 42
Methanol	MDHS 96	200 ppm (266 mg/m³)	250 ppm (333 mg/m³)	5	3	20	200	4	15	GC-FID	ST 226-51 39
2-Methoxyethanol	MDHS 72, 80	1 ppm (3 mg/m³)		24		50		8		TD, GC	ST 226-358 42
2-Methoxyethanol	MDHS 88	1 ppm (3 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
2-Methoxyethanol	MDHS 96	1 ppm (3 mg/m³)		10		20		8		GC-FID	ST 226-01 38
2-Methoxyethyl acetate	MDHS 72	1 ppm (5 mg/m³)		8		15		8		TD, GC	ST 226-37 39
2-Methoxyethyl acetate	MDHS 88	1 ppm (5 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 or PS 575-001 75
2-Methoxyethyl acetate	MDHS 96	1 ppm (5 mg/m³)		10	7.5	20	500	8	15	GC-FID	ST 226-01 38
1-Methoxypropan-2-ol	MDHS 72	100 ppm (375 mg/m³)	150 ppm (560 mg/m³)							TD, GC	ST 226-357 42
1-Methoxypropan-2-ol	MDHS 88	100 ppm (375 mg/m³)	150 ppm (560 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
1-Methoxypropyl acetate	MDHS 72	50 ppm (274 mg/m³)	100 ppm (548 mg/m³)							TD, GC	ST 226-358 38
1-Methoxypropyl acetate	MDHS 88	50 ppm (274 mg/m³)	100 ppm (548 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
1-Methoxypropyl acetate	MDHS 96	50 ppm (274 mg/m³)	100 ppm (548 mg/m³)							GC-FID	ST 226-01 38
Methyl acetate	MDHS 72, 80	200 ppm (616 mg/m³)	250 ppm (770 mg/m³)	24		50		8		TD, GC	ST 226-358 42
Methyl acetate	MDHS 88	200 ppm (616 mg/m³)	250 ppm (770 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Methyl acetate	MDHS 96	200 ppm (616 mg/m³)	250 ppm (770 mg/m³)	5	3	20	200	4	15	GC-FID	ST 226-01 38
Methyl acrylate	MDHS 72	5 ppm (18 mg/m³)	10 ppm (36 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Methyl acrylate	MDHS 88	5 ppm (18 mg/m³)	10 ppm (36 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Methyl acrylate	MDHS 96	5 ppm (18 mg/m³)	10 ppm (36 mg/m³)	varies		varies		varies		GC-FID	ST 226-01 38
Methyl cyanoacrylate	OSHA 55		0.3 ppm (1.4 mg/m³)	12	3	100	200	8	15	HPLC-UV	ST 226-98 40
Methyl ethyl ketone peroxide (MEKP)	OSHA 77		0.2 ppm (1.5 mg/m³)		15		1000		15	HPLC-UV	ST 226-93 40
Methyl isocyanate	OSHA 54		0.02 ppm	15		50		5		HPLC-FD	ST NA SKC
Methyl methacrylate	MDHS 72	50 ppm (208 mg/m³)	100 ppm (416 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Methyl methacrylate	MDHS 80	50 ppm (208 mg/m³)	100 ppm (416 mg/m³)	25		50		8		GC-ECD	ST 226-115 40
Methyl methacrylate	MDHS 88	50 ppm (208 mg/m³)	100 ppm (416 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Methyl methacrylate	MDHS 96	50 ppm (208 mg/m³)	100 ppm (416 mg/m³)	5		20		4		GC-FID	ST 226-30-06 38
1-Methyl-2-pyrrolidone	MDHS 72	25 pm (103 mg/m³)	75 ppm (309 mg/m³)	24		50		8		TD, GC	ST 226-357 42
1-Methyl-2-pyrrolidone	MDHS 96	25 pm (103 mg/m³)	75 ppm (309 mg/m³)	10		200		8		GC-FID	ST 226-01 38
N-Methyl-2-pyrrolidone	MDHS 72, 80	10 ppm (40 mg/m³)	20 ppm (80 mg/m³)	24		50		8		TD, GC	ST 226-357 42
N-Methyl-2-pyrrolidone	MDHS 96	10 ppm (40 mg/m³)	20 ppm (80 mg/m³)	10		200		8		GC-FID	ST 226-01 38
Methylacryonitrile	OSHA 37	1 ppm (2.8 mg/m³)		20		200		100 min		GC-NPD	ST 226-01 38
N-Methylaniline	NIOSH 3511	0.5 ppm (2.2 mg/m³)		100		1000		100 min		GC-FID	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
3-Methylbutan-1-ol	MDHS 88	100 ppm (366 mg/m³)	125 ppm (458 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
3-Methylbutan-1-ol	MDHS 96	100 ppm (366 mg/m³)	125 ppm (458 mg/m³)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Methylcyclohexanol	MDHS 88	50 ppm (237 mg/m³)	75 ppm (356 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Methylcyclohexanol	MDHS 96	50 ppm (237 mg/m³)	75 ppm (356 mg/m³)	12		25		8		GC-FID	ST 226-01 38
2-Methylcyclohexanone	MDHS 72, 80	50 ppm (233 mg/m³)	75 ppm (350 mg/m³)	24		50		8		TD, GC	ST 226-357 42
2-Methylcyclohexanone	MDHS 96	50 ppm (233 mg/m³)	75 ppm (350 mg/m³)	4		20		3.3		GC-FID	ST 226-01 38
4,4-Methylenebis(orthochloroaniline) (MbOCA)	MDHS 75/2			200		500				HPLC	IOM 225-70A 108 FLT 225-58F or F/CST 225-9004 65
4,4'-Methylenedianiline (MDA)	MDHS 75/2	0.01 ppm (0.08 mg/m³)		200		2000			100 min	HPLC	IOM 225-70A 108 FLT 225-58F or F/CST 225-9004 65
5-Methylheptane-3-one	MDHS 88	10 ppm (53 mg/m³)	20 ppm (107 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 75
5-Methylheptane-3-one	MDHS 96	10 ppm (53 mg/m³)	20 ppm (107 mg/m³)	10	3	20	200	8	15	GC-FID	ST 226-01 38
5-Methylhexan-2-one	MDHS 72	20 ppm (95 mg/m³)	100 ppm (475 mg/m³)	24		50		8		TD, GC	ST 226-357 42
5-Methylhexan-2-one	MDHS 88	20 ppm (95 mg/m³)	100 ppm (475 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
4-Methylpentan-2-ol	MDHS 88	25 ppm (106 mg/m³)	40 ppm (170 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
4-Methylpentan-2-ol	MDHS 96	25 ppm (106 mg/m³)	40 ppm (170 mg/m³)	10	3	20	200	8	15	GC-FID	ST 226-01 38
4-Methylpentan-2-one	MDHS 72, 80	50 ppm (208 mg/m³)	100 ppm (416 mg/m³)	24		50		8		TD, GC	ST 226-357 42
4-Methylpentan-2-one	MDHS 88	50 ppm (208 mg/m³)	100 ppm (416 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
4-Methylpentan-2-one	MDHS 96	50 ppm (208 mg/m³)	100 ppm (416 mg/m³)	10	3	20	200	8	15	GC-FID	ST 226-01 38
2-Methylpentane-2,4-diol	OSHA PV2101	25 ppm (123 mg/m³)	25 ppm (123 mg/m³)		3		200		15	GC-FID	ST 226-01 38
2-Methylpropan-1-ol	MDHS 72	50 ppm (154 mg/m³)	75 ppm (231 mg/m³)	24		50		8		TD, GC	ST 226-357 42
2-Methylpropan-1-ol	MDHS 88	50 ppm (154 mg/m³)	75 ppm (231 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
2-Methylpropan-1-ol	MDHS 96	50 ppm (154 mg/m³)	75 ppm (231 mg/m³)	10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Methyl-tert-butyl-ether	MDHS 88	50 ppm (183.5 mg/m³)	100 ppm (367 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Methyl-tert-butyl-ether	MDHS 96	50 ppm (183.5 mg/m³)	100 ppm (367 mg/m³)	96		200		8		GC-FID	ST 226-09 38
Mica (total inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Mica (total respirable)	MDHS 14/4	0.8 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Molybdenum compounds (insoluble) (as Mo)	MDHS 91/2	10 mg/m³	20 mg/m³	240		1000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Molybdenum compounds (soluble) (as Mo)	MDHS 91/2	5 mg/m³	10mg/m³	240		1000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Monochloroacetic acid	NIOSH 2008	0.3 ppm (1.2 mg/m³)		48		100		8		IC-ECN	ST 226-47-01 39
Nickel (insoluble compounds except nickel tetracarbonyl) (as Ni)	MDHS 91/2	0.5 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Nickel (soluble compounds except nickel tetracarbonyl) (as Ni)	MDHS 91/2	0.1 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Nicotine	MDHS 96	0.5 mg/m³	1.5 mg/m³	360		1000		6		GC-NPD	ST 226-30-04 38
Nitric acid	NIOSH 7903		1 ppm (2.6 mg/m³)	48	3	200	200	4	15	IC	ST 226-10-03 38
Nitrobenzene	MDHS 72	0.2 ppm (1 mg/m³)		24		50		8		TD, GC	ST 226-357 42
Nitrobenzene	MDHS 96	0.2 ppm (1 mg/m³)		48		100		8		GC-FID	ST 226-10 38
Nitrogen oxides	NIOSH 6014			1.5-6		25		1-4		VIS	ST 226-40 39
Nitromethane	NIOSH 2527	100 ppm (254 mg/m³)	150 ppm (381 mg/m³)	2.4		20		2		GC-NSD	ST 226-111A 40
2-Nitropropane	MDHS 96	5 ppm (19 mg/m³)				20		1.5		GC-FID	ST 226-110 40
di-n-Octyl phthalate	OSHA 104			240		1000		4		GC-FID	ST 226-56 38
Oil mist	MDHS 84/2			960	30	2000	2000	8	15	GR	IOM 225-70A 108 FLT 225-1930 88
Orthophosphoric acid	NIOSH 7903	1 mg/m³	2 mg/m³	48	3	200	200	4	15	IC	ST 226-10-03 38
Orthotoluidine	MDHS 75/2			200		500				HPLC	IOM 225-70A 108 FLT 225-58F 96 ST 226-35 38
Osmium tetraoxide (as Os)	MDHS 91/2	0.0002 ppm (0.002 mg/m³)	0.0006 ppm (0.006 mg/m³)	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Oxalic acid	OSHA PV2115	1 mg/m³	2 mg/m³	100		1000		100 min		IC	FLT 225-701 88 CST 225-3LF 97 C/HLD 225-1 102
2,2'-Oxydiethanol	NIOSH 5523	23 ppm (101 mg/m³)		60		1000		1		GC-FID	ST 226-57 39
Ozone	OSHA ID-214		0.2 ppm (0.4 mg/m³)	90		500		3		IC	CF/CST 225-9014 64 C/HLD 225-1 102
Paracetamol (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Paraffin wax (fume)	OSHA PV2047	2 mg/m³	6 mg/m³	100		1000		100 min		GC-FID	F/CST 225-706 96 C/HLD 225-1 102
Paraquat dichloride (ISO) (respirable dust)	MDHS 14/4	0.08 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F
Pentacarbonyliron (as Fe)	OSHA CSI	0.01 ppm (0.08 mg/m³)		480	30	2000	2000	4	15	CLR	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
Pentaerythritol (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Pentaerythritol (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200 (2000)		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F
Pentan-2-one	MDHS 88	200 ppm (716 mg/m³)	250 ppm (895 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Pentan-2-one	MDHS 96	200 ppm (716 mg/m³)	250 ppm (895 mg/m³)	10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Pentan-3-one	MDHS 88	200 ppm (716 mg/m³)	250 ppm (895 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Pentane	MDHS 72, 80	600 ppm (1800 mg/m³)		varies		varies		varies		TD, GC	ST 226-358 42
Pentane	MDHS 88	600 ppm (1800 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Pentane	MDHS 96	600 ppm (1800 mg/m³)		varies		varies		varies		GC-FID	ST 226-01 38
Pentyl acetates (all isomers)	MDHS 88	50 ppm (270 mg/m³)	100 ppm (541 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Pentyl acetates (all isomers)	MDHS 96	50 ppm (270 mg/m³)	100 ppm (541 mg/m³)	varies		varies		varies		GC-FID	ST 226-01 38
Peroxodisulphate salts	MDHS 79/2			960	30	2000	2000	8	15	IC	IOM 225-70A 108 FLT 225-1930 88
Phenol	MDHS 96	2 ppm (7.8 mg/m³)	4 ppm (16 mg/m³)	24	3	100	200	4	15	GC-FID	ST 226-95 40
p-Phenyldiamine	OSHA 87	0.1 mg/m³		100		1000		100 min		HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
2-Phenylpropene (alpha-methyl styrene)	MDHS 72	50 ppm (246 mg/m³)	100 ppm (491 mg/m³)	24		50		8		TD, GC	ST 226-357 42
2-Phenylpropene (alpha-methyl styrene)	MDHS 88	50 ppm (246 mg/m³)	100 ppm (491 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
2-Phenylpropene (alpha-methyl styrene)	MDHS 96	50 ppm (246 mg/m³)	100 ppm (491 mg/m³)	10	3	20	200	8	15	GC-FID	ST 226-01 38
Phorate (ISO)	NIOSH 5600	0.05 mg/m³	0.2 mg/m³	240		1000		4		GC-FPD	ST 226-58 39
Phosgene	OSHA 61	0.02 ppm (0.08 mg/m³)	0.06 ppm (0.25 mg/m³)	240		1000		4		GC-NPD	ST 226-117 40
Phosphine	NIOSH 6002	0.1 ppm (0.14 mg/m³)	0.2 ppm (0.28 mg/m³)	12	3	100	200	2	15	UV-VIS	ST 226-165A 41
Phosphorus pentachloride	OSHA CSI	0.1 ppm (0.87 mg/m³)	0.2 ppm (2 mg/m³)	48		200		4		CLR	F/CST 225-803 93 IMP 225-36-1 67 IT 225-22 67 SCN 225-26 102
Phosphorus trichloride	OSHA CSI	0.2 ppm (1.1 mg/m³)	0.5 ppm (2.9 mg/m³)	240		1000		4		IC	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
Phosphorus yellow	OSHA CSI	0.1 mg/m³	0.3 mg/m³	96		200		8		GC-FPD	ST 226-35-03 39
Phthalic anhydride	MDHS 62/2	4 mg/m³	12 mg/m³	960	30	2000	2000	8	15	HPLC	IOM 225-70A 108 FLT 225-58F 96 ST 226-35 38
Picloram (ISO)	OSHA PV2049	10 mg/m³	20 mg/m³	60		1000		1		GR	FLT 225-5-37-P 93 CST 225-3LF 97
Picric acid	OSHA CSI	0.1 mg/m³	0.3 mg/m³	180		1500		2		HPLC-UV	IOM 225-70A 108 FLT 225-1930 88
Piperazine	OSHA CSI	0.1 mg/m³	0.3 mg/m³	10		100		8		HPLC-UV	ST 226-30-18 38
Piperazine dihydrochloride	MDHS 14/4	0.1 mg/m³	0.3 mg/m³	120		1000		8		GC-NPD	IOM 225-70A 108 FLT 225-58F 96
Piperidine	OSHA CSI	1 ppm (3.5 mg/m³)		6		200		30 min		GC-FID	ST 226-01 38
Plaster of Paris (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Plaster of Paris (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Polychlorinated biphenyls (PCB)	ASTM 4861	0.1 mg/m³		960		2000		8		GC-ECD	PUF 226-124 41 PUF 226-92 40
Polychlorinated biphenyls (PCB)	OSHA PV2088	0.1 mg/m³		60		1000		1		GC-ECD	ST 226-30-16 38
Polyvinylchloride (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Polyvinylchloride (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Portland cement (inhalable dust)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Portland cement (respirable dust)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 FLT 225-58F 96
Potassium hydroxide	MDHS 14/4		2 mg/m³	10		2000		5		AA or AES	IOM 225-70A 108 FLT 225-1930 88
Prop-2-yn-1-ol	OSHA 97	1 ppm (2.3 mg/m³)	3 ppm (7 mg/m³)	6		50		2		GC-ECD	ST 226-178 41
Propan-1-ol	MDHS 72	200 ppm (500 mg/m³)	250 ppm (625 mg/m³)	24		50		8		TD, GC	ST 226-358 42
Propan-1-ol	MDHS 72	200 ppm (500 mg/m³)	250 ppm (625 mg/m³)	24		50		8		TD, GC	ST 226-358 42
Propan-1-ol	MDHS 88	200 ppm (500 mg/m³)	250 ppm (625 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 75
Propan-1-ol	MDHS 88	200 ppm (500 mg/m³)	250 ppm (625 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 75
Propan-1-ol	MDHS 96	200 ppm (500 mg/m³)	250 ppm (625 mg/m³)	varies		varies		varies		GC-FID	ST 226-01 38
Propan-1-ol	MDHS 96	200 ppm (500 mg/m³)	250 ppm (625 mg/m³)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Propan-2-ol	MDHS 72	400 ppm (999 mg/m³)	500 ppm (1250 mg/m³)	24		50		8		TD, GC	ST 226-358 42
Propan-2-ol	MDHS 88	400 ppm (999 mg/m³)	500 ppm (1250 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Propan-2-ol	MDHS 96	400 ppm (999 mg/m³)	500 ppm (1250 mg/m³)	3	3	20	200	2.5	15	GC-FID	ST 226-01 38
Propane-1,2-diol (particulates)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Propane-1,2-diol (total vapour & particulates)	OSHA PV2051	150 ppm (474 mg/m³)		60	15	1000	1000	1	15	GC-FID	ST 226-57 39
Propionic acid	OSHA CSI	10 ppm (31 mg/m³)	15 ppm (46 mg/m³)	10		20		8		GC-FID	ST 226-15 38
Propoxur (ISO)	NIOSH 5601	0.5 mg/m³	2 mg/m³	240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 39
Propranolol	MDHS 14/4	2 mg/m³	6 mg/m³	960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
n-Propyl acetate	MDHS 72	200 ppm (849 mg/m³)	250 ppm (1060 mg/m³)	24		50		8		TD, GC	ST 226-357 42
n-Propyl acetate	MDHS 88	200 ppm (849 mg/m³)	250 ppm (1060 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
n-Propyl acetate	MDHS 96	200 ppm (849 mg/m³)	250 ppm (1060 mg/m³)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Propylene oxide	MDHS 72	5 ppm (12 mg/m³)		24		50		8		TD, GC	ST 226-357 42
Propylene oxide	MDHS 80, 88	5 ppm (12 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Propylene oxide	MDHS 96	5 ppm (12 mg/m³)		5		20		4.2		GC-FID	ST 226-01 38
Pulverized fuel ash (inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Pulverized fuel ash (respirable)	MDHS 14/4	4 mg/m³		1056		2200 (2000)		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 FLT 225-58F 96
Pyrethrum	OSHA 70	1 mg/m³		60		1000		1		GC-ECD	ST 226-30-16 38
Pyridine	MDHS 72	5 ppm (16 mg/m³)	10 ppm (33 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Pyridine	MDHS 88	5 ppm (16 mg/m³)	10 ppm (33 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Pyridine	MDHS 96	5 ppm (16 mg/m³)	10 ppm (33 mg/m³)	40		100		8		GC-FID	ST 226-01 38
2-Pyridylamine	OSHA PV2143	0.5 ppm (2 mg/m³)	2 ppm (7.8 mg/m³)	240		1000		4		GC-NPD	F/CST 225-9004 65
Pyrocatechol	OSHA PV2014	5 ppm (23 mg/m³)		100		1000		100 min		HPLC-UV	ST 226-57 39
Refractory ceramic & special purpose fibres		5 mg/m³ (1 fibre/mm)		240		1000		8		PCM	FLT/CL 225-54A 102 FLT 225-1913 88
Rhodium (metal fume & dust) as Rh	MDHS 91/2	0.1 mg/m³	0.3 mg/m³	960	30	2000	2000	8	15	XRF	IOM 225-70A 108 FLT 225-1930 88
Rhodium (soluble salts) as Rh	MDHS 91/2	0.001 mg/m³	0.003 mg/m³	960	30	2000	2000	8	15	XRF	IOM 225-70A 108 FLT 225-1930 88
Rosin-based solder flux fume	MDHS 83/3	0.05 mg/m³	0.15 mg/m³	960	30	2000	2000	8	15	GC-FID	CST 225-8050K (kit) FLT 225-8050 96
Rotenone (ISO)	NIOSH 5007	5 mg/m³	10 mg/m³	120		1000		2		HPLC-UV	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Rouge (total inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Rouge (total respirable)	MDHS 14/4	4 mg/m³		1056		2200 (2000)		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F
Rubber fume	MDHS 47/3	0.6 mg/m³		960	500	2000	2000	8		GR + SE	IOM 225-70A 108 FLT 225-58F 96
Rubber process dust	MDHS 14/4	6 mg/m³		960	30	2000	2000	8	15	GR	IOM 225-70A 108 FLT 225-58F 96
Selenium & compounds (except hydrogen selenide) (as Se)	MDHS 91/2	0.1 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Silane		0.5 ppm (0.67 mg/m³)	1 ppm (1.3 mg/m³)	480		1000		4		AAS-GF	IMP 225-36-2 67 IMP 225-36-5 67 IT 225-22 67
Silica amorphous (inhalable dust)	MDHS 14/4	6 mg/m³		960	30	2000	2000	8	15	GR	IOM 225-70A 108 FLT 225-5-25 93
Silica amorphous (respirable dust)	MDHS 14/4	2.4 mg/m³		1056	30	2200 (2000)	2200/ 2000	8	15	GR	CYC 225-69 111 FLT 225-5-25 93 IOM 225-70A 108 FOAM 225-772 108 FLT 225-5-25 93
Silica fused (respirable dust)	MDHS 14/4	0.08 mg/m³		1056	33	2200	2200/ 2000	8	15	GR	CYC 225-69 111 FLT 225-5-25 93 IOM 225-70A 108 FOAM 225-772 108 FLT 225-5-25 93
Silica, crystalline (respirable)	MDHS 101	0.1 mg/m³		1056		2200 (2000)		8		IR / XRD	CYC 225-69 111 FLT 225-5-25 or IOM 225-70A 108 FOAM 225-772 108 FLT 225-5-25
Silica, crystalline (respirable)	MDHS 14/4	0.1 mg/m³		1056		2200 (2000)		8		GR	CYC 225-69 111 FLT 225-5-25 93 IOM 225-70A 108 FOAM 225-772 108 FLT 225-5-25 93
Silicone carbide (not whiskers) (total inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Silicone carbide (not whiskers) (total respirable)	MDHS 14/4	4 mg/m³		1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Silver (soluble compounds as Ag)	MDHS 91/2	0.01 mg/m³		960	30	2000	2000	8	15	XRF	IOM 225-70A 108 FLT 225-1930 88
Silver, metallic	MDHS 91/2	0.1 mg/m³		240	60	2000	2000	0.5	2	XRF	IOM 225-70A 108 FLT 225-1930 88
Sodium azide (as NaN_3)	OSHA ID-211	0.1 mg/m³	0.3 mg/m³		5		1000		5 min	IC-UV	ST 226-55 39 FLT 225-5-37-P 93 CST 225-2LF 97 SPC 225-23 102 C/HLD 225-1 102
Sodium hydrogen sulphite	OSHA ID-121	5 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 88 C/HLD 225-1 102
Sodium hydroxide	MDHS 14/4		2 mg/m³	960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Sodium-2-(2,4-dichlorophenoxy) ethyl sulphate	OSHA CSI	10 mg/m³	20 mg/m³	varies	varies	varies	varies			CLR	IOM 225-70A 108 FLT 225-1930 88
Softwood dust	MDHS 14/4	5 mg/m³		960	30	2000	2000	8	15	GR	IOM 225-70A 108 FLT 225-58F 96
Starch (respirable)	MDHS 14/4	4 mg/m³		1056		2200 (2000)		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Starch (total inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Styrene	MDHS 72, 80	100 ppm (430 mg/m³)	250 ppm (1080 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Styrene	MDHS 88	100 ppm (430 mg/m³)	250 ppm (1080 mg/m³)	diffusive	diffusive	diffusive	diffusive	8	15	GC-FID	PS 575-006 75
Styrene	MDHS 96	100 ppm (430 mg/m³)	250 ppm (1080 mg/m³)	10	5	20(50)	330	8(3.3)	15	GC-FID	ST 226-01 38
Subtilisins (Bacillus subtilis BPN & Carlsberg)	OSHA CSI	0.00004 mg/m³						Bulk		Bulk	Bulk
Sucrose	MDHS 14/4	10 mg/m³	20 mg/m³	960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Sulfotep (tetraethyl dithiosopyrophosphate, TEPD)	OSHA CSI Σ	0.1 mg/m³		480		1000		100 min		GC-FPD	ST 226-30-16 38
Sulphuric acid	NIOSH 7903	0.05 mg/m³		48		200		4		IC	ST 226-10-03 38
Sulphuric acid	OSHA 113	0.05 mg/m³		480		2000		4		IC	PPI 225-3861 FLT 225-5 93 IS 225-388 SP 225-27 103
Sulphuryl difluoride	NIOSH 6012	5 ppm (21 mg/m³)	10 ppm (42 mg/m³)	10		20		8		IC-ECN	ST 226-16 38
Talc (respirable dust)	MDHS 14/4	1 mg/m³		1056	33	2200	2200	8	15	GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Tantalum	MDHS 91/2	5 mg/m³	10 mg/m³	240	6	2000	2000	0.5	2	XRF	IOM 225-70A 108 FLT 225-1930 88
Tellurium & compounds (except hydrogen telluride) as Te	MDHS 91/2	0.1 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Terphenyls (all isomers)	OSHA CSI		0.5 ppm (4.8 mg/m³)		8.5		1700		5	HPLC-FD	F/CST 225-709 96 C/HLD 225-1 102
1,1,2,2-Tetrabromomethane	MDHS 96	0.5 ppm (7.2 mg/m³)		96		200		8		GC-FID	ST 226-10 38
Tetracarbonylnickel	OSHA CSI		0.1 ppm (0.24 mg/m³)	480		1000		8		AA-GF	F/CST 225-709 96 C/HLD 225-1 102 IMP 225-36-2 67 IT 225-22 67
1,1,2,2-Tetrachloroethane	MDHS 88			diffusive	diffusive	diffusive	diffusive	8	15	GC-FID	PS 575-001 75
1,1,2,2-Tetrachloroethane	MDHS 96			10	3	20	200	8	15	GC-FID	ST 226-01 38
Tetrachloroethylene	MDHS 72, 80	50 ppm (345 mg/m³)	100 ppm (689 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Tetrachloroethylene	MDHS 88	50 ppm (345 mg/m³)	100 ppm (689 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
Tetrachloroethylene	MDHS 96	50 ppm (345 mg/m³)	100 ppm (689 mg/m³)	3		20		2.5		GC-FID	ST 226-01 38
Tetrachlorophthalic anhydride	MDHS 62/2			240	7.5	500	500	8	15	HPLC	IOM 225-70A 108 FLT 225-58F 96 ST 226-35 38
Tetraethyl lead (as Pb)				960	120	2000	2000	8	60	AA	IOM 225-70A 108 FLT 225-1930 88
Tetrahydrofuran	MDHS 88	50 ppm (150 mg/m³)	100 ppm (300 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Tetrahydrofuran	MDHS 96	50 ppm (150 mg/m³)	100 ppm (300 mg/m³)	9	1.5	20(50)	100	7(3)	15	GC-FID	ST 226-01 38
Tetrasodium pyrophosphate	OSHA ID-111	5 mg/m³		960		2000		8		GR IC	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Thallium (soluble compounds) (as Tl)	MDHS 91/2	0.1 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Thionyl chloride	OSHA CSI		1 ppm (4.9 mg/m³)		15		1000		15	IC	IMP 225-36-2 or IMP 225-36-5 67 IT 225-22 67
Tin compounds (inorganic except SnH_4) (as Sn)	MDHS 91/2	2 mg/m³	4 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Tin compounds (organic except cyhexatin) (ISO) (as Sn)	NIOSH 5504	0.1 mg/m³	0.2 mg/m³	480		1000		8		HPLC AA-GF	ST 226-30 38 F/CST 225-706 96 C/HLD 225-1 102
Titanium dioxide - respirable	MDHS 14/4	4 mg/m³		1056		2200 (2000)		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F
Titanium dioxide (inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Toluene	MDHS 72	50 ppm (191 mg/m³)	100 ppm (384 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Toluene	MDHS 80	50 ppm (191 mg/m³)	100 ppm (384 mg/m³)	24		50		8		GC-ECD	ST 226-357 or ST 226-358 42
Toluene	MDHS 88	50 ppm (191 mg/m³)	100 ppm (384 mg/m³)	diffusive	diffusive	diffusive	diffusive	8	15	GC-FID	PS 575-001 75
Toluene	MDHS 96	50 ppm (191 mg/m³)	100 ppm (384 mg/m³)	6	3	100	200	1	15	GC-FID	ST 226-01 38
o-Toluidine	MDHS 75/2	0.2 ppm (0.89 mg/m³)		200		500				HPLC	IOM 225-70A 108 FLT 225-58F 96 ST 226-35
o-Toluidine	MDHS 96	0.2 ppm (0.89 mg/m³)		48		100		8		GC-FID	ST 226-10 38
o-Toluidine	MDHS 96			48		100		8		GC-FID	ST 226-10 38
Tributyl phosphate (all isomers)	NIOSH 5034	5 mg/m³	5 mg/m³	90		1500		1		GC-FPD	F/CST 225-3-01 88 C/HLD 225-1 102
1,2,4-Trichlorobenzene	MDHS 80	1 ppm	5 ppm	varies		varies		varies		GC-ECD	FLT 225-17-03 94 ST 226-30-04 38 CST Special order C/HLD 225-1 102

See page 212 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
1,1,1-Trichloroethane	MDHS 72, 80	100 ppm (555 mg/m³)	200 ppm (1110 mg/m³)	24		50		8		TD, GC	ST 226-358 42
1,1,1-Trichloroethane	MDHS 88	100 ppm (555 mg/m³)	200 ppm (1110 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
1,1,1-Trichloroethane	MDHS 96	100 ppm (555 mg/m³)	200 ppm (1110 mg/m³)		3		200		15	GC-FID	ST 226-01 38
1,1,2-Trichloroethane	MDHS 72			24		50		8		TD, GC	ST 226-358 42
1,1,2-Trichloroethane	MDHS 88			diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
1,1,2-Trichloroethane	MDHS 96			10	3	20	200	8	15	GC-FID	ST 226-01 38
Trichloroethylene	MDHS 72, 80	100 ppm (550 mg/m³)	150 ppm (820 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Trichloroethylene	MDHS 88	100 ppm (550 mg/m³)	150 ppm (820 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Trichloroethylene	MDHS 96	100 ppm (550 mg/m³)	150 ppm (820 mg/m³)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Trichloronitromethane	OSHA PV2103	0.1 ppm (0.68 mg/m³)	0.3 ppm (2.1 mg/m³)	3		200		15 min		GC-ECD	ST 226-93 40
Triethylamine	OSHA PV2060	2 ppm (8 mg/m³)	4 ppm (17 mg/m³)	5	3	100	200	50	15	GC-FID	ST 226-98 40
Triglycidyl isocyanurate (TGIC)	MDHS 85/2	0.1 mg/m³		960	30	2000	2000	8	15	HPLC	IOM 225-70A 108 FLT 225-58F 96
Trimellitic anhydride	MDHS 62/2	0.04 mg/m³	0.12 mg/m³	240	7.5	500	500	8	15	HPLC	IOM 225-70A 108 FLT 225-58F 96 ST 226-35 38
Trimethylbenzenes (all isomers or mixtures)	MDHS 72, 80	25 ppm (125 mg/m³)		24		50		8		TD, GC	ST 226-357 42
Trimethylbenzenes (all isomers or mixtures)	MDHS 88	25 ppm (125 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
3,5,5-Trimethylcyclohex-2-enone	MDHS 72		5 ppm (29 mg/m³)	24		50		8		TD, GC	ST 226-357 42
3,5,5-Trimethylcyclohex-2-enone	MDHS 88		5 ppm (29 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 75
3,5,5-Trimethylcyclohex-2-enone	MDHS 96		5 ppm (29 mg/m³)	10		20(50)		8(3.3)		GC-FID	ST 226-01 38
2,4,6-Trinitrotoluene	OSHA 44	0.5 mg/m³		60		1000		1		GC-TEA-EAP	ST 226-56 39
Tri-o-tolyl phosphate	NIOSH 5037	0.1 mg/m³	0.3 mg/m³	90		1000		1.5		GC-FPD	F/CST 225-3-01 88 C/HLD 225-1 102
Triphenyl phosphate	NIOSH 5038	3 mg/m³	6 mg/m³	240		1000		4		GC-FPD	F/CST 225-3-01 88 C/HLD 225-1 102
Tungsten & insoluble compounds (as W) & others	MDHS 91/2	5 mg/m³	10 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Tungsten & soluble compounds (as W)	MDHS 91/2	1 mg/m³	3 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Turpentine	NIOSH 1551	100 ppm (566 mg/m³)	150 ppm (850 mg/m³)	10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Vanadium pentoxide	MDHS 91/2	0.05 mg/m³		960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Vanadium pentoxide	NIOSH 7504	0.05 mg/m³		600		2600		4		XRD	F/CST 225-803 93 CYC 225-01-02 111 C/HLD 225-1 102
Vinyl chloride	MDHS 96	3 ppm (7.8 mg/m³)		5		50		1.6		GC-FID	ST 226-01 38
Vinylidene chloride	MDHS 88	10 ppm (40 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Vinylidene chloride	MDHS 96	10 ppm (40 mg/m³)		5		20		4		GC-FID	ST 226-01 38
Welding fume	ISO 10882-1					750				GR	H/SET 225-6200 MINI 225-6201 CAL 225-6202 FLT 225-8050
Wood dust (inhalable)	MDHS 14/4			1056		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Wood dust (respirable)	MDHS 14/4			1056		2200		8		GR	CYC 225-69 111 FLT 225-58F or IOM 225-70A 108 FOAM 225-772 108 FLT 225-58F 96
Wool process dust	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Xylene (o-,m-,p-, or mixed isomers)	MDHS 72, 80	50 ppm (220 mg/m³)	100 ppm (441 mg/m³)	24		50		8		TD, GC	ST 226-357 42
Xylene (o-,m-,p-, or mixed isomers)	MDHS 88	50 ppm (220 mg/m³)	100 ppm (441 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 75
Xylene (o-,m-,p-, or mixed isomers)	MDHS 96	50 ppm (220 mg/m³)	100 ppm (441 mg/m³)	21	3	50	200	7	15	GC-FID	ST 226-01 38
Yttrium	MDHS 91/2	1 mg/m³	3 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Zinc chloride (fume)	MDHS 91/2	1 mg/m³	2 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Zinc distearate (inhalable dust)	MDHS 91/2	10 mg/m³	20 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88
Zinc distearate (respirable dust)	MDHS 91/2	4 mg/m³		1056		2200 (2000)		8		XRF	CYC 225-69 111 FLT 225-1930 or IOM 225-70A 108 FOAM 225-772 108 FLT 225-1930 88
Zinc oxide	MDHS 14/4			960		2000		8		GR	IOM 225-70A 108 FLT 225-58F 96
Zirconium compounds (as Zr)	MDHS 91/2	5 mg/m³	10 mg/m³	960		2000		8		XRF	IOM 225-70A 108 FLT 225-1930 88

√ *Use two Cat. No. 226-35 tubes.*

¶ *Use two Cat. No. 226-36 tubes.*

§ *Use Cat. No. 226-44-02 if RH is 50% or greater.*

† *Filter requires coating.*

£ *The filter is not analysed.*

∑ *Contact HSE for more details on sampling and analysis.*

See page 212 for abbreviations.

A

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Abietic acid	OSHA CSI				200		2000		1.6		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102 225-32 102
Absidia species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Absidia species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Acenaphthene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Acenaphthene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Acenaphthene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-UV	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Acenaphthylene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Acenaphthylene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Acenaphthylene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-UV	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Acetaldehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
Acetaldehyde	NIOSH 2538		LFC		10		20		8		GC-FID	ST 226-27 38
Acetaldehyde	NIOSH 3507		LFC		60		125		8		HPLC	IMP 225-36-2 67 IT 225-22 67
Acetaldehyde	OSHA 68	1007	200		3	0.75	50	50	1	15	GC-NPD	ST 226-27 38
Acetaldehyde (Aldehydes, Screening)	NIOSH 2539		LFC		5		10		8		GC-FID & GC-MS	ST 226-118 40
Acetamide	OSHA PV2084				10		20(50)		8(3.3)		GC-NPD	ST 226-10 38
Acetates (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Acetic acid	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Acetic acid	NIOSH 1603		10	15	24		50		8		GC-FID	ST 226-01 38
Acetic acid	OSHA ID 186SG		10		48		200		4		IC or GC-FID	ST 226-01 38
Acetic acid	OSHA PV2119				48		200		4		IC or GC-FID	ST 226-01 38
Acetic anhydride	NIOSH 3506			5	90		1000		1.5		VAS	IMP 225-36-2 67 IT 225-22 67
Acetic anhydride	OSHA 102	1392	5		7.5	7.5	50	500	2.5	15	GC-NPD	CF/CST 225-9010 †† 64 C/HLD 225-1 102
Acetic anhydride	OSHA 82	1391	5		0.75		50		15 min		GC-NPD	CF/CST 225-9009 64 C/HLD 225-1 102
Acetoin	NIOSH 2558				1-10		10-200		varies		GC-FID	ST NA SKC
Acetoin (acetyl methyl carbinol)	OSHA 1012		0.05		9	3	50	200	3	15	GC-FID	ST 226-183 41
Acetoin (acetyl methyl carbinol)	OSHA 1013		0.05		9	3	50	200	3	15	GC-FID	ST 226-183 41
Acetone	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
Acetone	OSHA 69		1000		3		50		1		GC-FID	ST NA SKC
Acetone (Ketones I)	NIOSH 1300		250		2	0.75	20	50	100 min	15	GC-FID	ST 226-01 38
Acetone (Ketones I)	NIOSH 2555				0.5 - 3		10-200		varies		GC-FID	ST NA SKC
Acetonitrile	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Acetonitrile	NIOSH 1606		20		10		20(50)		8(3.3)		GC-FID	ST 226-09 38
Acetophenone	OSHA PV2003				12		100		2		GC-FID	ST 226-35 38
Acetyl methyl carbinol (acetoin)	NIOSH 2558				1-10		10-200		varies		GC-FID	ST NA SKC
2-Acetylaminofluorene	OSHA CSI				240		1000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Acetylene tetrabromide	OSHA CSI		1		96		200		8		GC-FID	ST 226-10 38
Acetylene tetrabromide (1,1,2,2-tetrabromoethane)	NIOSH 2003				96		200		8		GC-FID	ST 226-10 38
Acetylsalicylic acid	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Acid black 128	OSHA CSI				200		1000		3.3		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Acid blue 9	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Acid orange 74	OSHA CSI				200		1000		3.3		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Acid red 114	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Acid yellow 34	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Acid yellow 42	OSHA CSI				100		1000		100 min		HPLC-FD	F/CST 225-706 96 C/HLD 225-1 102
Acremonium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Acremonium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Acridine	OSHA 58	1077	0.2 mg/m³		960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 CST 225-2LF 97 C/HLD 225-1 102
Acrolein	NIOSH 2501		0.1	0.3	24	3	50	200	8	15	GC-NPD	ST 226-118 40
Acrolein	OSHA 52		0.1		48	3	100	200	8	15	GC-NPD	ST 226-117 40

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA	CLG/STEL	Rate (ml/min) TWA	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
Acrolein (Aldehydes, Screening)	NIOSH 2539		0.1	0.3	5		10		8		GC-FID & GC-MS	ST 226-118 40
Acrylamide	OSHA 21		0.3 mg/m³		120		1000		2		GC-NPD	ST 226-10 38 FLT 225-16 96 CST 225-32 102
Acrylamide	OSHA PV2004		0.3 mg/m³		120		1000		2		HPLC-UV	ST 226-57 39
Acrylic acid	NON 10				48		100		8		GC	ST 226-70A 39
Acrylic acid	OSHA 28				24		100		4		HPLC-UV	ST 226-30-08 38
Acrylonitrile	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Acrylonitrile	NIOSH 1604	1266	1	10 (15 min)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Acrylonitrile	OSHA 37	1265	2	10	20	6	200	400	100 min	15	GC-NPD	ST 226-01 38
Actinomycetes, thermophilic	NIOSH 0800				varies		28300		varies		varies	BI 225-9611 120
Adipic acid	OSHA CSI				96		200		8		GC-FID	ST 226-30-16 38
Adiponitrile	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Aerobic bacteria (by GC-FAME)	NIOSH 0801				50-300		28300		varies		GC-FID	BI 225-9611 120
Alcohols (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Alcohols combined	NIOSH 1405		varies	varies	varies	varies	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Alcohols I *(see specific compounds)*	NIOSH 1400		varies		varies		varies		varies		GC-FID	ST 226-01 38
Alcohols II *(see specific compounds)*	NIOSH 1401		varies		varies		varies		8		GC-FID	ST 226-01 38
Alcohols III *(see specific compounds)*	NIOSH 1402		varies		varies		varies		8		GC-FID	ST 226-01 38
Alcohols IV *(see specific alcohol)*	NIOSH 1403		varies		varies		varies		varies		GC-FID	ST 226-01 38
Aldehydes	EPA TO-5	1671			< 80 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Aldehydes (screening)	NIOSH 2539		varies		5		20		4		GC-FID & GC-MS	ST 226-118 40
Aldehydes (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Aldicarb (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Aldicarb (Temik)	OSHA 74	1399			480		1000		8		GC-NPD	ST 226-30-16 38
Aldrin	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Aldrin	NIOSH 5502		0.25 mg/m³		240		500		8		GC-ECN	F/CST 225-709 96 IMP 225-36-2 67 IT 225-22 67 C/HLD 225-1 102
Aldrin	OSHA CSI		0.25 mg/m³		240		1000		4		GC-ECN	F/CST 225-709 96 IMP 225-36-2 67 IT 225-22 67 C/HLD 225-1 102
Aliphatic hydrocarbons (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Alkaline dusts	NIOSH 7401					30		2000		15	TITRA	F/CST 225-1715 94 C/HLD 225-1 102
Allethrin	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Allyl alcohol	OSHA CSI		2		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Allyl alcohol	OSHA PV2140		2 (skin)		10		50		200 min		GC-FID	ST 226-01 38
Allyl alcohol (Alcohols Combined)	NIOSH 1405		2	4 (skin)	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Allyl alcohol (Alcohols III)	NIOSH 1402		2	4	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Allyl chloride	NIOSH 1000		1	2		15		1000		15	GC-FID	ST 226-01 38
Allyl chloride	OSHA 07	1126	1		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Allyl glycidyl ether	NIOSH 2545		5	10	6	3	50	200	2	15	GC-FID	ST 226-35-03 39
Allyl propyl disulfide	OSHA PV2086		2		10		20(50)		8(3.3)		GC-FPD	ST 226-110 40
Alternaria species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Alternaria species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Alumina (aluminum & compounds [total dust as Al])	NIOSH 7013		10 mg/m³		360		1000		6		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Alumina (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	CYC 225-01-02 111 C/HLD 225-1 102 F/CST 225-803 93
Alumina (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
alpha-Alumina (respirable fraction)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	CYC 225-105 110 F/CST 225-803 93 C/HLD 225-1 102
alpha-Alumina (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Aluminum (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		10 mg/m³ (total dust)	5 mg/m³ (respirable)	1-330		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Aluminum & compounds (total dust as Al)	NIOSH 7013		10 mg/m³		360		1000		6		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Aluminum (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		10 mg/m³ (total dust)		5-100		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 93 C/HLD 225-1 102
Aluminum (Elements by ICP HNO_3 Digestion)	NIOSH 7303		10 mg/m³ (total dust) 5 mg/m³ (respirable fume)		2-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Aluminum (Elements by ICP $HNO_3/HClO_4$ Ashing)	NIOSH 7300	1455	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)		5-100		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Aluminum (respirable fraction)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-105 110
Aluminum (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Aluminum soluble salts	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Aluminum welding fumes	OSHA CSI				960		2000		8		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Aluminum, pyro powders	OSHA CSI				960		2000		8		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Alupent	OSHA CSI				720		2000		6		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Amiben	OSHA CSI				240		1000		4		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Amines	NIOSH 2002		varies		20		40		8		GC-FID or GC-NSD	ST 226-10 38
Amines, aliphatic	NIOSH 2010		varies		24		50		8		GC-FID	ST 226-10 38
2-Amino-2-methy-1-propanol	OSHA CSI				9		100		90 min		GC-NPD	ST 226-10 38
2-Amino-2-methy-1-propanol	OSHA PV2145				10		100		100 min		HPLC-UV	ST 226-30-16 38
4-Aminobiphenyl	OSHA 93	1233			100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
2-Aminoethanol	NIOSH 2007		3	6	10		20		8		GC-FID	ST 226-10-04 38
2-Aminoethanol	NIOSH 3509		3	6	240		1000		4		IC	IMP 225-36-1 67 IT 225-22 67
2-Aminoethanol	OSHA PV2111		3		10	1.5	100	100	100 min	15	HPLC-UV	ST 226-30-18 38
Aminoethanol compounds I *(see specific compounds)*	NIOSH 2007		varies		varies		varies		8		GC-FID	ST 226-10-04 38
Aminoethanol compounds II *(see specific compounds)*	NIOSH 3509		varies		240		1000		4		IC	IMP 225-36-1 67 IT 225-22 67
Aminoethylethanolamine	OSHA PV2116				10		100				HPLC-UV	ST 226-30-18 38
N-Aminoethylpiperazine	OSHA CSI				9		100		90 min		GC-NPD	ST 226-98 40
p-Aminophenylarsonic acid (arsenic, organo-)	NIOSH 5022				960		2000		8		IC-AA	FLT 225-17-01 94 C/HLD 225-1 102 CST 225-3LF 97
2-Aminopyridine	OSHA CSI		0.5		12		200		1		GC-FID	ST 226-35-02 38
2-Aminopyridine	OSHA PV2143		0.5		240		1000		4		GC-NPD	CF/CST 225-9004 64 C/HLD 225-1 102
3-Aminopyridine	OSHA PV2143				240		1000		4		GC-NPD	CF/CST 225-9004 64 C/HLD 225-1 102
4-Aminopyridine	OSHA PV2143				240		1000		4		GC-NPD	CF/CST 225-9004 64 C/HLD 225-1 102
Amitrole	OSHA PV2006				60		1000		1		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Ammonia	NIOSH 6015		25	35	72	3	150	200	8	15	VAS	ST 226-10-06 38 F/CST 225-3-01** 90
Ammonia	NON 41				18	5	75	500	4	10	CLR	ST 226-61 39
Ammonia	OSHA ID 188	1008	50		24	7.5	100	500	4	15	IC-CD	ST 226-29 38
Ammonia (by IC)	NIOSH 6016		25	35	48	3	100	200	8	15	IC	ST 226-10-06 38 F/CST 225-3-01 90
Ammonium chloride (fume)	OSHA ID 188				960	30	2000	2000	8	15	IC-CD	F/CST 225-3-01 90 C/HLD 225-1 102
Ammonium hydroxide *(see ammonia)*												
Ammonium metavanadate *(see vanadium oxides)*	NIOSH 7504											
Ammonium nitrate	OSHA CSI				960		2000		8		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Ammonium sulfamate (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	CYC 225-105 110 F/CST 225-803 93 C/HLD 225-1 102
Ammonium sulfamate (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Ammonium sulfamate (total dust)	OSHA ID 188		15 mg/m³		960		2000		8		GR & IC-ECN	F/CST 225-3-01 90 C/HLD 225-1 102
n-Amyl acetate	OSHA 07		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
sec-Amyl acetate (2-pentyl acetate)	OSHA 07		125		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
n-Amyl acetate (Esters I)	NIOSH 1450		100		1-10		10-200		varies		GC-FID	ST 226-01 38
Amyl nitrite	OSHA CSI				8		50		2.5		HPLC-UV	ST 226-01 38
Aniline	NIOSH 2017		LFC		24		200		2		GC-FID	CF/CST 225-9004 64 ST 226-15 38
Aniline	OSHA PV2079		5		24		50		8		GC-FID	ST 226-98 40
Aniline (Amines, Aromatic)	NIOSH 2002	1058	LFC		24		50		8		GC-FID or GC-NSD	ST 226-10 38
o-Anisaldehyde	OSHA CSI				96		200		8		HPLC-UV	ST 226-30 38
Anisidine	NIOSH 2514		0.5 mg/m³		240		1000		4		HPLC-UV	ST 226-30-05 38
Anisidine (o- & p-isomers)	OSHA CSI		0.5 mg/m³		240		1000		4		HPLC-UV	ST 226-30-05 38
Anthophyllite fibers *(see asbestos fibers)*	NIOSH 7400											
Anthracene	OSHA 58	1075	0.2 mg/m³		960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 C/HLD 225-1 102 CST 225-2LF 97

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Anthracene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m^3 (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Anthracene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Anthracene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-UV	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Antimony & compounds (as Sb)	OSHA ID 121		0.5 mg/m^3		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Antimony & compounds (as Sb)	OSHA ID 125G		0.5 mg/m^3		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Antimony (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.05 mg/m^3		1-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Antimony (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.5 mg/m^3		50-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Antimony (Elements by ICP HNO_3 Digestion)	NIOSH 7303		0.5 mg/m^3		3-100,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Antimony (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.5 mg/m^3		50-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Antimony (ICP Analysis of Metal/metalloid Particulates from Solder Operations)	OSHA ID 206		0.5 mg/m^3		480		2000		4		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
ANTU (alphanaphthyl thiourea)	OSHA CSI		0.3 mg/m^3		480		2000		4		HPLC-UV	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Apron	OSHA PV2102				60		1000		1		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Aroclor	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Aroclor	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
Aroclor 1242	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Aroclor 1242 (42% Cl) *(see polychlorobiphenyls)*	NIOSH 5503											
Aroclor 1254	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Aroclor 1254 (54% Cl) *(see polychlorobiphenyls)*	NIOSH 5503											
Aroclor 1260	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Aromatic hydrocarbons (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Arsenic (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.002 mg/m^3		32-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Arsenic & compounds (as As)	NIOSH 7900		2 µg/m^3 (15 min)		30		2000		15		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Arsenic (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.002 mg/m^3		5-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Arsenic (Elements by ICP HNO_3 Digestion)	NIOSH 7303		0.002 mg/m^3		8-5,000,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Arsenic (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1040	0.002 mg/m^3 (C)		5-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Arsenic (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Arsenic (inorganic compounds as As)	OSHA ID 105		0.01 mg/m^3		960		2000		8		AAS-HGA	F/CST 225-3-01 90 C/HLD 225-1 102
Arsenic trioxide as AS	NIOSH 7901		2 mg/m^3 (15 min)		30		2000		15		AAS-GF	FLT 225-5 ‡ 88 CST 225-2LF 97 C/HLD 225-1 102
Arsenic, inorganic (volatile compounds as As)	OSHA ID 105		0.01 mg/m^3		960		2000		8		AAS-HGA	CF/CST 225-9001 64 C/HLD 225-1 102
Arsenic, organo-	NIOSH 5022				960		2000		8		IC-AA	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Arsine	NIOSH 6001	1278	2 µg/m^3 (15 min)		10	3	20	200	8	15	AAS-GF	ST 226-01 38
Arylam *(see carbaryl)*												
Asbestos	OSHA ID 160	1301	0.1 fbr/cc	1 fbr/cc EL	25-1200	25-1200	500-2500	500-2500	varies	varies	PCM	FLT/CL 225-321 or FLT/CL 225-326 or FLT/CL 225-321A or FLT/CL 225-327 90
Asbestos ((bulk) by PLM)	NIOSH 9002		1% (bulk)		bulk						PLM	
Asbestos (by TEM)	NIOSH 7402		0.1 fbr/cc/400L		960		2000		8		TEM	FLT/CL 225-327 90
Asbestos (chrysotile)	NIOSH 9000				bulk						XRD	
Asbestos (mass concentrations)	ASTM D 5756	1440			varies		2000		2 min (minimum)		TEM	MVC 225-322 142
Asbestos (structure number concentrations)	ASTM D 5755	1440			varies		2000		2 min (minimum)		TEM	MVC 225-322 142
Asbestos fibers	NIOSH 7400	1033	0.1 fbr/cc/400L		varies		varies		varies		PCM	FLT/CL 225-321 or FLT/CL 225-326 or FLT/CL 225-321A or FLT/CL 225-327 90
Aspartame	NIOSH 5031				480		1000		8		HPLC-UV	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Aspergillus flavipes species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aspergillus flavipes species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Aspergillus flavus species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aspergillus flavus species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Aspergillus fumigatus species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aspergillus fumigatus species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120

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References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Aspergillus glaucus species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aspergillus glaucus species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Aspergillus nidulans species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aspergillus nidulans species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Aspergillus niger species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aspergillus niger species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Aspergillus ochraceus (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aspergillus ochraceus (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Aspergillus versicolor (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aspergillus versicolor (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Asphalt fume (benzene-soluble & total particulate)	NIOSH 5042			5 mg/m³ (15 min) (C)	360	60	1000	4000	6	15	GR	FLT 225-27-07 94 SP 225-27 103 CST 225-2LF 97
Asphalt fume particulate	ASTM D 6494				960		2000		8		GR	F/CST 225-1713 94 C/HLD 225-1 102
Asphalt fumes (petroleum)	OSHA 58	1078			960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 CST 225-2LF 97 C/HLD 225-1 102
Atrazine	ASTM D 4861				240-7200		1000-5000		4-24		GC-NPD	PUF 226-92 44
Atrazine	NIOSH 5602		5		480		1000		8		GC-ECD	ST 226-58 39
Atrazine	OSHA CSI				240		1000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Auramine	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Aureobasidium pullulans (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aureobasidium pullulans (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Aureobasidium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Aureobasidium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Azelaic acid	NIOSH 5019				960		2000		8		GC-FID	F/CST 225-803 93 C/HLD 225-1 102
Azinphos-ethyl	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Azinphos-methyl	OSHA PV2087		0.2 mg/m³		480		1000		8		GC-FPD	ST 226-30-16 38
Azinphos-methyl (Organophosphorus Pesticides)	NIOSH 5600		0.2 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
1,1'-Azobisformamide	OSHA CSI				90		1000		1.5		HPLC-UV	ST 226-30-16 38
Bacteria	NIOSH 0800				varies		28300		varies		varies	BI 225-9611 120
Bacteria (by GC-FAME)	NIOSH 0801				50-300		28300		varies		GC-FID	BI 225-9611 120
Bacteria (in air)	NON 48				62.5-375		12500 +		5-30		varies	BS 225-9595 122 VT 225-9598A◊ 122
Barium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				3-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Barium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.5 mg/m³		50-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Barium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				1-100,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Barium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2415 140 TMP 225-2403 or
Barium (insoluble compounds)	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Barium (soluble compounds)	NIOSH 7056		0.5 mg/m³		960		2000		8		AA	F/CST 225-3-01 90 C/HLD 225-1 102
Barium (soluble compounds)	OSHA ID 121		0.5 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Barium chloride (barium, soluble compounds)	NIOSH 7056		0.5 mg/m³		960		2000		8		AA	F/CST 225-3-01 90 C/HLD 225-1 102
Barium sulfate (respirable fraction)	OSHA ID 204	1216	5 mg/m³		varies		varies		varies		GR & XRF	CYC 225-105 110 C/HLD 225-1 102 F/CST 225-3-01 90
Barium sulfate (total dust)	OSHA ID 121	1217	15 mg/m³		960		2000		8		AA or AES	F/CST 225-802 93 C/HLD 225-1 102
Baygon (propoxur)	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Baygon (propoxur)	OSHA PV2007				48		100		8		HPLC-UV	ST 226-30-16 38
Bendiocarb	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Bendiocarb (Ficam)	OSHA PV2008				240		1000		4		HPLC-UV	ST 226-30-16 38
Benomyl (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Benomyl (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		HPLC-UV	ST 226-30-16 38 CYC 225-105 110
Benomyl (total dust)	OSHA PV2107		15 mg/m³		60		1000		1		HPLC-UV	ST 226-30-16 38
Bentonite *(see dust, total and respirable nuisance)*												
Benz(a)anthracene	OSHA CSI				960		2000		8		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Benz(a)anthracene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Benz(a)anthracene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benz(a)anthracene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzaldehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
Benzene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Benzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Benzene	OSHA 1005	1749	1	5	12	0.75	50	50	4	15	GC-FID	ST 226-01 38
Benzene	OSHA 1005	1749	1	5					8	15	GC-FID	PS 575-002 75
Benzene	OSHA 12	1009	1	5	10	3	200	200	50 min	15	GC-FID	ST 226-01 38
Benzene (by portable GC)	NIOSH 3700	1029	0.1	1 (15 min)	varies		20-5000		varies		P GC-PID	SB 232 Series 55
Benzene (Hydrocarbons, Aromatic)	NIOSH 1501		0.1	1	5-30	5-30	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
alpha-Benzene hexachloride	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
beta-Benzene hexachloride	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
gamma-Benzene hexachloride	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
1,2-Benzenedicarboxylic acid	OSHA CSI				240		1000		4		GC-FID	ST 226-56 39
Benzene-soluble & total particulate (asphalt fume)	NIOSH 5042			5 mg/m³ (15 min) (C)	360	60	1000	4000	6	15	GR	FLT 225-27-07 94 SP 225-27 103 CST 225-2LF 97
Benzene-soluble particulate matter	ASTM D 4600	1416			960		2000		8		GR	FLT 225-7 96 SP 225-27 103 CST 225-2LF 97 C/HLD 225-1 102
Benzidine	NIOSH 5509		LFC		96		200		8		HPLC-UV	FLT 225-16 96 CST 225-32 102
Benzidine	OSHA 65	1239			100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
Benzidine dyes (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC	FLT 225-17A 94 CST 225-3LF 97 C/HLD 225-1 102
Benzidine-based dyes	OSHA CSI				480		1000		8		HPLC-UV	FLT 225-17-04 94 CST 225-3LF 97 C/HLD 225-1 102
Benzo(a)pyrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515		0.1 mg/m³		480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(a)pyrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95 PEM 761-200B 114 FLT 225-1709 94
Benzo(a)pyrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(b)fluoranthene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95 PEM 761-203B 114 FLT 225-1709 94
Benzo(b)fluoranthene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(b)fluoranthene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(e)pyrene	OSHA CSI				960		2000		8		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Benzo(e)pyrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(e)pyrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Benzo(e)pyrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(g,h,i)perylene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Benzo(g,h,i)perylene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(g,h,i)perylene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(k)fluoranthene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzo(k)fluoranthene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Benzoalphapyrene	OSHA 58		0.2 mg/m³		960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 CST 225-2LF 97 C/HLD 225-1 102
2,3-Benzofuran	OSHA CSI				96		200		8		HPLC-UV	ST 226-30 38
Benzoic acid	OSHA CSI				24		100		4		GC-FID	ST 226-115 40
Benzophenone	NON 39				480		1000		8		GC-FID	ST 226-56 39
Benzophenone	OSHA PV2130		0.5 mg/m³		48		200		4		GC-FID	ST 226-110 40
Benzophenonetetracarboxylic acid dianhydride	OSHA CSI				100		1000		100 min		HPLC	FLT 225-17-04 94 CST 225-2LF 97 C/HLD 225-1 102
Benzothiazole in asphalt fume	NIOSH 2550				480		1000		8		GC-SCD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
2-Benzothiazolethiol	OSHA CSI				240		2000		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Benzotrichloride	OSHA ID 216SG				12		200		1		GC-FID	ST 226-35-03 39
Benzoyl chloride	OSHA CSI				90		1000		1.5		GC-ECD	IMP 225-36-1 67 IT 225-22 67
Benzoyl peroxide	NIOSH 5009		5 mg/m³		90		1500		1		HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
Benzyl acetate	OSHA PV2124				10		100		100 min		GC-FID	ST 226-73 39

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Benzyl alcohol	OSHA PV2009				24		100		4		GC-FID	ST 226-95 40
Benzyl chloride	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Benzyl chloride	OSHA 07	1187	1		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Benzyl chloride (hydrocarbons, halogenated)	NIOSH 1003			1		10		10-200		varies	GC-FID	ST 226-01 38
Beryllium & compounds	OSHA ID 125G		2 µg/m³	5 µg/m³	480	60	2000	2000	4	15	ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Beryllium & compounds (as Be)	NIOSH 7102			0. 5 µg/m³	960		2000		8		AA-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Beryllium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.0005 mg/m³	0.005 mg/m³	10-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Beryllium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.0005 mg/m³		1250-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Beryllium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				35-25,000,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Beryllium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.0005 mg/m³		1250-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Beryllium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2415 140 TMP 225-2403 or
Beryllium (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206		2 mg/m³	5 mg/m³ (C)	480	10	2000	2000	4	5	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Beryllium (in air by portable fluorometry)	NIOSH 7704		2 mg/m³	5 mg/m³ (C)	240-2000		1000-4000				P FLUOR UV/VIS	F/CST 225-3-01 or F/CST 225-3100 90 C/HLD 225-1 102
Betasan	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
BHC (alpha-, beta-, gamma-)	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Bioaerosol sampling	NIOSH 0800				varies		28300		varies		varies	BI 225-9611 120
Bioaerosols					15-150		15000		1-10 min		varies	STC 225-9820 101
Bioaerosols	NON 48				62.5-375		12500 +		5-30		varies	BS 225-9595 122 VT 225-9598A◊ 122
Biphenyl (diphenyl)	NIOSH 2530		0.2		10		20(50)		8(3.3)		GC-FID	ST 226-35-01 38
Bipolaris species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Bipolaris species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
4,4'-Bipyridine (vapor & aerosol)	NON 26				96	2	200	200	8	10	HPLC	ST 226-30-05 38 F/CST 225-706 96 C/HLD 225-1 102
Bis (tributyltin) oxide (tin, organic compounds [as Sn])	OSHA CSI				960		2000		8		AA-GF	F/CST 225-709 96 C/HLD 225-1 102
Bismuth	OSHA CSI				960		2000		8		AA	F/CST 225-3-01 90 C/HLD 225-1 102
Bismuth (Elements by ICP HNO_3 Digestion))	NIOSH 7303				1-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Bismuth telluride, Se-doped	OSHA ID 121		5 mg/m³		960		2000		8		AA or AES	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Bismuth telluride, undoped (respirable dust)	OSHA ID 121		5 mg/m³		varies		varies		varies		GR & AA or GR & AES	CYC 225-105 110 C/HLD 225-1 102 F/CST 225-803 93
Bismuth telluride, undoped (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Bisphenol A	OSHA 1018				240		1000		240 (min)		HPLC-UV/ PDA	F/CST 225-709 96 C/HLD 225-1 102
Bladex	OSHA CSI				100		1000		100 min		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Borates tetrasodium salts (anhydrous, decahydrate & pentahydrate)	OSHA ID 125G				480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Boric acid (total dust)	OSHA CSI				960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Boron (Elements by ICP HNO_3 Digestion))	NIOSH 7303				1-3300		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Boron (total dust)	OSHA CSI				960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Boron carbide	NIOSH 7506				600		2500		4		XRD	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Boron oxide (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Boron oxide (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Boron oxide (total dust)	OSHA CSI		15 mg/m³		480		2000		4		ICP-AES	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Boron tribromide	OSHA CSI					5		1000		5	IC	IMP 225-36-2 67 IT 225-22 67
Boron trifluoride	OSHA CSI			1 (C)		15		1000		15	ISE	IMP 225-36-2 67 IT 225-22 67
Botran	OSHA CSI				400		1000		6.7		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Bromacil	OSHA CSI				50		1000		50 min		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Bromine	NIOSH 6011	1329	0.1	0.3	240	15	1000	1000	4	15	IC	CF/CST 225-9006 64 C/HLD 225-1 102
Bromine	OSHA ID 108		0.1		120	7.5	500	500	4	15	IC	IMP 225-36-2 67 IT 225-22 67
Bromine pentafluoride	OSHA CSI				48		200		4		IC	ST 226-10-03 38
Bromoethane (ethyl bromide)	NIOSH 1011				4		20(50)		3.3(1.3)		GC-FID	ST 226-01 38

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Bromoform	OSHA 07	1127	0.5		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Bromoform (hydrocarbons, halogenated)	NIOSH 1003		0.5 (skin)		10		10-200		varies		GC-FID	ST 226-01 38
1-Bromopropane	NIOSH 1025				0.1-12		10-200		varies		GC-FID	ST 226-01 38
1-Bromopropane	OSHA 1017				12		50		240 (min)		GC-FID	ST 226-01 38
1-Bromopropane	OSHA PV2061				12		100		2		GC-FID	ST 226-01 38
2-Bromopropane	NIOSH 1025				0.1-12		10-200		varies		GC-FID	ST 226-01 38
2-Bromopropane	OSHA 1017				12		50		240 (min)		GC-FID	ST 226-01 38
2-Bromopropane	OSHA PV2062				12		100		2		GC-FID	ST 226-01 38
Bromotrifluoromethane (trifluorobromomethane)	NIOSH 1017		1000		0.3		20		15 min		GC-FID	ST 226-09 38 ST 226-01 38
Bromoxynil	NIOSH 5010				240		1000		4		HPLC-UV	F/CST 225-1713 94 C/HLD 225-1 102
Bromoxynil octanoate	NIOSH 5010				240		1000		4		HPLC-UV	F/CST 225-1713 94 C/HLD 225-1 102
Bronkosol	OSHA CSI				480		1000		8		HPLC	F/CST 225-706 96 C/HLD 225-1 102
Brucine	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
BTEX (hydrocarbons, aromatic. *See benzene, toluene, ethylbenzene, and xylene)*	NIOSH 1501		varies		varies		varies		varies		GC-FID	ST 226-01 38
1,3-Butadiene	NIOSH 1024	1010	LFC		10		20		8		GC-FID	ST 226-37 39
1,3-Butadiene	OSHA 56	1011	1	5	3		50		1		GC-FID	ST 226-73 39
Butane	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1,3-Butanediol	OSHA CSI				60		2000		30 min		GC-FID	ST 226-57 39
1-Butanethiol (butyl mercaptan)	NIOSH 2525			0.5	1		50		15		GC-FPD	ST 226-109 40
n-Butanol (alcohols combined)	NIOSH 1405		50 (skin)		2-10		10-200		varies		GC-FID	ST 226-01 38
2-Butanone	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
2-Butanone	OSHA 1004		200		12		50		4		GC-FID	ST NA SKC
2-Butanone (Ketones I)	NIOSH 2555				1-10		10-200		varies		GC-FID	ST NA SKC
2-Butanone (methyl ethyl ketone)	NIOSH 2500	1012	200	300	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-81A 39
2-Butanone (methyl ethyl ketone)	OSHA 1004		200				16.88		8		GC-FID	PS 575-002 75
2-Butanone (methyl ethyl ketone)	OSHA 16	1282	200		3	1.5	100	100	30 min	15	GC-FID	ST 226-10 38
2-Butanone (methyl ethyl ketone)	OSHA 84		200		3	0.75	50	50	1	15	GC-FID	ST NA SKC
Butene	OSHA CSI				1		20		50 min		GC-FID	ST 226-01 38
2-Butoxyethanol (alcohols IV)	NIOSH 1403	1275	5 (skin)		2-10		10-50		varies		GC-FID	ST 226-01 38
2-Butoxyethanol (butyl CELLOSOLVE solvent)	OSHA 83		50		48		100		8		GC-FID	ST 226-01 38
2-Butoxyethanol acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
2-Butoxyethanol acetate (butyl CELLOSOLVE acetate)	OSHA 83				48		100		8		GC-FID	ST 226-01 38
n-Butyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
n-Butyl acetate	OSHA 07		150		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
n-Butyl acetate	OSHA 1009	1750	150		12	0.75	50	50	4	15	GC-FID	ST 226-01 38
n-Butyl acetate	OSHA 1009	1750	150				13.07	13.07	8	15	GC-FID	PS 575-002 75
sec-Butyl acetate	OSHA 07		200		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
sec-Butyl acetate	OSHA 1009	1750	200		12	0.75	50	50	4	15	GC-FID	ST 226-01 38
sec-Butyl acetate	OSHA 1009	1750	200				12.74	12.74	8	15	GC-FID	PS 575-002 75
t-Butyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
t-Butyl acetate	OSHA 07		200		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
t-Butyl acetate	OSHA 1009	1750	200		12	0.75	50	50	4	15	GC-FID	ST 226-01 38
t-Butyl acetate	OSHA 1009	1750	200				13.09	13.09	8	15	GC-FID	PS 575-002 75
n-Butyl acetate (Esters I)	NIOSH 1450	1272	150	200	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
sec-Butyl acetate (Esters I)	NIOSH 1450		200		1-10		10-200		varies		GC-FID	ST 226-01 38
t-Butyl acetate (Esters I)	NIOSH 1450		200		1-10		10-200		varies		GC-FID	ST 226-01 38
Butyl acrylate	OSHA PV2011				12		50		4		GC-FID	ST 226-73 39
n-Butyl acrylate	NON 54		5	15	10	3	20	200	8	15	GC-FID	ST 226-81A 39
n-Butyl alcohol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
n-Butyl alcohol	OSHA 07		100		10	1	20	200	8	5	GC-FID	ST 226-01 38
sec-Butyl alcohol	OSHA 07		150		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
t-Butyl alcohol	OSHA 07		100		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
n-Butyl alcohol (alcohols combined)	NIOSH 1405		50 (skin)		2-10		10-200		varies		GC-FID	ST 226-01 38
sec-Butyl alcohol (alcohols combined)	NIOSH 1405		100	150	2-10	2-10	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
t-Butyl alcohol (Alcohols I)	NIOSH 1400		100	150	10		20(50)		8(3.3)		GC-FID	ST 226-01 38

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

B

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
n-Butyl alcohol (alcohols II)	NIOSH 1401			50	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
sec-Butyl alcohol (alcohols II)	NIOSH 1401		100	150	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Butyl benzyl phthalate	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Butyl butryrate	OSHA PV2090				10		200		50 min		GC-FID	ST 226-01 38
Butyl carbitol (diethylene glycol monobutyl ether)	OSHA PV2095				10		200		50 min		GC-FID	ST 226-01 38
Butyl carbitol acetate	OSHA PV2095				10		200		50 min		GC-FID	ST 226-01 38
Butyl CELLOSOLVE acetate *(see 2-butoxyethanol acetate)*	OSHA 83											
Butyl CELLOSOLVE solvent *(see 2-butoxyethanol)*	OSHA 83											
t-Butyl chromate (as CrO_3)	OSHA ID 215 (V2)	1439	0.005 mg/m³		960		2000			15	IC-UV	F/CST 225-802 93 C/HLD 225-1 102
n-Butyl glycidyl ether	NIOSH 1616			5.6 (15 min)		3		200		15	GC-FID	ST 226-01 38
n-Butyl glycidyl ether	OSHA 07	1125	50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
t-Butyl glycidyl ether	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
Butyl isocyanate	OSHA CSI				15		50		5		HPLC-UV	ST NA SKC
n-Butyl lactate	OSHA PV2080				10		200		50 min		GC-FID	ST 226-01 38
n-Butyl mercaptan	NIOSH 2525			0.5		1		50		15	GC-FPD	ST 226-109 40
Butyl mercaptan (butanethiol)	OSHA CSI		10		1.5		25		1		GC-FPD	ST 226-109 40
n-Butyl mercaptan (mercaptans)	NIOSH 2542	1330		0.5 (15 min)	48	12	100	200	8	60	GC-FPD	CF/CST 225-9007 64 C/HLD 225-1 102
t-Butyl methyl ether	OSHA CSI				96		200		8		GC-FID	ST 226-37 39
t-Butyl methyl ether (MTBE)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Butyl ziram	OSHA PV2065				180		1000		3		HPLC-UV	ST 226-30-16 38
N-t-Butyl-2-benzothiazolesulfenamide	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Butylamine	OSHA CSI			5 (C)		5		1000		5	GC-FID	ST 226-53 39
n-Butylamine	NIOSH 2012			5		15		1000		15	GC-FID	ST 226-53 39
Butylated hydroxytoluene	OSHA PV2108				100		1000		100 min		GC-FID	ST 226-57 39
sec-Butylbenzene	OSHA CSI				6		100		1		GC-FID	ST 226-01 38
1,3-Butylene glycol (glycols)	NIOSH 5523	1404			60		1000		1		GC-FID	ST 226-57 39
o-sec-Butylphenol	OSHA PV 2128				20		200		1.6		HPLC-UV	ST 226-95 40
p-tert-Butylphenol	OSHA PV2085				20		200		100 min		GC-FID	ST 226-95 40
Butyltin trichloride	OSHA ID 217SG				240		1000		4		AA-GF	ST 226-30-16 38
p-tert-Butyltoluene	OSHA 07	1129	10		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
p-tert-Butyltoluene (Hydrocarbons, Aromatic)	NIOSH 1501		10	20	1-29	1-29	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Butyraldehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
Butyraldehyde (Aldehydes, Screening)	NIOSH 2539				5		20		4		GC-FID & GC-MS	ST 226-118 40
Butyric acid	OSHA CSI				18		100		3		GC-FID	ST 226-15 38
beta-Butyrolactone	OSHA CSI				9.6		20		8		GC-FID	ST 226-01 38
gamma-Butyrolactone	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Cadmium	OSHA ID 189	1456	5 µg/m³		960		2000		8		AA	F/CST 225-3-01 90 C/HLD 225-1 102
Cadmium & compounds (as Cd)	NIOSH 7048	1467	LFC		480	30	1000	2000	8	15	AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Cadmium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		LFC		3-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Cadmium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		LFC		13-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Cadmium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				3-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Cadmium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1280	LFC		13-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Cadmium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Cadmium dust (as Cd)	OSHA ID 121		0.2 mg/m³	0.5 mg/m³	960	30	2000	2000	8	15	AA	F/CST 225-3-01 90 C/HLD 225-1 102
Cadmium dust (as Cd)	OSHA ID 206		0.2 mg/m³	0.5 mg/m³	960	30	2000	2000	8	15	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Cadmium fume (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206		0.1 mg/m³	0.3 mg/m³ (C)	480		2000		4		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium & compounds (as Ca)	NIOSH 7020		varies		240		1000		4		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Calcium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		varies		5-200		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Calcium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				2-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	varies		5-200		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium *(see specific compounds)*	NIOSH 7020		varies		varies		varies		varies		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Calcium arsenate (as As)	OSHA CSI				600		2000		5		AA-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium bromide *(see dust, total & respirable nuisance)*	OSHA CSI											
Calcium carbonate	OSHA ID 121		15 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium carbonate (calcium)	NIOSH 7020		2 mg/m³		240		1000		4		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium carbonate (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Calcium carbonate (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Calcium carbonate *(see dust, total & respirable nuisance)*												
Calcium cyanamide	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium hydroxide	OSHA ID 121		5 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium hydroxide (calcium)	NIOSH 7020		2 mg/m³		240		1000		4		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium hydroxide *(see dust, total & respirable nuisance)*												
Calcium oxide	OSHA ID 121		5 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium oxide (calcium)	NIOSH 7020		2 mg/m³		240		1000		4		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium oxide (Elements by ICP HNO_3 Digestion))	NIOSH 7303		2 mg/m³		3-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Calcium silicate (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Calcium silicate (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Calcium sulfate *(see dust, total & respirable nuisance)*												
Camphor	OSHA 07	1130	2 mg/m³		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Camphor (Ketones II)	NIOSH 2553		2		1-25		10-200		varies		GC-FID	ST NA SKC
Camphor (Ketones II)	NIOSH 1301		2		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Caprolactam	OSHA PV2012				100		1000		100 min		HPLC-UV	ST 226-57 39
Capsaicin	NIOSH 5041				480	15	1000	1000	8	15	HPLC-FD	FLT 225-16 96 CST 225-32 102
Captafol (difolatan)	OSHA CSI				240		1000		4		GC-ECD	ST 226-30-16 38
Captan	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Captan	OSHA PV2093				60		1000		1		HPLC-UV	ST 226-30-16 38
Captan (Organonitrogen Pesticides)	NIOSH 5601		5 mg/m³		240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Carbadox	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Carbaryl	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Carbaryl (Organonitrogen Pesticides)	NIOSH 5601		5 mg/m³		240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Carbaryl (Sevin)	NIOSH 5006		5 mg/m³		240		1000		4		VAS	F/CST 225-706 96 C/HLD 225-1 102
Carbaryl (Sevin)	OSHA 63		5 mg/m³		60		1000		1		HPLC-UV	ST 226-30-16 38
Carbazol	OSHA CSI				120		1000		2		GC-FID	ST 226-56 39
Carbendazim (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Carbitol	OSHA PV2013				10		200		50 min		GC-FID	ST 226-01 38
Carbitol acetate	OSHA PV2013				10		200		50 min		GC-FID	ST 226-01 38
Carbofuran	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Carbofuran (Organonitrogen Pesticides)	NIOSH 5601		0.1 mg/m³		240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Carbon black	NIOSH 5000		3.5 mg/m³		360		1500		4		GR	FLT 225-5-37-P 93 CST 225-3LF 97 SCN 225-26 103 C/HLD 225-1 102
Carbon black	OSHA ID 196		3.5 mg/m³		960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Carbon dioxide	OSHA ID 172	1026	5000	30,000	2-5	2-5	10-50	300	4-8	15	GC-TCD	SB 253 Series or SB 263 Series 56
Carbon dioxide (by portable GC)	NIOSH 6603	1027	5000	30,000	varies	varies	20-100	20-100	varies	varies	P GC-TCD	SB 232 Series 55
Carbon disulfide	NIOSH 1600		1	10	10	3	20(50)	200	8(3.3)	15	GC-FPD	ST 226-01 38 DRT 226-44 39
Carbon monoxide	OSHA ID 209		50								DRI	DRI 805-18970
Carbon monoxide	OSHA ID 210	1021	50		2-5	2-5	10-50	1000	varies	varies	GC-DID	SB 252 Series or SB 253 Series or SB 262 Series or SB 263 Series 56
Carbon tetrabromide	OSHA CSI				9	3	50	200	3	15	GC-ECD	ST 226-93 40
Carbon tetrachloride	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Carbon tetrachloride	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Carbon tetrachloride	OSHA 07	1131	10	25	15	3	50	200	5	15	GC-FID	ST 226-01 38
Carbon tetrachloride (hydrocarbons, halogenated)	NIOSH 1003			2 (1 hr)		15		10-200		varies	GC-FID	ST 226-01 38
Carbon, activated *(see dust, total nuisance)*												
Carbonyl fluoride	OSHA CSI				480		2000		4		ISE	IMP 225-36-2 67 IT 225-22 67

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

C

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA	CLG/STEL	Rate (ml/min) TWA	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
Carboxin	OSHA CSI				200		1000		3.3		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
3-Carene (terpenes)	NIOSH 1552				24		50		8		GC-FID	ST 226-01 38
Catechol (pyrocatechol)	OSHA PV2014				100		1000		100 min		HPLC-UV	ST 226-57 39
Cell fragments (bioaerosols)					15-150		15000		1-10 min		varies	STC 225-9820 101
CELLOSOLVE acetate *(see 2-ethoxyethyl acetate)*												
CELLOSOLVE solvent *(see 2-ethoxyethanol)* (alcohols IV)	NIOSH 1403	1273										
Cellulose (paper fiber) (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Cellulose (paper fiber) (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Cellulose *(see dust, total or respirable nuisance)*												
Cellulose insulation	NIOSH 7404				varies		1000		varies		SEM	FLT/CL 225-1604 93
Cerium	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Cesium hydroxide	OSHA CSI				960		2000		8		AA	F/CST 225-3-01 90 C/HLD 225-1 102
Chaetomium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Chaetomium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Chloramphenicol	OSHA CSI				60		1000		1		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Chlordane	NIOSH 5510		0.5 mg/m³		150		1000		2.5		GC-ECD	ST 226-107 40 FLT 225-5 88 CST 225-2LF 97 SCN 225-26 103 C/HLD 225-1 102
Chlordane	OSHA 67	1013	0.5 mg/m³		480		1000		8		GC-ECD	ST 226-30-16 38
Chlordane (non-occupational exposure)	ASTM D 4947	1417			240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Chlordane (technical)	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Chlorinated & organonitrogen herbicides	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
Chlorinated & organonitrogen herbicides (hand wash)	NIOSH 9200										GC-ECD	NA SKC
Chlorinated camphene (Toxaphene)	NIOSH 5039		LFC		30	15	1000	1000	0.5	15	GC-ECD	F/CST 225-3-01 90 C/HLD 225-1 102
Chlorinated diphenyl ether (chlorinated diphenyl oxide)	NIOSH 5025		0.5 mg/m³		180		1000		3		GC-ECD	F/CST 225-3-01 90 C/HLD 225-1 102
Chlorinated diphenyl oxide	NIOSH 5025		0.5 mg/m³		90		1000		1.5		GC-ECD	F/CST 225-3-01 90 C/HLD 225-1 102
Chlorinated hydrocarbons (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Chlorinated terphenyl (60% chlorine)	NIOSH 5014				720		1500		8		GC-ECD	F/CST 225-706 96 C/HLD 225-1 102
Chlorine	NIOSH 6011	1332	0.5	1	90	15	1000	1000	1.5	15	IC	CF/CST 225-9006 64 C/HLD 225-1 102
Chlorine	OSHA ID 101	1052		1 (C)	240	15	1000	1000	4	15	ISE	IMP 225-36-2 67 IT 225-22 67
Chlorine (prefiltered)	OSHA ID 101	1289		1 (C)	240	15	1000	1000	4	15	ISE	IMP 225-36-2 67 IT 225-22 67 CST 225-3-23 97 SP 225-2901 103 FLT 225-2708 94
Chlorine dioxide	OSHA ID 202	1462	0.1		120	7.5	500	500	4	15	IC-CD	IMP 225-36-2 67 IT 225-22 67
Chlorine trifluoride	OSHA CSI			0.1		15		1000		15	ISE	IMP 225-36-2 67 IT 225-22 67
1-Chloro-1-nitropropane	OSHA CSI		20		12		50		4		GC-FID	ST NA SKC
5-Chloro-2-methyl-4-isothiazolin-3-one (Kathon 886)	NON 55		0.75 mg/m³	0.23 mg/m³	50	7.5	200	500	4	15	HPLC-UV	ST 226-99 40
1-Chloro-4-(trifluoromethyl)benzene (parachlorobenzotrifluoride)	OSHA CSI				6		100		1		GC-FID	ST 226-01 38
2-Chloro-6-trichloromethyl pyridine (respirable dust)	OSHA CSI		15 mg/m³		480		1000		8		HPLC-UV	ST 226-30-16 38 CYC 225-105 110
2-Chloro-6-trichloromethyl pyridine (total dust)	OSHA CSI		5 mg/m³		varies		varies		varies		HPLC-UV	ST 226-30-16 38
Chloroacetaldehyde	NIOSH 2015			1		3		200		15	GC-ECD	ST 226-15GWS 38
Chloroacetaldehyde	OSHA 76			1 (C)		2.5		500		5	GC-ECD	ST 226-15GWS 38
Chloroacetic acid	NIOSH 2008				48		100		8		IC-CD	ST 226-47-01 39
alpha-Chloroacetophenone (phenacylchloride)	OSHA CSI		0.05		12		200		1		HPLC-UV	ST 226-35-02 38
Chloroacetyl chloride	OSHA CSI				10		50		3.3		HPLC-UV	ST NA SKC
o-Chloroaniline	OSHA CSI				5		20		4		HPLC-UV	ST 226-10 38
p-Chloroaniline	OSHA PV2109				6		100		1		HPLC-UV	ST 226-10 38
Chlorobenzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Chlorobenzene (monochlorobenzene)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Chlorobenzene (monochlorobenzene)	OSHA 07	1132	75		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Chlorobenzene (monochlorobenzene) (hydrocarbons, halogenated)	NIOSH 1003				10		10-200		varies		GC-FID	ST 226-01 38
4-Chlorobenzotrifluoride	NIOSH 1026				0.1-10.0		10-200		varies		GC-FID	ST 226-01 38
4-Chlorobenzotrifluoride	OSHA CSI				6		100		1		GC-FID	ST 226-01 38
p-Chlorobenzotrifluoride	NIOSH 1026				0.1-10.0		10-200		varies		GC-FID	ST 226-01 38
p-Chlorobenzotrifluoride	OSHA CSI				6		100		1		GC-FID	ST 226-01 38
Chlorobiphenyl	NIOSH 5503		0.001 mg/m³ (10 hr)		48		100(200)		8(4)		GC-ECD	FLT 225-16 96 CST 225-32 102 ST 226-39 39

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA	Vol. (liter) CLG/STEL	Rate (ml/min) TWA	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
Chlorobromomethane	OSHA CSI		200		5		20		4		GC-FID	ST 226-01 38
Chlorobromomethane (hydrocarbons, halogenated)	NIOSH 1003		200		5		10-200		varies		GC-FID	ST 226-01 38
Chlorodifluoromethane	OSHA CSI				1		50		20 min		GC-FID	ST NA SKC
Chlorodiphenyl	OSHA CSI				60		1000		1		GC-ECD	ST 226-30-16 38
Chlorodiphenyl (21% Cl) *(see polychlorinated biphenyls)*	OSHA CSI											
Chlorodiphenyl (32% Cl) *(see polychlorinated biphenyls)*	OSHA CSI											
Chlorodiphenyl (42% Cl)	OSHA PV2089			1	60		1000		1		GC-ECD	ST 226-30-16 38
Chlorodiphenyl (42% Cl) *(see polychlorinated biphenyls)*	NIOSH 5503											
Chlorodiphenyl (48% Cl) *(see polychlorinated biphenyls)*	OSHA CSI											
Chlorodiphenyl (54% Cl)	OSHA PV2088			0.5	60		1000		1		GC-ECD	ST 226-30-16 38
Chlorodiphenyl (54% Cl) *(see polychlorinated biphenyls)*	NIOSH 5503											
Chlorodiphenyl (60% Cl) *(see polychlorinated biphenyls)*	OSHA CSI											
Chlorodiphenyl (62% Cl) *(see polychlorinated biphenyls)*	OSHA CSI											
Chloroethane (ethyl chloride)	NIOSH 2519				3		50		1		GC-FID	ST 226-09 38
2-Chloroethanol (ethylene chlorohydrin)	NIOSH 2513			1	10		20(50)		8(3.3)		GC-FID	ST 226-81A 39
Chloroform (trichloromethane)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Chloroform (trichloromethane)	OSHA 05	1062		50 (C)	10		200		50 min		GC-FID	ST 226-01 38
Chloroform (trichloromethane) (hydrocarbons, halogenated)	NIOSH 1003	1269		2		15		10-200		varies	GC-FID	ST 226-01 38
bis-Chloromethyl ether	OSHA 10				50		500		100 min		GC-ECD	IMP 225-36-2 67 IT 225-22 67
Chloromethyl methyl ether	NON 29	1251			2.4	0.3	10	20	4	15	GC-ECD	ST NA SKC
Chloromethyl methyl ether	OSHA 10				50		500		100 min		GC-ECD	IMP 225-36-2 67 IT 225-22 67
4-Chloronitrobenzene (nitrobenzenes)	NIOSH 2005		0.1 ppm		96		200		8		GC-FID	ST 226-10 38
Chloropentafluoroethane	OSHA CSI				2.5		50		50 min		GC-FID	ST 226-01 38
Chlorophene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-35 38
o-Chlorophenol	OSHA CSI				40		200		3.3		HPLC-UV	ST 226-10 38
p-Chlorophenol	NIOSH 2014				24		50		8		HPLC-UV	ST 226-10 38
Chloropicrin	NON 51		0.1		144		100		24		GC-MSD	ST 226-175 41
Chloropicrin	OSHA PV2103		0.1		3		200		15 min		GC-ECD	ST 226-93 40
beta-Chloroprene	NIOSH 1002			1 (15 min)		1.5		100		15	GC-FID	ST 226-01 38
beta-Chloroprene	OSHA 07	1133	25		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
beta-Chloroprene	OSHA 112		25		6		50		2		GC-ECD	ST 226-111A 40
o-Chlorostyrene	OSHA CSI				20	3	200	200	100 min	15	GC-FID	ST 226-01 38
Chlorothalonil	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Chlorothalonil	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
o-Chlorotoluene	OSHA CSI				20		200		100 min		GC-FID	ST 226-01 38
Chlorotoluron	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Chlorotrifluoroethylene	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
Chlorpropham (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Chlorpyrifos (Dursban)	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Chlorpyrifos (Dursban)	OSHA 62	1394			480		1000		8		GC-FPD	ST 226-30-16 38
Chlorpyrifos (Organophosphorus Pesticides)	NIOSH 5600		0.2 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Chromic acid & chromates (as CrO_3)	OSHA ID 215 (V2)	1439	0.005 mg/m³		960		2000		8	15	IC-UV	F/CST 225-802 Ω 93 C/HLD 225-1 102
Chromic acid & chromates (chromium hexavalent)	NIOSH 7600		1 µg/m³ (10 hr)		240		1000		4		VAS	F/CST 225-803 93 C/HLD 225-1 102
Chromic acid & chromates (chromium hexavalent)	NIOSH 7604		1 µg/m³ (10 hr)		960		2000		8		IC-CD	F/CST 225-803 93 C/HLD 225-1 102
Chromium & compounds (as Cr)	NIOSH 7024	1457	0.5 mg/m³		10 - 1000		1000 - 3000		varies		AA-F	F/CST 225-3-01 or F/CST 225-8410 90 C/HLD 225-1 102
Chromium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.5 mg/m³		1-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Chromium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.5 mg/m³		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Chromium (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.5 mg/m³		8-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Chromium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.5 mg/m³		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Chromium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

C

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Chromium acetate	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Chromium carbonate	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Chromium metal & insoluble compounds	OSHA ID 121	1043	1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Chromium metal & insoluble compounds	OSHA ID 125G		1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Chromium phosphate	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Chromium soluble salts (except hexavalent)	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Chromium trioxide (CR(VI))	OSHA ID 215 (V2)	1439	0.005 mg/m³		960		2000		8		IC-UV	F/CST 225-802 Ω 93 C/HLD 225-1 102
Chromium, hexavalent	ASTM D 6832				varies		1000-5000		varies		IC	F/CST 225-802 or F/CST 225-1713 or F/CST 225-709 or F/CST 225-401 95
Chromium, hexavalent	NIOSH 7600	1032	1 µg/m³ (10 hr)		240		1000		4		VAS	F/CST 225-802 93 C/HLD 225-1 102
Chromium, hexavalent	NIOSH 7604	1032	1 µg/m³ (10 hr)		240		1000		4		IC-CD	F/CST 225-802 93 C/HLD 225-1 102
Chromium, hexavalent	NIOSH 7605		0.001 mg/m³ (10 hr)		1-400		1000-4000		varies		IC-PCD-UV	F/CST 225-802 93 C/HLD 225-1 102
Chromium, hexavalent	NIOSH 7703		0.001 mg/m³ (10 hr)		10-1200		1000-4000		varies		P VAS	F/CST 225-802 93 C/HLD 225-1 102
Chromium, hexavalent	OSHA ID 103			0.005 mg/m³ (C)	960	30	2000	2000	8	15	DPP	F/CST 225-802 93 C/HLD 225-1 102
Chromium, hexavalent	OSHA W4001			0.005 mg/m³ (C)							IC-UV	FLT 225-5-37 or FLT 225-1822 95
Chromium, hexavalent (CR(VI))	OSHA ID 215 (V2)	1439	0.005 mg/m³		960		2000		8		IC-UV	F/CST 225-802 Ω 93 C/HLD 225-1 102
Chromium, hexavalent (in settled dust)	NIOSH 9101				bulk	bulk					CLR or VAS or IC	
Chrysene	OSHA 58		0.2 mg/m³		960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 C/HLD 225-1 102 CST 225-2LF 97
Chrysene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Chrysene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515		LFC		480		2000		4		GC-FID	F/CST 225-1713 94 C/HLD 225-1 102 ST 226-30-04 38
Chrysene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506		LFC		480		2000		4		HPLC-UV	F/CST 225-1713 94 C/HLD 225-1 102 ST 226-30-04 38
Chrysosporium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Chrysosporium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Chrysotile *(see asbestos fibers)*	NIOSH 9000				bulk						XRD	
Chrysotile fibers *(see asbestos fibers)*	NIOSH 7400											
Cladosporium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Cladosporium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Clopidol (respirable fraction)	OSHA CSI		5 mg/m³		varies		varies		varies		HPLC-UV	F/CST 225-706 96 C/HLD 225-105 110
Clopidol (total dust)	OSHA CSI		15 mg/m³		120		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Coal dust (< 5% SiO_2)	OSHA CSI		2.4 mg/m³/(%SiO_2+2)		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Coal dust (> 5% SiO_2) *(see Silica, respirable crystalline)*	OSHA ID 142											
Coal tar naphtha (naphthas)	NIOSH 1550		100		3		20		2.5		GC-FID	ST 226-01 38
Coal tar pitch volatiles	OSHA 58	1076	0.2 mg/m³		960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 C/HLD 225-1 102 CST 225-2LF 97
Cobalt	OSHA ID 213		0.1 mg/m³		480		2000		6		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Cobalt & compounds (as Co)	NIOSH 7027		0.05 mg/m³		960		2000		8		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Cobalt (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.05 mg/m³ (dust, fume)		1-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Cobalt (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.5 mg/m³ (dust, fume)		25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Cobalt (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.5 mg/m³ (dust, fume)		3-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Cobalt (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.05 mg/m³ (dust, fume)		25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Cobalt (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2415 140 TMP 225-2403 or
Cobalt acetate	OSHA ID 125G				480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Cobalt carbonyl	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Cobalt hydrocarbonyl	OSHA ID 121	1193	0.1 mg/m³ (as Co)		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Cobalt metal, dust & fume	OSHA ID 125G		0.1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or 225-3100 or F/CST 225-803 or F/CST 225-8215 or C/HLD 225-1 102 93
Cobalt metal, dust & fume (as Co)	OSHA ID 121	1210	0.1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Coke oven emissions	OSHA 58		0.15 mg/m³		960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 CST 225-2LF 97 C/HLD 225-1 102
Command (dimethazone)	OSHA PV2066				60		1000		1		GC-ECD	ST 226-30-16 38
Copper (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		1 mg/m³ (dust) 0.1 mg/m³ (fume)		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Copper (Elements by ICP HNO_3 Digestion))	NIOSH 7303		1 mg/m³ (dust) 0.1 mg/m³ (fume)		15-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Copper (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	1 mg/m³ (dust) 0.1 mg/m³ (fume)		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Copper (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Copper dust	NIOSH 7029		1 mg/m³		480		1000		8		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Copper dusts & mists	OSHA ID 125G		1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 or C/HLD 225-1 102 93
Copper dusts & mists (as Cu)	OSHA ID 121	1205	1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Copper fume	NIOSH 7029		0.1 mg/m³		480		1000		8		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Copper fume	OSHA ID 121	1206	0.1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Copper fume	OSHA ID 125G		0.1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 or C/HLD 225-1 102 93
Copper fume (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206		0.1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Co-Ral (coumaphos)	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Corn starch *(see dust, respirable nuisance)*												
Coronene	OSHA CSI				960		2000		8		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Corundum ($Al2O_3$) *(see alpha-alumina [total dust])*												
Corundum (emery) (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Corundum (emery) (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Corynebacterium species (bacteria)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Cotton Dust (raw)	OSHA CSI		1 mg/m³		960		2		8		GR	FLT 225-5-37-P with PPI 225-381 and IS 225-388 or PPI 225-386 112
Cotton Dust (raw)	OSHA CSI		1 mg/m³		2664		7.4		6		GR	F/CST 225-803 93 VERT. ELUTRIATOR NA SKC
Coumarin	OSHA CSI				96		200		8		HPLC-UV	ST 226-30-04 38
Crag herbicide (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		CLR	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-105 110
Crag herbicide (total dust)	OSHA CSI		15 mg/m³		90		1500		1		CLR	F/CST 225-3-01 90 C/HLD 225-1 102
p-Cresidine *(see 5-methyl-o-anisidine)*	OSHA CSI											
di-tert-butyl-p-Cresol	OSHA PV2108				100		1000		100 min		GC-FID	ST 226-57 39
Cresol (all isomers)	NIOSH 2546		10 mg/m³		24		100		4		GC-FID	ST 226-95 40
Cresol (all isomers)	OSHA 32		5 mg/m³		24		100		4		HPLC-UV	ST 226-95 40
Cresols	EPA TO-8	1668			< 80 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Cresylil acid *(see cresol, all isomers)*	OSHA CSI											
Cristobalite *(see Silica, respirable crystalline)*	OSHA ID 142											
Cristobalite (silica, crystalline [respirable] by XRD)	NIOSH 7500	1370	0.05 mg/m³		400-1000		2500		varies		XRD	F/CST 225-803 93 CYC 225-01-02 111 C/HLD 225-1 102
Cristobalite (silica, crystalline by IR)	NIOSH 7602		0.05 mg/m³		400-800		2500		varies		IR	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Cristobalite (silica, crystalline by VAS)	NIOSH 7601	1041	0.05 mg/m³		400-800		2500		varies		VAS	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Crocidolite fibers *(see asbestos fibers)*	NIOSH 7400											
Crotonaldehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
Crotonaldehyde	NIOSH 3516		2		48		200		4		DPP	IMP 225-36-2 67 IT 225-22 67
Crotonaldehyde	OSHA 81		2		6		100		1		HPLC-UV	CF/CST 225-9019 64 C/HLD 225-1 102
Crotonaldehyde (Aldehydes, Screening)	NIOSH 2539		2		5		20		4		GC-FID & GC-MS	ST 226-118 40
Crufomate	OSHA PV2015				60		1000		1		GC-FPD	ST 226-30-16 38
Cryolite (fluorides)	NIOSH 7902		2.5 mg/m³		480		1000		8		ISE	CF/CST 225-9001 64 C/HLD 225-1 102

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

C

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Cumene (isopropyl benzene)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Cumene (isopropyl benzene)	OSHA 07	1065	50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Cumene (isopropyl benzene)	OSHA PV2137		50		24		200		2		GC-FID	ST 226-01 38
Cumene (isopropyl benzene) (Hydrocarbons, Aromatic)	NIOSH 1501		50 (skin)		1-30		10-200		8(3.3)		GC-FID	ST 226-01 38
Cumene hydroperoxide	OSHA CSI				120		1000		2		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Cunninghamella species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Cunninghamella species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Cupric carbonate as Cu (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455			960		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Curvularia species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Curvularia species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Cyanamide	OSHA CSI				10		100		100 min		HPLC-UV	ST 226-30-18 38
Cyanazine	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
Cyanide (as Cn)	OSHA ID 120		5 mg/m³		120		1000		2		ISE	F/CST 225-3-01 90 IMP 225-36-2 67 IT 225-22 67
Cyanides, aerosol & gas	NIOSH 7904			5 mg/m³ (10 min)	120		500		4		ISE	FLT 225-2705 Δ 94 CST 225-2LF 97 IMP 225-36-2 67 IT 225-22 67 C/HLD 225-1 102
Cyanogen	OSHA PV2104				12		200		1		GC-NPD	ST 226-117 40
Cyanogen chloride	OSHA CSI				1		200		5		GC-NPD	ST 226-117 40
Cyanuric acid	NIOSH 5030				480		1000		8		HPLC-UV	F/CST 225-802 93 C/HLD 225-1 102
Cyclohexane	OSHA 07	1134	300		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Cyclohexane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500	1268	300		2.5-5		10-200		varies		GC-FID	ST 226-01 38
Cyclohexanol	OSHA 07	1135	50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Cyclohexanol (alcohols combined)	NIOSH 1405		50 (skin)		1-10		10-200		varies		GC-FID	ST 226-01 38
Cyclohexanol (alcohols III)	NIOSH 1402		50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Cyclohexanone	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Cyclohexanone	OSHA 01	1073	50		10		20(50)		8(3.3)		GC-FID	ST 226-110 40
Cyclohexanone (Ketones I)	NIOSH 1300		25		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Cyclohexanone (Ketones I)	NIOSH 2555				1-10		10-200		varies		GC-FID	ST NA SKC
Cyclohexene	OSHA 07	1124	300		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Cyclohexene (hydrocarbons, BP 36 to 216 C)	NIOSH 1500		300		5-7		10-200		varies		GC-FID	ST 226-01 38
N-Cyclohexyl-2-benzothiazolesulfenamide	OSHA CSI				480		2000		4		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Cyclohexylamine	OSHA PV2016				20		200		100 min		GC-FID	ST 226-98 40
Cyclonite (RDX)	OSHA CSI		1.5 mg/m³ (skin)		120		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Cyclopentane	OSHA CSI				5		200		25 min		GC-FID	ST 226-01 38
Cyhexatin	OSHA ID 197SG				480		2000		4		AA-GF	F/CST 225-709 96 ST 226-30 38 C/HLD 225-1 102
Cypermethrin	OSHA PV2063				60		1000		60 min		GC-ECD	ST 226-30-16 38
D & C red #19	OSHA CSI				240		1000		4		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
2,4-D (2,4-dichlorophenoxyacetic acid)	NIOSH 5001		10 mg/m³		180		1000		3		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
2,4-D (2,4-dichlorophenoxyacetic acid)	OSHA CSI		10 mg/m³		180		3000		1		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
2,4-D (2-butoxyethyl ester)	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
2,4-D (2-butoxyethyl ester)	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
2,4-D acid	NIOSH 5602		10		480		1000		8		GC-ECD	ST 226-58 39
2,4-D, BE	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
2,4-D, EH	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
2,4-D, ME (2,4-dichlorophenoxyacetic acid)	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
Dacthal	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
DAP (diallyl phthalate)	OSHA CSI				60		1000		1		GC-FID	ST 226-30-16 38
DBP *(see dibutyl phthalate)*	OSHA 104											
p,p-DDE	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
DDT	OSHA CSI		1 mg/m³		90		1500		1		GC-ECD	F/CST 225-709 96 C/HLD 225-1 102
p,p-DDT	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
DDVP (dichlorvos)	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Decaborane	OSHA CSI		0.05		480	30	2000	2000	4	15	ICP	F/CST 225-3-01 90 C/HLD 225-1 102
Decabromodiphenyl oxide	NIOSH 2559				48-960		2000		varies		HPLC-UV	FLT 225-1822 95 SP 225-27 103 CST 225-2LF 97
Decabromodiphenyl oxide	OSHA CSI				200		1000		3		GC-ECD	F/CST 225-709 96 C/HLD 225-1 102

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA	Vol. (liter) CLG/STEL	Rate (ml/min) TWA	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
n-Decane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
n-Decane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500				2		10-50		varies		GC-FID	ST 226-01 38
Decyl alcohol	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
DEHP *(see di-2-ethylhexyl phthalate)*	OSHA 104											
Dehydroabietic acid	OSHA CSI				180		2000		1.5		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Dehydroisoandrosterone	OSHA CSI				240		1000		4		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Demeton	NIOSH 5514		0.1 mg/m³		480		1000		8		GC-FPD	FLT 225-5 88 SCN 225-26 103 CST 225-2LF 97 ST 226-30-05 38 C/HLD 225-1 102
Demeton (Systox)	OSHA CSI		0.1 mg/m³		480		1000		8		GC-FPD	ST 226-30-16 38
Demosan	OSHA CSI				960		2000		8		GC-ECD	F/CST 225-709 96 C/HLD 225-1 102
DEP *(see diethyl phthalate)*	OSHA 104											
Desflurane	OSHA 106	1760			3		50		1		GC-FID	ST 226-81A 39
Di-(2-ethylhexyl) adipate	OSHA CSI				180		1000		3		GC-FID	FLT 225-17-04 94 CST 225-3LF 97 C/HLD 225-1 102
Di-(2-ethylhexyl) phthalate	OSHA CSI		5 mg/m³		60	15	1000	1000	1	15	GC-FID	ST 226-30-16 38
Di-(2-ethylhexyl) phthalate (DEHP)	NIOSH 5020				180		1000		3		GC-FID	F/CST 225-3-01 90 C/HLD 225-1 102
Di(ethyleneglycol) ethyl ether acrylate	OSHA PV2132		1 mg/m³		48		200		4		GC-FID	ST 226-110 40
Diacetone alcohol	OSHA 07	1123	50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Diacetone alcohol (alcohols combined)	NIOSH 1405		50		1-10		10-200		varies		GC-FID	ST 226-01 38
Diacetone alcohol (alcohols III)	NIOSH 1402		50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Diacetyl	NIOSH 2557				6		100		1		GC	ST NA SKC
Diacetyl	OSHA 1012		0.05		9	3	50	200	3	15	GC-FID	ST 226-183 41
Diacetyl	OSHA 1013		0.05		9	3	50	200	3	15	GC-FID	ST 226-183 41
Diallyl disulfide	OSHA PV2086				10		20(50)		8(3.3)		GC-FPD	ST 226-110 40
Diallyl phthalate	OSHA CSI				60		1000		1		GC-FID	ST 226-30-16 38
1,2-Diaminoethane	NIOSH 2540				10		100		1.7		HPLC-UV	ST 226-30-18 38
o-Dianisidine	OSHA 71	1235			100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
o-Dianisidine dyes (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC-UV	FLT 225-17A 94 CST 225-3LF 97 C/HLD 225-1 102
o-Dianisidine-based dyes	OSHA CSI				480		1000		8		HPLC-UV	FLT 225-17-04 94 CST 225-3LF 97 C/HLD 225-1 102
DiaziNON ASTM D 4861					240-7200		1000-5000		4-24		GC-NPD	PUF 226-92 44
DiaziNON OSHA 62	1396				480		1000		8		GC-FPD	ST 226-30-16 38
Diazinon (Organophosphorus Pesticides)	NIOSH 5600		0.1 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Diazomethane	NIOSH 2515		0.2		10		200		50 min		GC-FID	ST 226-23 38
Diazomethane	OSHA CSI		0.2		10		200		50 min		GC-FID	ST 226-23 38
Dibenz(a,h)anthracene	OSHA CSI				960		2000		8		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Dibenz(a,h)anthracene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Dibenz(a,h)anthracene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Dibenz(a,h)anthracene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Diborane	NIOSH 6006		0.1		120		1000		2		PES	ST 226-151 41 FLT NA SKC and CST 225-32 102
Dibrom	OSHA CSI		3 mg/m³		60		1000		1		GC-FPD	ST 226-30-16 38
1,2-Dibromo-3-chloropropane (DBCP)	OSHA CSI		1 ppb		10		20(50)		8(3.3)		GC-ECD	ST 226-81A 39
Dibromodifluoromethane (difluorodibromomethane)	NIOSH 1012		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1,2-Dibromoethane (ethylene dibromide)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
1,2-Dibromoethane (ethylene dibromide)	NIOSH 1008		0.045	0.13	24	3	50	200	8	15	GC-ECD	ST 226-01 38
Dibutyl amine	OSHA CSI				120		1000		2		GC-NPD	IMP 225-36-2 67 IT 225-22 67
2-Dibutyl aminoethanol (aminoethanol compounds I)	NIOSH 2007		2		10		20(50)		8(3.3)		GC-FID	ST 226-10-04 38
Dibutyl phosphate	NIOSH 5017		1	2	240		2000		2		GC-FPD	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Dibutyl phthalate	NIOSH 5020		5 mg/m³		100		1000		100 min		GC-FID	F/CST 225-3-01 90 C/HLD 225-1 102
Dibutyl phthalate (DBP)	OSHA 104		5 mg/m³		240		1000		4		GC-FID	ST 226-56 39
Dibutyltin bis (isooctyl mercaptoacetate) (organotin compounds as Sn)	NIOSH 5504		0.1 mg/m³		480		1000		8		HPLC & AA-GF	ST 226-30 38 F/CST 225-709 96 C/HLD 225-1 102
Dibutyltin dilaurate (as Sn)	OSHA ID 218SG				500		1000		500 min		AA	F/CST 225-3-01 90 C/HLD 225-1 102
Dibutyltin maleate (as Sn)	OSHA ID 224SG				200		1000		200 min		AA-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Dicamba	OSHA CSI				200		1000		3.3		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Dicamba sodium salt	OSHA CSI				200		1000		3.3		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
3,3-Dichloro-1,1,1,2,2-pentafluoropropane	OSHA CSI				9		50		3		GC-FID	ST 226-01 38
2,2-Dichloro-1,1,1-trifluoroethane	NON 50				9		50		3		GC-FID	ST 226-09 38
1,3-Dichloro-1,1,2,2,3-pentafluoropropane	OSHA CSI				9		50		3		GC-FID	ST 226-01 38
1,1-Dichloro-1-fluoroethane	OSHA 113				1		50		20 min		GC-FID	ST NA SKC
1,1-Dichloro-1-nitroethane	NIOSH 1601		2		10		20(50)		8(3.3)		GC-FID	ST 226-81A 39
1,1-Dichloro-1-nitroethane	OSHA 07			10		15		1000		15	GC-FID	ST 226-81A 39
1,1-Dichloro-1-nitroethane	OSHA CSI			10	10		20		8		GC-FID	ST 226-81A 39
Dichloroacetylene	OSHA CSI					1		200		5	GC-FID	ST 226-01 38
3,4-Dichloroaniline	OSHA CSI				100		1000		1.5		HPLC	F/CST 225-803 93 C/HLD 225-1 102
m-Dichlorobenzene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
m-Dichlorobenzene	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
o-Dichlorobenzene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
o-Dichlorobenzene	OSHA 07	1122		50 (C)		3		200		15	GC-FID	ST 226-01 38
p-Dichlorobenzene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
p-Dichlorobenzene	OSHA 07	1121	75		3	0.75	20	50	2.5	15	GC-FID	ST 226-01 38
o-Dichlorobenzene (hydrocarbons, halogenated)	NIOSH 1003			50		3		10-200		varies	GC-FID	ST 226-01 38
p-Dichlorobenzene (hydrocarbons, halogenated)	NIOSH 1003		1.7 (LOQ)		3		10-200		varies		GC-FID	ST 226-01 38
3,3'-Dichlorobenzidine	OSHA 65	1238			100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
Dichlorodifluoroethane	OSHA CSI				3		100		30 min		GC-FID	ST 226-01 38
Dichlorodifluoromethane	NIOSH 1018		1000		3		20		2.5		GC-FID	ST 226-01 38 ST 226-09 38
1,2-Dichloroethane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
1,2-Dichloroethane (ethylene dichloride)	OSHA 07	1119	50	100	10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1,1-Dichloroethane (ethylidene chloride)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
1,1-Dichloroethane (ethylidene chloride)	OSHA 07		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1,1-Dichloroethane (Hydrocarbons, Halogenated)	NIOSH 1003	1267	100		10		10-200		varies		GC-FID	ST 226-01 38
Dichloroethyl ether	NIOSH 1004		5	10	10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Dichloroethyl ether	OSHA 07			15	10	15	20	1000	8	15	GC-FID	ST 226-01 38
1,2-Dichloroethylene	OSHA 07	1118	200		3		20		2.5		GC-FID	ST 226-01 38
cis-1,2-Dichloroethylene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
1,2-Dichloroethylene (hydrocarbons, halogenated)	NIOSH 1003		200		3		10-200		varies		GC-FID	ST 226-01 38
Dichlorofluoromethane	NIOSH 2516		10		3		20		2.5		GC-FID	ST 226-25 38
Dichloromethane	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Dichloromethane (methylene chloride)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Dichloromethane *(see methylene chloride)*												
Dichloromonofluoromethane (dichlorofluoromethane)	NIOSH 2516		10		3		20		2		GC-FID	ST 226-09 ♠ 38
Dichloromonofluoromethane (dichlorofluoromethane)	OSHA CSI		1000		3		20		2.5		GC-FID	ST 226-09 38
2,4-Dichlorophenoxyacetic acid (2,4-D)	NIOSH 5001		10 mg/m³		180		1000		3		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
1,2-Dichloropropane (propylene dichloride)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
1,2-Dichloropropane (propylene dichloride)	NIOSH 1013		LFC		3		20		2.5		GC-ECN	ST 226-81A 39
1,3-Dichloropropene	OSHA CSI				5		200		25 min		GC-FID	ST 226-01 38
cis-1,3-Dichloropropene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
trans-1,3-Dichloropropene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
3,4-Dichloropropionanilide	OSHA CSI										W	FLT 225-7 96
2,2-Dichloropropionic acid	OSHA PV2017				10		200		50 min		HPLC-UV	ST 226-10 38
Dichlorotetrafluoroethane	OSHA CSI				3		50		1		GC-FID	ST 226-09 38 ST 226-01 38
1,1-Dichlorotetrafluoroethane	OSHA CSI				2		50		40 min		GC-FID	ST 226-01 38 ST 226-09 38
1,2-Dichlorotetrafluoroethane (dichlorodifluoromethane)	NIOSH 1018		1000		3		20		2.5		GC-FID	ST 226-01 38 ST 226-09 38
Dichlorotrifluoroethane	NON 50				9		50		3		GC-FID	ST 226-09 38
Dichlorvos (DDVP)	ASTM D 4861				240-7200		1000- 5000		4-24		GC-ECD	PUF 226-92 44
Dichlorvos (DDVP)	OSHA 62	1395	1 mg/m³		480		1000		8		GC-FPD	ST 226-30-16 38
Dicloran	ASTM D 4861				240-7200		1000- 5000		4-24		GC-ECD	PUF 226-92 44
Dicofol	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Dicofol	OSHA CSI										W	SM TB 225-24 140
Dicrotophos	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Dicrotophos (Bidrin)	OSHA PV2099				480		1000		8		GC-FPD	ST 226-30-16 38

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Dicrotophos (Organophosphorus Pesticides)	NIOSH 5600		0.25 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Dicyclopentadiene	OSHA PV2098				10		100		100 min		GC-FID	ST 226-01 38
Dicyclopentadienyl iron (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	F/CST 225-803 93 C/HLD 225-1 102
Dicyclopentadienyl iron (total dust)	OSHA CSI		15 mg/m³		960		2000		8		AA	F/CST 225-3-01 90 C/HLD 225-1 102
Dieldrin	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Dieldrin	OSHA CSI		0.25 mg/m³		180		1500		2		GC-ECD	F/CST 225-709 96 C/HLD 225-1 102
Diesel emissions *(see elemental carbon)*	NIOSH 5040										TOA-FID	
Diesel exhaust particles *(see elemental carbon)*	NIOSH 5040										TOA-FID	
Diesel particulate matter	ASTM D 6877				varies		1000-4000		varies		EGA-TOS	DPM 225-317 or F/CST 225-401 95
Diesel particulate matter	MSHA 30CFR57		350 µg/m³ (total carbon)		varies		2000		varies		TOA-FID	DPM 225-317 95 C/HLD 225-1 102 CYC 225-105 110
Diesel particulate matter	MSHA 30CFR57		350 µg/m³ (total carbon)		varies		varies		varies		TOA-FID	F/CST 225-401 95 C/HLD 225-1 102 CYC 225-100 110
Diethanolamine	OSHA PV2018				10		100		100 min		HPLC-UV	ST 226-30-18 38
Diethanolamine (DEA) (Aminoethanol Compounds II)	NIOSH 3509	1006	3		240		1000		4		IC	IMP 225-36-1 67 IT 225-22 67
Diethyl ether (ethyl ether)	NIOSH 1610				0.25-3		10-200		varies		GC-FID	ST 226-01 38
Diethyl ketone (3-pentanone)	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST NA SKC
Diethyl phthalate (DEP)	OSHA 104				240		1000		4		GC-FID	ST 226-56 39
Diethyl sulfate	OSHA CSI				15		1000		15 min		GC-FID	ST 226-10 38
Diethylamine	OSHA 41	1697	25		10	3	200	200	50 min	15	HPLC	ST 226-96 40
Diethylamine (amines, aliphatic)	NIOSH 2010		10	25	24	3	50	200	8	15	GC-FID	ST 226-10 38
2-Diethylaminoethanol	OSHA CSI		10		24		200		2		GC-FID	ST 226-10-04 38
2-Diethylaminoethanol (aminoethanol compounds I)	NIOSH 2007		10		10		20(50)		8(3.3)		GC-FID	ST 226-10-04 38
Diethylaminopropylamine (DEP)	OSHA CSI				100		1000		100 min		GC-NPD	IMP 225-36-1 67 IT 225-22 67
Diethylene dioxide *(see dioxane)*												
Diethylene ether *(see dioxane)*												
Diethylene glycol (glycols)	NIOSH 5523	1387			60		1000		1		GC-FID	ST 226-57 39
Diethylene glycol methyl ether	OSHA CSI				10		100		100 min		GC-FID	ST 226-01 38
Diethylene glycol monobutyl ether acetate	OSHA CSI				9.6		100		1.6		GC-FID	ST 226-01 38
Diethylene glycol monoethyl ether	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Diethylenetriamine	OSHA 60	1285			10		100		100 min		HPLC-UV	ST 226-30-18 38
Difluorodibromomethane	NIOSH 1012		100		6		50		2		GC-FID	ST 226-01 38
Difluorodibromomethane	OSHA 07		100		10		20		8		GC-FID	ST 226-01 38
Diglycidyl ether of bisphenol A	OSHA 1018				240		1000		240 (min)		HPLC-UV/ PDA	F/CST 225-709 96 C/HLD 225-1 102
Diglycolamine	OSHA CSI				20		100		3		GC-NPD	IMP 225-36-1 67 IT 225-22 67
Diglyme	OSHA CSI				20		200		100 min		GC-FID	ST 226-01 38
Dihexyl phthalate	OSHA PV2076				240		1000		4		GC-FID	ST 226-56 39
Dihydrocapsaicin	NIOSH 5041				480	15	1000	1000	8	15	HPLC-FD	FLT 225-16 96 CST 225-32 102
Diisobutyl ketone	OSHA 07	1116	50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Diisobutyl ketone (Ketones I)	NIOSH 1300		25		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Diisobutyl ketone (Ketones I)	NIOSH 2555				1-10		10-200		varies		GC-FID	ST NA SKC
Diisocyanates	OSHA 42	1458			240	15	1000	1000	4	15	HPLC-UV or HPLC-FD	CF/CST 225-9002 or CF/CST 225-9013 64 C/HLD 225-1 102
Diisopropylamine	OSHA CSI		5		120		1000		2		GC-FID	IMP 225-36-1 67 IT 225-22 67
Dimethazone	OSHA PV2066				60		1000		1		GC-ECD	ST 226-30-16 38
Dimethoate	OSHA PV2113				480		1000		8		GC-FPD	ST 226-30-16 38
2,5-Dimethoxyaniline	OSHA CSI				17		50		5.7		HPLC-UV	ST 226-30-04 38
Dimethoxymethane (methylal)	NIOSH 1611		1000		2		20		1.5		GC-FID	ST 226-01 38
Dimethoxymethane (methylal)	OSHA 07	1115	1000		2		20		1.5		GC-FID	ST 226-01 38
Dimethyl adipate	OSHA PV2019				20		200		100 min		GC-FID	ST 226-01 38
Dimethyl arsenic acid (arsenic, organo-)	NIOSH 5022				960		2000		8		IC-AA	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Dimethyl disulfide	NON 42	1413			12		1000		12 min		GC-FPD	SB 253-10 or SB 263-10 or SB 231-10 54
Dimethyl disulfide	OSHA CSI				6		100		1		GC-FID	ST 226-01 38
Dimethyl glutarate	OSHA PV2020				20		200		100 min		GC-FID	ST 226-01 38
Dimethyl phthalate (DMP)	OSHA 104		5 mg/m³		240		1000		4		GC-FID	ST 226-56 39
Dimethyl succinate	OSHA PV2021				20		200		100 min		GC-FID	ST 226-01 38
Dimethyl sulfate	NIOSH 2524	1284	0.1 (8 hrs.)		12		50		4		GC-ECN	ST 226-114 40
Dimethyl sulfate	OSHA PV2147		1		10		100		100 min		GC-FPD	ST 226-115 40

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Dimethyl sulfide	NON 42	1413			12		1000		12 min		GC-FPD	SB 263-10 or SB 231-10 54
Dimethyl sulfide	OSHA CSI				5		20		4		GC-FPD	ST 226-01 38
Dimethyl sulfoxide	OSHA CSI				10		100		100 min		GC-FID	ST 226-01 38
Dimethyl-1,2-dibromo-2,2-dichloroethyl phosphate	OSHA CSI		3 mg/m³		60		1000		1		GC-FPD	ST 226-30-16 38
2,3-Dimethyl-2,3-dinitrobutane	NON 44		0.15 mg/m³ OEL		10		200		50 min		GC-ECD	ST 226-35-03 39
Dimethylacetamide	NIOSH 2004	1695	10		48		100		8		GC-FID	ST 226-10 38
Dimethylacetamide	OSHA CSI		10		60		1000		1		GC-FID	ST 226-10 38
Dimethylamine	NIOSH 2010		10		24		50		8		GC-FID	ST 226-10 38
Dimethylamine	OSHA 34	1696	10		10		20		8		HPLC	ST 226-96 40
2-Dimethylamino ethanol	NIOSH 2561				10-24		20-100		varies		GC-FID	ST 226-94 40
1-Dimethylamino-2-propanol	NIOSH 2561				10-24		20-100		varies		GC-FID	ST 226-94 40
4-Dimethylaminoazobenzene	OSHA CSI				60		1000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102 IMP 225-36-1 67 IT 225-22 67
Dimethylaminobenzene	OSHA CSI		5		24		50		8		GC-FID	ST 226-10 38
2,4-Dimethylaminobenzene (Amines, Aromatic)	NIOSH 2002		2		24		50		8		GC-FID or GC-NSD	ST 226-10 38
N,N-Dimethylaniline	OSHA 07		5		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
N,N-Dimethylaniline	OSHA PV2064		5		30		200		2.5		GC-FID	ST 226-98 40
N,N-Dimethylaniline (Amines, Aromatic)	NIOSH 2002	1054	5	10	24	3	50	200	8	15	GC-FID or GC-NSD	ST 226-10 38
2,5-Dimethylbenzaldehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ○ or ST 226-119 40
trans-1,4-Dimethylcyclohexane	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
N,N-Dimethylethanolamine	NIOSH 2561				10-24		20-100		varies		GC-FID	ST 226-94 40
N,N-Dimethylethanolamine	OSHA CSI				24		50		8		GC-FID	ST 226-10-04 38
N,N-Dimethylethylamine	OSHA PV2096				40		100		40 min		GC-NPD	ST 226-18 38
N,N-Dimethylformamide	NIOSH 2004		10		24		50		8		GC-FID	ST 226-10 38
N,N-Dimethylformamide	OSHA 66	1271	10		9.6	3	20	200	8	15	GC-NPD	ST 226-01 38
1,1-Dimethylhydrazine	NIOSH 3515		0.06 (120 min)		60		1000		1		VAS	IMP 225-36-2 67 IT 225-22 67
1,1-Dimethylhydrazine	OSHA CSI		0.5		96		200		8		CLR	IMP 225-36-2 67 IT 225-22 67
N,N-Dimethyl-p-toluidine (Amines, Aromatic)	NIOSH 2002	1055			96		200		8		GC-FID or GC-NSD	ST 226-10 38
Dimethyltin dichloride	NIOSH 5526		0.1 mg/m³		60	60	250	1000	4	60	GC-FPD	ST 226-30-16 38
Di-n-hexyl phthalate	OSHA PV2076				240		1000		4		GC-FID	ST 226-56 39
Dinitolmide	OSHA CSI				240		1000		4		HPLC	F/CST 225-706 96 C/HLD 225-1 102
Dinitrobenzene (all isomers)	OSHA CSI		1 mg/m³		60		1000		1		HPLC-UV	ST 226-30-16 38
Dinitro-o-cresol	OSHA CSI		0.2 mg/m³		180		1500		2		HPLC-UV	F/CST 225-3-01 90 IMP 225-36-1 67 IT 225-22 67
4,6-Dinitro-o-sec-butyl phenol	OSHA CSI				24		50		8		HPLC-UV	ST 226-95 40
2-(2,4-Dinitrophenoxy)ethanol	OSHA CSI				10		20(50)		8(3.3)		HPLC-UV	ST 226-10 38
Dinitrotoluene (DNT)	OSHA 44		1.5 mg/m³		60		1000		1		GC-TEA	ST 226-56 39
Di-n-octyl phthalate (DNOP)	OSHA 104				240		1000		4		GC-FID	ST 226-56 39
Di-n-octyl-phthalate (DNOP)	OSHA CSI				90		1000		1.5		GC-ECD	ST 226-56 39
n-Dioctyl phthalate (DNOP)	OSHA 104				240		1000		4		GC-FID	ST 226-56 39
Dioxane (diethylene dioxide)	NIOSH 1602		1 (30 min)		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Dioxane (diethylene dioxide)	OSHA 07	1114	100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Dioxathion (Delnav)	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Dioxin (including, PHDDs, PCDDs, PBDDs)	EPA TO-9A	1673					200-280 L/min		24 hrs		HRGC-HRMS	PUF 226-131 41 FLT 225-1808 95
Diphenyl	NIOSH 2530		0.2		30		100		5		GC-FID	ST 226-35-01 38
Diphenyl ether	OSHA PV2022		0.2		20		200		100 min		GC-FID	ST 226-95 40
p,p-Diphenyl methane diisocyanate (MDI) *(see methylene bisphenyl isocyanate)*	OSHA 47											
2-Diphenylacetyl-1,3-indandione	OSHA CSI				480		2000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Diphenylamine	OSHA 78	1229			100		1000		100 min		HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
5,5-Diphenylhydantoin	OSHA CSI				60		1000		1		HPLC-UV	FLT 225-7 ‡ 96 CST 225-3LF 97 C/HLD 225-1 102
Diphenylmethane-4,4'-diisocyanate (4,4-methylene bisphenyl isocyanate) (isocyanates)	NIOSH 5521	1001	50 µg/m³	200 µg/m³ (10 min) C	480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Dipropyl disulfide	OSHA PV2086				10		20(50)		8(3.3)		GC-FPD	ST 226-110 40
Dipropyl ketone	OSHA CSI				10		20		8		GC-FID	ST NA SKC
Dipropylene glycol methyl ether	OSHA 07	1113	100		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Dipropylene glycol methyl ether	OSHA 101		100		10		100		100 min		GC-FID	ST 226-01 38

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Dipropylene glycol methyl ether (glycol ethers)	NIOSH 2554				3-25		100-200		varies		GC-FID	ST 226-81A 39
Dipropylene glycol monomethyl ether (glycol ethers)	NIOSH 2554				3-25		100-200		varies		GC-FID	ST 226-81A 39
Diquat	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Direct black 38	OSHA CSI				100		1000		100 min		HPLC	F/CST 225-706 96 C/HLD 225-1 102
Direct black 38 (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC	FLT C/HLD 225-17A 225-1 94 102 CST 225-3LF 97
Direct blue	OSHA CSI				60		1000		1		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Direct blue 2	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Direct blue 6	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Direct blue 6 (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC	FLT C/HLD 225-17A 225-1 94 102 CST 225-3LF 97
Direct blue 8 (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC	FLT C/HLD 225-17A 225-1 94 102 CST 225-3LF 97
Direct blue 98	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Direct brown 31	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Direct brown 95	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Direct brown 95 (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC	FLT C/HLD 225-17A 225-1 94 102 CST 225-3LF 97
Direct red 2	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Direct red 2 (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC	FLT C/HLD 225-17A 225-1 94 102 CST 225-3LF 97
Direct red 28 (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC	FLT C/HLD 225-17A 225-1 94 102 CST 225-3LF 97
Direct red 81	OSHA CSI				100		1000		100		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Di-sec-octyl phthalate *(see di-[2-ethylhexy] phthalate)*												
Disperse yellow 3	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Disulfiram (tetraethylthiuram disulfide)	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Disulfoton	OSHA PV2105				480		1000		8		GC-FPD	ST 226-30-16 38
Disulfoton (Organophosphorus Pesticides)	NIOSH 5600		0.1 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Disyston	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
2,2'-Dithiobis(benzothiazole)	OSHA CSI				480		2000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Diuron	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Diuron (Organonitrogen Pesticides)	NIOSH 5601		10 mg/m³		240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Divinyl benzene	OSHA 89				12		50		4		GC-FID	ST 226-73 39
Divinyl sulfide	OSHA CSI				2.5		20		2		GC	ST 226-01 38
DMP *(see dimethyl phthalate)*	OSHA 104											
DNOP *(see di-n-octyl phthalate)*	OSHA 104											
DNT (dinitrotoluene)	OSHA 44		1.5 mg/m³		60		1000		1		GC-TEA	ST 226-56 39
n-Dodecane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
Dodecyl alcohol (lauryl alcohol)	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Dodine	OSHA CSI				240		1000		2		HPLC-UV	ST 226-30 38
Dursban (chlorpyrifos)(organophosphorus pesticides)	NIOSH 5600		0.2 mg/m³	0.6 mg/m³	240		1000		4		GC-FPD	ST 226-58 39
Dust, inorganic					15-150		15000		1-10 min		varies	STC 225-9820 101
Dust, respirable (in workplace atmospheres)	ASTM D 4532	1418			varies		2500		varies		GR	FLT 225-5-37-P 93 CYC 225-01-02 111 C/HLD 225-1 102 CST 225-3LF 97
Dust, respirable nuisance	OSHA CSI		5.0 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 CYC 225-105 110 C/HLD 225-1 102 CST 225-3LF 97
Dust, respirable nuisance (particulates)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 CYC 225-01-02 111 C/HLD 225-1 102 CST 225-3LF 97
Dust, total nuisance	OSHA CSI		15 mg/m³		720		1500		8		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Dust, total nuisance (particulates)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Dust, total, particulates not otherwise regulated	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Dyes, benzidine, o-tolidine, o-dianisidine	NIOSH 5013		LFC		480		1000		8		HPLC-UV	FLT C/HLD 225-17A 225-1 94 102 CST 225-3LF 97
Dyfonate	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Elemental carbon (diesel exhaust)	MSHA				varies		varies		varies		EGA-TOS	DPM 225-317 95 CYC 225-105 110
Elemental carbon (diesel exhaust)	NIOSH 5040				varies		varies		varies		TOA-FID	F/CST 225-401 95 C/HLD 225-1 102 CYC 225-100 110
Elements by Cellulosic Internal Capsule Sampler *(see specific element)*	NIOSH 7306		Varies		Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Elements by ICP Aqua Regia ashing *(see specific element)*	NIOSH 7301		varies		varies		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102 or F/CST 225-803 93
Elements by ICP HNO_3 digestion *(see specific element)*	NIOSH 7303		varies		varies		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Elements by ICP $HNO_3/HClO_4$ ashing *(see specific element)*	NIOSH 7300	1455	varies		varies		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Elements on wipes *(see specific element)*	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2415 140 TMP 225-2403 or
Elements qualitative	OSHA ID 204				480		2000		8		XRF	F/CST 225-3-01 90 C/HLD 225-1 102
Emery (corundum) (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Emery (corundum) (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Emery (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Emery (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Endosulfan (thiodan)	OSHA PV2023				60		1000		1		GC-ECD	ST 226-30-16 38
Endotoxins (bacteria in air)	NON 48				62.5-375		12500 +		5-30		varies	BS 225-9595 122 VT 225-9598A◊ 122
Endrin	NIOSH 5519		0.1 mg/m³		240		1000		4		GC-ECD	CST 225-2LF 97 SCN 225-26 103 C/HLD 225-1 102 FLT 225-5 88 ST NA SKC
Enflurane (ethrane)	OSHA 103	1348			12		50		4		GC-FID	ST 226-81A 39
Enflurane (ethrane)	OSHA 29				10		20		8		GC-FID	ST 226-01 38
Environmental tobacco smoke (nicotine & 3-ethenylpyridine)	NON 49				90-720		1500		1-8		GC-NSD	ST 226-170 41
Environmental tobacco smoke (respirable particles)	ASTM D 5955	1419			varies		varies		varies		GR & HPLC-UV & HPLC-FD	FLT 225-2705 94 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Environmental tobacco smoke (solanesol, respirable particles)	ASTM D 6271				150-3600		2500		1-24		HPLC-UV	FLT 225-2705 94 CST 225-3LF 97 CYC 225-01-02 111 C/HLD 225-1 102
Epichlorohydrin	NIOSH 1010		LFC		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Epichlorohydrin	OSHA 07	1112	5		20		100		3.3		GC-FID	ST 226-01 38
Epicoccum species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Epicoccum species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
EPN	NIOSH 5012		0.5 mg/m³		480		1000		8		GC-FPD	F/CST 225-709 96 C/HLD 225-1 102
EPN	OSHA CSI		0.5 mg/m³		480		1000		8		GC-FPD	ST 226-30-16 38
1,2-Epoxyethylbenzene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-35 38
1,2-Epoxypropane *(see propylene oxide)*												
2,4,D-Esters	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Esters I *(see specific compounds)*	NIOSH 1450		varies		1-10		varies		varies		GC-FID	ST 226-01 38
Estradiol	OSHA PV2001				240		1000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Estriol	OSHA PV2001				60		1000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Estrone	OSHA PV2001				60		1000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
1,2-Ethanediol (ethylene glycol) (glycols)	NIOSH 5523	1401			24		100		4		GC-FID	ST 226-57 39
1,2-Ethanediol dinitrate	OSHA 43			0.2 (C)		15		1000		15	HPLC-TEA	ST 226-35-03 39
2-(2-methoxyethoxy)Ethanol	OSHA CSI				6		100		1		GC-FID	ST 226-01 38
Ethanol (ethyl alcohol)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Ethanolamine	OSHA PV2111		3		10	1.5	100	100	100 min	15	HPLC-UV	ST 226-30-18 38
3-Ethenylpyridine	NON 49				90-720		1500		1-8		GC-NSD	ST 226-170 41
3-Ethenylpyridine & nicotine	ASTM D 5075	1427			90-2160		1500		1-24		GC-NPD	ST 226-93 40
Ethion (nialate)	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Ethion (Organophosphorus Pesticides)	NIOSH 5600		0.4 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Ethoprop (Organophosphorus Pesticides)	NIOSH 5600				240		1000		4		GC-FPD	ST 226-58 39
1-Ethoxy-2-propanol	OSHA CSI				48		100		8		GC-FID	ST 226-01 38
2-Ethoxyethanol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
2-Ethoxyethanol (alcohols IV)	NIOSH 1403	1273	0.5 (skin)		1-6		10-50		varies		GC-FID	ST 226-01 38
2-Ethoxyethanol (CELLOSOLVE solvent)	OSHA 79	1277	200		48	15	100	1000	8	15	GC-FID	ST 226-01 38
2-Ethoxyethanol (CELLOSOLVE solvent) (alcohols IV)	NIOSH 1403	1273	0.5 (skin)		1-6		10-50		varies		GC-FID	ST 226-01 38
2-Ethoxyethyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
2-Ethoxyethyl acetate (CELLOSOLVE acetate)	OSHA 79	1277	100		48	15	100	1000	8	15	GC-FID	ST 226-01 38
2-Ethoxyethyl acetate (Esters I)	NIOSH 1450		0.5 (skin)		1-10		10-200		varies		GC-FID	ST 226-01 38

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Ethrane (enflurane)	OSHA 29				10		100		1.6		GC-FID	ST 226-01 38
Ethyl 2-cyanoacrylate	OSHA 55				12		100		2		HPLC-UV	ST 226-98 40
Ethyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Ethyl acetate	NIOSH 1457		400		10		20		8		GC-FID	ST 226-01 38
Ethyl acetate	OSHA 07	1111	400		5		20		4		GC-FID	ST 226-01 38
Ethyl acrylate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Ethyl acrylate	NON 54		5	15	10	3	20	200	8	15	GC-FID	ST 226-81A 39
Ethyl acrylate	OSHA 92		25		12	0.75	50	50	4	15	GC-FID	ST 226-73 39
Ethyl acrylate (Esters I)	NIOSH 1450		4 (LOQ)		1-10		10-200		varies		GC-FID	ST 226-01 38
Ethyl alcohol (ethanol)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Ethyl alcohol (ethanol)	OSHA 07	1109	1000		1		50		20 min		GC-FID	ST 226-01 38
Ethyl alcohol (ethanol)	OSHA 100	1283	1000		12		50		4		GC-FID	ST 226-82 40
Ethyl alcohol (ethanol) (Alcohols I)	NIOSH 1400		1000		1		50		20 min		GC-FID	ST 226-01 38
Ethyl amyl ketone	OSHA 07	1158	25		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Ethyl benzene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Ethyl benzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Ethyl benzene	OSHA 07	1108	100		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Ethyl benzene	OSHA 1002	1746	100		12		50		4		GC-FID	ST 226-01 38
Ethyl benzene	OSHA 1002	1746	100				13.83		8		GC-FID	PS 575-002 75
Ethyl benzene (Hydrocarbons, Aromatic)	NIOSH 1501	1053	100	125	1-24	1-24	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Ethyl bromide (bromoethane)	NIOSH 1011				4		20		3.3		GC-FID	ST 226-01 38
Ethyl bromide (bromoethane)	OSHA 07	1107	200		5	3	20	200	4	15	GC-FID	ST 226-01 38
Ethyl butyl ketone (3-heptanone)	OSHA 07	1106	50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Ethyl butyl ketone (3-heptanone) (Ketones II)	NIOSH 2553		50		1-25		10-200		varies		GC-FID	ST NA SKC
Ethyl butyl ketone (3-heptanone) (Ketones II)	NIOSH 1301		50		24		200		2		GC-FID	ST 226-01 38
Ethyl chloride	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Ethyl chloride	NIOSH 2519				3		50		1		GC-FID	ST 226-25 38
Ethyl chloride	OSHA 07		1000		3		50		1		GC-FID	ST 226-01 38
Ethyl ether (diethyl ether)	OSHA 07	1105	400		3	3	20	200	2.5	15	GC-FID	ST 226-01 38
Ethyl ether (ethyl ether)	NIOSH 1610				0.25-3		10-200		varies		GC-FID	ST 226-01 38
Ethyl formate	NIOSH 1452		100		10		20		8		GC-FID	ST 226-01 38
Ethyl formate	OSHA 07	1104	100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Ethyl lactate	OSHA PV2081				10		200		50 min		GC-FID	ST 226-01 38
Ethyl mercaptan	OSHA CSI			10 (C)		120		1000		120	GC-FPD	CF/CST 225-9007 64 C/HLD 225-1 102
Ethyl mercaptan (mercaptans)	NIOSH 2542	1330		0.5 (15 min)	48	12	100	200	8	60	GC-FPD	CF/CST 225-9007 64 C/HLD 225-1 102
Ethyl methacrylate	NIOSH 2537				1-8		10-50		varies		GC-FID	ST 226-30-06 38
Ethyl methacrylate	OSHA PV2100				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Ethyl O-(p-nitrophenyl) phenylphosphonothionate (EPN)	NIOSH 5012		0.5 mg/m³		480		1000		8		GC-FPD	F/CST 225-709 96 C/HLD 225-1 102
Ethyl parathion	ASTM D 4861				240-7200		1000-5000		4-24		GC-NPD	PUF 226-92 44
Ethyl propionate	OSHA CSI				10		20(50)		8(3.3)		GC	ST 226-01 38
Ethyl silicate	OSHA CSI		100		9		50		3		GC-FID	ST 226-30-04 38
2-Ethyl toluene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
3-Ethyl toluene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
4-Ethyl toluene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Ethyl vinyl benzene	OSHA 89				12		50		4		GC-FID	ST 226-73 39
Ethyl-3-ethoxypropionate	OSHA PV2025				10		100		100 min		GC-FID	ST 226-01 38
Ethylamine	OSHA 36		10		10		200		50 min		HPLC-UV	ST 226-96 40
Ethylene chlorohydrin	NIOSH 2513			1	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-81A 39
Ethylene chlorohydrin	OSHA 07	1159	5		20		40		8		GC-FID	ST 226-81A 39
Ethylene dibromide (1,2-dibromoethane)	NIOSH 1008		0.045	0.13 (15 min)	10	3	20(50)	200	8(3.3)	15	GC-ECD	ST 226-01 38
Ethylene dibromide (1,2-dibromoethane)	OSHA 02	1072	20	30	10	1	20(50)	200	8(3.3)	5	GC-ECD	ST 226-01 38
Ethylene dichloride	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Ethylene dichloride (1,2-dichloroethane)	OSHA 03	1063	50	100	10	3	200	200	1	15	GC-ECD	ST 226-01GWS 38

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Ethylene dichloride (1,2-dichloroethane) (hydrocarbons, halogenated)	NIOSH 1003		1	2	3	3	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Ethylene glycol (glycols)	NIOSH 5523	1401			60		1000		1		GC-FID	ST 226-57 39
Ethylene glycol dinitrate	OSHA 43			0.2 (C)		15		1000		15	HPLC-TEA	ST 226-35-03 39
Ethylene glycol dinitrate (nitroglycerine)	NIOSH 2507			0.1 mg/m³		15		1000		15	GC-ECD	ST 226-35-03 39
Ethylene glycol isopropyl ether (isopropyl CELLOSOLVE solvent)	OSHA CSI				9		100		1.5		GC-FID	ST 226-01 38
Ethylene glycol monohexyl ether	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
Ethylene oxide	ASTM D 4413				6	3	100	200	1	15	GC-FID	ST 226-16 or ST 226-36 39
Ethylene oxide	ASTM D 5578				9.6	1.5	20	100	8	15	GC-ECD	ST 226-178 41
Ethylene oxide	NIOSH 1614		0.1	5 (10 min)	24	1.5	100	150	4	10	GC-ECD	ST 226-178 41
Ethylene oxide	OSHA 1010	1751	1	5.0 EL	12	0.75	50	50	4	15	GC-ECD	ST 226-178 41
Ethylene oxide (by portable GC)	NIOSH 3702	1031	0.1	5 (10 min)	varies	varies	20-4000	varies	varies	varies	P GC-PID	SB 232 Series 55
Ethylene oxide (Qazi-Ketcham)	NON 14				10		20(50)		8(3.3)		GC	ST 226-36 39
Ethylene thiourea	NIOSH 5011		LFC		480		2000		4		VAS	F/CST 225-802 93 C/HLD 225-1 102
Ethylene thiourea	OSHA 95				480		2000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Ethylenediamine	NIOSH 2540		10		10		100		1.7		HPLC-UV	ST 226-30-18 38
Ethylenediamine	OSHA 60	1287	10		10		100		100 min		HPLC-UV	ST 226-30-18 38
Ethylenimine	NIOSH 3514				48		200		4		HPLC-UV	IMP 225-36-2 67 IT 225-22 67
2-Ethylhexanol	OSHA CSI				48		200		4		GC-FID	ST 226-01 38
Ethylhexyl acetate	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
2-Ethylhexyl acrylate	OSHA PV2026				12		100		2		GC-FID	ST 226-73 39
di-2-Ethylhexyl phthalate (DEHP)	OSHA 104		5 mg/m³		240		1000		4		GC-FID	ST 226-56 39
N-Ethylmorpholine	OSHA CSI		20		10		20(50)		8(3.3)		GC-FID	ST 226-10 38
ETS *(see environmental tobacco smoke)*	NON 49											
Exserohilum species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Exserohilum species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Fenamiphos	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Fenamiphos (Organophosphorus Pesticides)	NIOSH 5600		0.1 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Fenarimol	OSHA CSI				30		1000		30 min		HPLC-UV	ST 226-30-16 38
Fensulfothion (Dansanit)	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Fenthion	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Fenvalerate	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Ferbam	OSHA CSI		15 mg/m³		480		1000		8		HPLC-UV	ST 226-30-16 38
Ferric chloride *(see iron salts, soluble as Fe)*	OSHA ID 121											
Ferrovanadium dust	OSHA ID 125G	1218	1 mg/m³		480	30	2000	2000	4	15	ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Fibers (bioaerosols)					15-150		15000		1-10 min		varies	STC 225-9820 101
Fibers *(see specific compounds)*												
Fibrous glass (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Fibrous glass (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Fibrous glass dust	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-8204 93 C/HLD 225-1 102
Flax dust *(see dust, total and respirable nuisance)*	OSHA CSI											
Fluoboric acid	OSHA CSI				120		1000		2		ISE	IMP 225-36-2 67 IT 225-22 67
Fluometuron	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Fluoranthene	OSHA CSI				960		2000		8		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Fluoranthene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Fluoranthene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Fluoranthene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Fluorene	OSHA CSI				960		2000		8		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Fluorene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Fluorene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Fluorene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-UV	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Fluoride (particulate)	NIOSH 7906		2.5 mg/m³		960		2000		8		IC-CD	CF/CST 225-9031 64 C/HLD 225-1 102

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA	Vol. (liter) CLG/STEL	Rate (ml/min) TWA	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
Fluorides	ASTM D 4765	1421			varies		2000		varies		ISE	CF/CST 225-9001 64 C/HLD 225-1 102
Fluorides (aerosol & gas by ISE)	NIOSH 7902	1226	2.5 mg/m³	6 (HF)	480	22.5	1000	1500	8	15	ISE	CF/CST 225-9001 64 C/HLD 225-1 102
Fluorides (as F)	OSHA ID 110	1227	2.5 mg/m³		90	22.5	1500	1500	1	15	ISE	CF/CST 225-9001 64 C/HLD 225-1 102
Fluorine	OSHA CSI		0.1		480		1000		8		ISE	IMP 225-36-2 67 IT 225-22 67
Fluorotrichloromethane (trichlorofluoromethane)	NIOSH 1006			1000		5		20		240	GC-FID	ST 226-09 38
5-Fluorouracil	OSHA CSI				180		1000		3		HPLC-UV	ST 226-30-16 38
Folpet	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Fonofos (Dyfonate)	OSHA PV2027				480		1000		8		GC-FPD	ST 226-30-16 38
Fonofos (Organophosphorus Pesticides)	NIOSH 5600		0.1 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Formaldehyde	ASTM D 5197	1442			varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ◇ or ST 226-119 40
Formaldehyde	EPA IP-6A	1664					100-1000 ml/min		5 min-24 hrs		HPLC-UV	ST 226-119 or ST 226-120 40
Formaldehyde	EPA IP-6C	1664					20.4 ml/min		15 min-8 hrs		HPLC-UV	PS 500-100 84
Formaldehyde	EPA IP-6C	1664					20.4 ml/min		1-7 days		HPLC-UV	PS 500-100 84
Formaldehyde	EPA IP-6C	1664					20.4 ml/min		7 days		HPLC-UV	PS 500-100 84
Formaldehyde	EPA TO-11A	1082			varies		100-2000 ml/min		varies		HPLC-UV	ST 226-119 or ST 226-120 40
Formaldehyde	EPA TO-11A	1082					28.6 ml/min		15 min-24 hrs		HPLC-UV	PS 500-100 84
Formaldehyde	EPA TO-11A	1082					28.6 ml/min		15 min-8 hrs		HPLC-UV	PS 500-100 84
Formaldehyde	EPA TO-11A	1082					28.6 ml/min		7 days		HPLC-UV	PS 500-100 84
Formaldehyde	NIOSH 2016	1761	0.016	0.1 (C)	1-<15	1-<15	30-500	30-500	varies	varies	HPLC-UV	ST 226-119 ♠ 40
Formaldehyde	NIOSH 2541	1015	0.016	0.1 (C)	24	1	100	100	4	10	GC-FID	ST 226-118 40
Formaldehyde	NIOSH 3500		0.016	0.1	96	15	200	1000	8	15	VAS	IMP 225-36-1 67 IT 225-22 67 FLT 225-1709** 94 CST 225-2LF** 97 SCN 225-26** 103
Formaldehyde	OSHA 1007		0.75	2	13.8	0.43	28.6	28.6	8	15	HPLC-UV	PS 500-100 84
Formaldehyde	OSHA 52	1020	0.75	2	24	3	100	200	4	15	GC-NPD	ST 226-117 or ST 226-54 39
Formaldehyde (Aldehydes, Screening)	NIOSH 2539		0.016	0.1	5		20		4		GC-FID & GC-MS	ST 226-118 40
Formaldehyde on dust (textile or wood)	NIOSH 5700		0.016	0.1	240		2000		4		HPLC-UV	IOM 225-70A 108 FLT 225-5-25 93
Formamide	OSHA CSI				10	1.5	100	100	100 min		GC-NPD	ST 226-10 38
Formetanate (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Formic acid	NIOSH 2011		5		24		200		2		IC-CD	FLT 225-2708 94 CST 225-3-25LF 97 ST 226-10-03 38 C/HLD 225-1 102
Formic acid	OSHA ID 186SG		5		48		100		8		IC	ST 226-09 38
Freon 11	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Freon 113	OSHA 113		1000		1		50		20 min		GC-FID	ST NA SKC
Freon 113 (1,1,2-Trichloro-1,2,2-trifluoroethane)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Freon 114	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Freon 12	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Freon 123	NON 50				9		50		3		GC-FID	ST 226-09 38
Freon 141b	OSHA 113		1000		1		50		20 min		GC-FID	ST NA SKC
Fumarin	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Fungi	NIOSH 0800				varies		28300		varies		varies	BI 225-9611 120
Fungi (in air)					15-150		15000		1-10 min		varies	STC 225-9820 101
Fungi (in air) (BioSampler method)	NON 48				62.5-375		12500 +		5-30		varies	BS 225-9595 122 VT 225-9598A◇ 122
Furans (including PHDFs, PCDFs, PBDFs)	EPA TO-9A	1673					200-280 L/min		24 hrs		HRGC-HRMS	PUF 226-131 41 FLT 225-1808 95
Furfural	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Furfural	NIOSH 2529				5		20		4		GC-FID	ST 226-118 40
Furfural	OSHA 72		5		180		1000		3		GC-FID	ST 226-81A 39
Furfural (Aldehydes, Screening)	NIOSH 2539				5		20		4		GC-FID & GC-MS	ST 226-118 40
Furfuryl alcohol	NIOSH 2505		10	15	5		20		4		GC-FID	ST 226-115 40
Fusarium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Fusarium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Gallium	OSHA CSI				960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Gallium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				1-3300		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Gasoline	OSHA PV2028				10	1.5	20(50)	100	8(3.3)	15	GC-FID	ST 226-01 38
Gentian violet	OSHA CSI				180		1000		3		HPLC-UV	FLT 225-7 96 CST 225-2LF 97
Germanium oxide	OSHA CSI				960		2000		8		AA-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Glass, fibrous *(see asbestos fibers)*	NIOSH 7400											

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Glass, fibrous dust	OSHA CSI				960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Gliocladium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Gliocladium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Glutaraldehyde	NIOSH 2531		0.2			4		200		20	HPLC-UV	ST 226-118 40
Glutaraldehyde	NIOSH 2532	1346	0.2			3		200		15	HPLC-UV	ST 226-119 40
Glutaraldehyde	NON 43				30	15	250	1000	2	15	GC-FID	ST 226-10 38
Glutaraldehyde	OSHA 64	1241				15		1000		15	HPLC-UV	CF/CST 225-9003 64 C/HLD 225-1 102
Glycerin mist (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Glycerin mist (respirable)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Glycerin mist (total dust)	OSHA CSI		15 mg/m³		96		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Glycidol (2,3-epoxy-1-propanol)	NIOSH 1608		25		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Glycidol (2,3-epoxy-1-propanol)	OSHA 07	1157	50		48		100(200)		8(4)		GC-FID	ST 226-01 38
Glycol chlorohydrin *(see ethylene chlorohydrin)*												
Glycol ethers	NIOSH 2554				3-25		100-200		varies		GC-FID	ST 226-81A 39
Glycols	NIOSH 5523	1402			60		1000		1		GC-FID	ST 226-57 39
Glyphosate	OSHA PV2067				100		1000		100 min		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Gold	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Gold (Elements by ICP HNO_3 Digestion))	NIOSH 7303				1-3300		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Grain dust (oats, wheat, barley)	OSHA CSI		10 mg/m³		960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Graphite (natural) *(see Respirable dust)*	OSHA ID 142											
Graphite (synthetic) (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Graphite (synthetic) (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Graphite (synthetic) (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Graphite (synthetic) (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Graphium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Graphium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Grunerite fibers *(see asbestos)*	OSHA ID 160											
Gypsum (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Gypsum (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Hafnium	OSHA ID 121		0.5 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Halothane	OSHA 103	1347			12		50		4		GC-FID	ST 226-81A 39
Halothane	OSHA 29				9		100		1.5		GC-FID	ST 226-01 38
Haloxon	OSHA CSI										W	W 225-2401A 140
HDI *(see hexamethylene diisocyanate)*												
Heptachlor	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Heptachlor	OSHA PV2029		0.5 mg/m³		60		1000		1		GC-ECD	ST 226-30-16 38
Heptachlor (non-occupational exposure)	ASTM D 4947	1417			240-7200	250	1000-5000		4-24		GC-ECD	PUF 226-92 44
Heptachlor epoxide	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Heptanal (Aldehydes, Screening)	NIOSH 2539				5		20		4		GC-FID & GC-MS	ST 226-118 40
n-Heptane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
n-Heptane	OSHA 07	1156	500		5	3	20	200	4	15	GC-FID	ST 226-01 38
3-Heptanone (ethyl butyl ketone) (Ketones II)	NIOSH 2553		50		1-25		10-200		varies		GC-FID	ST NA SKC
2-Heptanone (methyl n-amyl ketone) (Ketones II)	NIOSH 2553		100		1-25		10-200		varies		GC-FID	ST NA SKC
1-Heptene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Hexachloro-1,3-cyclopentadiene	NIOSH 2518		0.01		24		50		8		GC-ECD	ST 226-116 40
Hexachlorobenzene	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Hexachlorobenzene	OSHA CSI				480		2000		4		GC-ECD	F/CST 225-706 96 C/HLD 225-1 102
Hexachlorobutadiene	NIOSH 2543		0.02		48		100		8		GC-ECD	ST 226-30-04 38
Hexachlorocyclopentadiene	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-124 44
Hexachlorocyclopentadiene (hexachloro-1,3-cyclopentadiene)	NIOSH 2518		0.01		48		100		8		GC-ECD	ST 226-116 40
Hexachloroethane	OSHA 07	1155	1		30		100		5		GC-FID	ST 226-01 38

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Hexachloroethane (hydrocarbons, halogenated)	NIOSH 1003		1		10		10-200		varies		GC-FID	ST 226-01 38
Hexachloronaphthalene	OSHA CSI		0.2 mg/m³		30		1000		30 min		GC-ECD	F/CST 225-3-01 90 C/HLD 225-1 102
Hexamethylene diisocyanate	NIOSH 5522		35 µg/m³	140 µg/m³	360	20	1000	2000	6	10	HPLC-FD	IMP 225-36-1 67 IT 225-22 67
1,6-Hexamethylene diisocyanate	OSHA 42	1458			15		1000		15 min		HPLC-UV or HPLC-FD	CF/CST 225-9002 or 225-1 102 CF/CST 225-9013 64
Hexamethylene diisocyanate (gaseous)	ASTM D 6562				15		1000		15 min		HPLC-UV or HPLC-FD	CF/CST 225-9023 or 225-1 102 CF/CST 225-9022 64
Hexamethylene diisocyanate (HDI) (isocyanates)	OR-OSHA 1010		0.02	0.02	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67 IT 225-22 67 CF/CST 225-9029 64
Hexamethylene diisocyanate (isocyanates)	NIOSH 5521		35 µg/m³	140 µg/m³ (10 min) (C)	480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1 67 IT 225-22 67
1,6-Hexamethylene diisocyanate (isocyanates, total)	NIOSH 5525		35 µg/m³	140 µg/m³ (10 min) (C)	1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
Hexamethylene diisocyanate (monomeric aerosol)	ASTM D 6561				15		1000		15 min		HPLC-UV	CF/CST 225-9023 or 225-1 102 CF/CST 225-9022 ▼ 64
Hexamethylene diisocyanate (monomeric gaseous)	ASTM D 6561				15		1000		15 min		HPLC-UV	CF/CST 225-9023 or 225-1 102 CF/CST 225-9022 64
Hexamethylene diisocyanate (oligomeric aerosol)	ASTM D 6561				15		1000		15 min		HPLC-UV	CF/CST 225-9023 or 225-1 102 CF/CST 225-9022 ▼ 64
Hexamethylene diisocyanate biuret	OSHA PV2030				15		1000		15 min		HPLC-UV	FLT 225-7 ‡ 96 CST 225-3LF 97 C/HLD 225-1 102
Hexamethylene diisocyanate biuret (HDI-BT) (isocyanates)	OR-OSHA 1010		1.0 mg/m³	0.5 mg/m³	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67 IT 225-22 67 CF/CST 225-9029 64
Hexamethylene diisocyanate isocyanurate (HDI-IC) (isocyanates)	OR-OSHA 1010		1.0 mg/m³	0.5 mg/m³	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67 IT 225-22 67 CF/CST 225-9029 64
Hexamethylenediamine	OSHA CSI				12		100		2		HPLC-UV	ST 226-30-18 38
Hexamethylenetetramine	NON 52				15		1000		15 min		GC-NPD or GC-FID	ST 226-57 39
Hexamethylenetetramine	OSHA CSI				15		1000		15 min		GC-NPD	F/CST 225-3-01 90 IMP 225-36-1 67 IT 225-22 67
Hexanal	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
Hexanal (Aldehydes, Screening)	NIOSH 2539				5		20		4		GC-FID & GC-MS	ST 226-118 40
n-Hexane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
n-Hexane	OSHA 07	1154	500		5		20		4		GC-FID	ST 226-01 38
Hexane (isomers other than n-hexane)	OSHA CSI				4	3	20	200	3.3	15	GC-FID	ST 226-01 38
1,6-Hexanediol	OSHA CSI				6		100		1		GC-FID	ST 226-09 38
Hexanediol diacrylate	NON 39				480		1000		8		GC-FID	ST 226-56 39
1,6-Hexanediol diacrylate	OSHA CSI				10		20(50)		8(3.3)		HPLC	ST 226-95 40
1,6-Hexanediol diacrylate	OSHA PV2133		1 mg/m³		48		200		4		GC-FID	ST 226-110 40
2-Hexanone (Ketones I)	NIOSH 2555				1-10		10-200		varies		GC-FID	ST NA SKC
2-Hexanone (methyl butyl ketone)	OSHA 07	1153	100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
2-Hexanone (methyl butyl ketone) (Ketones I)	NIOSH 1300		1		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Hexavalent chromium	ASTM D 6832				varies		1000-5000		varies		IC	F/CST 225-802 or F/CST 225-1713 or F/CST 225-709 or F/CST 225-401 95
Hexavalent chromium	NIOSH 7600	1032	1 µg/m³ (10 hr)		240		1000		4		VAS	F/CST 225-802 93 C/HLD 225-1 102
Hexavalent chromium	NIOSH 7604	1032	1 µg/m³ (10 hr)		240		1000		4		IC-CD	F/CST 225-802 93 C/HLD 225-1 102
Hexavalent chromium	NIOSH 7605		0.001 mg/m³ (10 hr)		1-400		1000-4000		varies		IC-PCD-UV	F/CST 225-802 93 C/HLD 225-1 102
Hexavalent chromium	NIOSH 7703		0.001 mg/m³ (10 hr)		10-1200		1000-4000		varies		P VAS	F/CST 225-802 93 C/HLD 225-1 102
Hexavalent chromium	OSHA ID 103			0.005 mg/m³ (C)	960	30	2000	2000	8	15	DPP	F/CST 225-802 93 C/HLD 225-1 102
Hexavalent chromium	OSHA W4001			0.005 mg/m³ (C)							IC-UV	FLT 225-5-37 or FLT 225-1822 95
Hexavalent chromium (CR(VI))	OSHA ID 215 (V2)	1439	0.005 mg/m³		960		2000		8		IC-UV	F/CST 225-802 93 C/HLD 225-1 102
Hexavalent chromium (in settled dust)	NIOSH 9101				bulk	bulk					CLR or VAS or IC	
Hexone	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Hexone	OSHA 1004		100				13.62		8		GC-FID	PS 575-002 75
Hexone	OSHA 1004		100		12		50		4		GC-FID	ST NA SKC
Hexone (Ketones I)	NIOSH 2555		50		1-10		10-200		varies		GC-FID	ST NA SKC
Hexone (methyl isobutyl ketone)	OSHA 07		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Hexone (methyl isobutyl ketone) (Ketones I)	NIOSH 1300		50	75	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
n-Hexyl acetate	OSHA CSI				6		200		30 min		GC-FID	ST 226-01 38

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
sec-Hexyl acetate	OSHA 07	1152	50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Hexyl alcohol	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Hexyl carbitol	OSHA CSI				6		200		30 min		GC-FID	ST 226-01 38
Hexylene glycol	OSHA PV2101					3		200		15	GC-FID	ST 226-01 38
HMX	OSHA PV2032				480		1000		8		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
HydramethylNON OSHA CSI					90		1000		1.5		HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
Hydrazine	NIOSH 3503			0.03 (120 min)	90		1000		1.5		VAS	IMP 225-36-2 67 IT 225-22 67
Hydrazine	NON 22				96		200		8		CLR	ST 226-42-02 39
Hydrazine	OSHA 108		1		240		1000		4		IC-UV	CF/CST 225-9012 64 C/HLD 225-1 102
Hydrazine	OSHA 20	1281	1		20		100		3.3		HPLC-UV	ST 226-42-02 39
Hydrazoic acid	NON 25					15		1000		15	HPLC-UV	ST 226-55 39
Hydrazoic acid	OSHA ID 211					5		1000		5	IC-UV	ST 226-55 39 FLT 225-5-37-P 93 CST 225-2LF 97 SPC 225-23 103 C/HLD 225-1 102
Hydrocarbons BP 36 to 216 C *(see specific compounds)*	NIOSH 1500		varies		varies		varies		varies		GC-FID	ST 226-01 38
Hydrocarbons, aromatic *(see specific compounds)*	NIOSH 1501	1453	varies		varies		varies		varies		GC-FID	ST 226-01 38
Hydrocarbons, halogenated *(see specific compounds)*	NIOSH 1003	1454	varies		varies		varies		varies		GC-FID	ST 226-01 38
Hydrofluoric acid (fluorides)	NIOSH 7906		3	6	960	30	2000	2000	8	15	IC-CD	CF/CST 225-9031 64 C/HLD 225-1 102
Hydrogen bromide	NIOSH 7907			3		30		2000		15	IC-CD	CF/CST 225-9032 64
Hydrogen bromide	OSHA ID 165SG		3		97	3	200	200	8	15	IC	ST 226-10-03 38
Hydrogen chloride	NIOSH 7907			5		30		2000		15	IC-CD	CF/CST 225-9032 64
Hydrogen chloride (hydrochloric acid)	OSHA ID 174SG			5		7.5		500		15	IC	ST 226-10-03 38
Hydrogen cyanide	NIOSH 6010			4.7		2-90		50-200		varies	VAS	ST 226-28 38
Hydrogen cyanide	NIOSH 6017			4.7		2-90		50-200		varies	IC/ELCM	ST 226-28 38
Hydrogen cyanide	OSHA 1015		10				28.4		8	15	IC-ELCM	PS 590-400 86
Hydrogen cyanide	OSHA ID 120		10		120	15	1000	1000	2	15	ISE	CST 225-3LF 97 IMP 225-36-2 67 IT 225-22 67 FLT 225-5 88 SP 225-2902 103
Hydrogen cyanide (cyanides)	NIOSH 7904			5 mg/m³ (10 min)		15		1000		15	ISE	FLT 225-2705 Δ 94 CST 225-2LF 97 IMP 225-36-2 67 IT 225-22 67 C/HLD 225-1 102
Hydrogen fluoride	NIOSH 7906		3	6	960	30	2000	2000	8	15	IC-CD	CF/CST 225-9031 64 C/HLD 225-1 102
Hydrogen fluoride (as F)	OSHA ID 110		3	6	90	22	1500	1500	1	15	ISE	CF/CST 225-9001 64 C/HLD 225-1 102
Hydrogen fluoride (fluorides)	NIOSH 7902		3	6	480	30	1000	2000	8	15	ISE	CF/CST 225-9001 64 C/HLD 225-1 102
Hydrogen peroxide	OSHA 1019		1.0 (1.4 mg.m³)		240	30	1000	2000	4	15	VAS	CF/CST 225-9030 64 C/HLD 225-1 102
Hydrogen selenide (as Se)	OSHA CSI		0.05		480		1000		8		AA	IMP 225-36-2 67 IT 225-22 67
Hydrogen sulfide	NIOSH 6013			10 (10 min)	24	3	100	300	4	10	IC	ST NA SKC
Hydrogen sulfide	NON 42	1414			12		1000		12 min		GC-FPD	SB 231-10 54
Hydrogen sulfide	OSHA 1008		10	20	12	7.5	50	500	4	15	IC	ST 226-177 41
Hydrogenated terphenyls	OSHA CSI				30		1000		30		GC-FID	FLT 225-17-04 94 CST 225-2LF 97 C/HLD 225-1 102
Hydroquinone	NIOSH 5004			2 mg/m³ (15 min)		30		2000		15	HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
Hydroquinone	OSHA PV2094		2 mg/m³		20		200		100 min		HPLC-UV	ST 226-98 40
2-Hydroxy-4-methoxyacetophenone	OSHA CSI				10		200		50 min		HPLC-UV	ST 226-30 38
4-Hydroxy-4-methyl-2-pentanone *(see diacetone alcohol)*												
4-Hydroxy-4-methyl-2-petanone (alcohols combined)	NIOSH 1405		50		1-10		10-200		varies		GC-FID	ST 226-01 38
m-Hydroxyacetophenone	OSHA CSI				10		200		50 min		HPLC-UV	ST 226-30-04 38
m-Hydroxybenzoic acid	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
4-Hydroxycoumarin	OSHA CSI				10		200		50 min		HPLC-UV	ST 226-30-04 38
Hydroxyethyl acrylate	OSHA CSI				12		200		2		GC-FID	ST 226-15GWS 38
2-Hydroxyethyl methacrylate	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
2-Hydroxypropyl acrylate	OSHA PV2078				10		100		100 min		GC-FID	ST 226-73 39
2-Imidazolidinethione (ethylene thiourea)	NIOSH 5011		LFC		480		1000		8		VAS	F/CST 225-803 93 C/HLD 225-1 102
Indene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-110 40
Indeno(1,2,3-cd)pyrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Indeno(1,2,3-cd)pyrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Indeno(1,2,3-cd)pyrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Indium	OSHA ID 121		0.1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Indium & compounds (as In)	OSHA CSI		0.1 mg/m³		960		2000		8		ICP-DCP	F/CST 225-3-01 90 C/HLD 225-1 102
Indium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.1 mg/m³		8-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Indium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				15-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Iodine	NIOSH 6005		0.1		15		1000		15		IC	ST 226-67 39
Iodine	NON 16				48		100		8		IC	ST 226-67 39
Iodine	OSHA ID 212		0.1 (C)		2.5		500		5		IC	ST 226-80 39
Iodine (particulates)	OSHA ID 212		0.1		2.5		500		5		IC	ST 226-142 41
Iodine (vapor)	OSHA ID 212		0.1		2.5		500		5		IC	ST 226-80 39
Iodoform	OSHA CSI				10		100		100 min		GC-ECD	F/CST 225-706 96 C/HLD 225-1 102 ST 226-93 40
Iridium	OSHA CSI				960		2000		8		AA	F/CST 225-3-01 90
Iron	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Iron & compounds (as Fe)	OSHA ID 121	1209			960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Iron (bulk)	OSHA ID 125G				480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Iron (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		5 mg/m³ (dust, fume) as Fe		2-500		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Iron (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		5 mg/m³ (dust, fume)		5-100		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Iron (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.5 mg/m³ (dust, fume)		1-5000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Iron (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	5 mg/m³ (dust, fume)		5-100		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Iron (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Iron oxide (Elements by ICP HNO_3 Digestion))	NIOSH 7303				1-5000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Iron oxide fume	OSHA ID 121	1045	10 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Iron oxide fume	OSHA ID 125G		10 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Iron pentacarbonyl (as Fe)	OSHA CSI				480	30	2000	2000	4	15	CLR	IMP 225-36-2 67 IT 225-22 67
Iron salts, soluble (as Fe)	OSHA ID 121	1208			960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Isoamyl acetate	OSHA 07	1151	100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Isoamyl acetate (Esters I)	NIOSH 1450		100		1-10		10-200		varies		GC-FID	ST 226-01 38
Isoamyl alcohol	OSHA CSI		100		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Isoamyl alcohol (alcohols combined)	NIOSH 1405		100	125 (skin)	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Isoamyl alcohol (alcohols III)	NIOSH 1402		100	125	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Isoamyl nitrite	OSHA CSI				5		20		4		HPLC-UV	ST 226-01 38
Isobutanol (isobutyl alcohol)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Isobutyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Isobutyl acetate	OSHA 07	1150	150		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Isobutyl acetate	OSHA 1009	1750	150		12	0.75	50	50	4	15	GC-FID	ST 226-01 38
Isobutyl acetate	OSHA 1009	1750	150				13.16	13.16	8	15	GC-FID	PS 575-002 75
Isobutyl acetate (Esters I)	NIOSH 1450		150		1-10		10-200		varies		GC-FID	ST 226-01 38
Isobutyl acrylate	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Isobutyl alcohol	OSHA 07	1149	100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Isobutyl alcohol (alcohols combined)	NIOSH 1405		50		2-10		10-200		varies		GC-FID	ST 226-01 38
Isobutyl alcohol (alcohols II)	NIOSH 1401		50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Isobutyl alcohol (isobutanol)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Isobutyl isobutyrate	OSHA PV2090				10		200		50 min		GC-FID	ST 226-01 38
Isobutyl nitrite	OSHA CSI				5		20		4		HPLC-UV	ST 226-01 38
Isobutylbenzene	OSHA CSI				6		200		30 min		GC-FID	ST 226-01 38
Isobutyraldehyde (Aldehydes, Screening)	NIOSH 2539				5		20		4		GC-FID & GC-MS	ST 226-118 40
Isobutyric acid	OSHA CSI				6		100		1		GC-FID	ST 226-110 40
Isobutyronitrile	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Isocyanates *(see specific isocyanate)*	NIOSH 5521	1459	varies		480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Isocyanates *(see specific isocyanate)*	NIOSH 5522	1460	varies	varies	360	20	1000	2000	6	10	HPLC-FD	IMP 225-36-1 67 IT 225-22 67
Isocyanates *(see specific isocyanate)*	OR-OSHA 1010		varies	varies	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67 IT 225-22 67 CF/CST 225-9029 64
Isocyanates, total *(see specific isocyanate)*	NIOSH 5525		varies	varies	1-500	1-500	1000-2000	1000-2000	varies	varies	HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
Isofenphos	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Isoflurane	OSHA 103	1349			12		50		4		GC-FID	ST 226-81A 39
Isooctyl alcohol	OSHA PV2033		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Isophorone	NIOSH 2508		4		10		20(50)		8(3.3)		GC-FID	ST 226-81A 39
Isophorone	NIOSH 2556		4		2-25		10-100		varies		GC-FID	ST 226-93 40
Isophorone	OSHA 07	1160	25		10		20(50)		8(3.3)		GC-FID	ST 226-81A 39
Isophorone (3,5,5-Trimethylcyclohex-2-enone)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Isophorone diisocyanate	OSHA PV2034				60	15	1000	1000	1	15	HPLC-UV	CF/CST 225-9002 64 C/HLD 225-1 102
Isophorone diisocyanate (IPDI)	OR-OSHA 1010		0.02	0.02	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67 IT 225-22 67 CF/CST 225-9029 64
Isophorone diisocyanate (isocyanates, total)	NIOSH 5525		45 µg/m³	180 µg/m³ (10 min) C	1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
Isophthalic acid	OSHA CSI				bulk						HPLC-UV	
Isopropanol (isopropyl alcohol)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Isopropyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Isopropyl acetate	NIOSH 1454				9		50		3		GC-FID	ST 226-01 38
Isopropyl acetate	NIOSH 1460				0.1-9.0		20-200		varies		GC-FID	ST 226-01 38
Isopropyl acetate	OSHA 07	1148	250		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Isopropyl alcohol	OSHA 07	1147	400		3	1.5	20	100	2.5	15	GC-FID	ST 226-01 38
Isopropyl alcohol	OSHA 109		400		18	3	50	200	6	15	GC-FID	ST 226-82 40
Isopropyl alcohol (Alcohols I)	NIOSH 1400		400	500	3	3	20	200	2.5	15	GC-FID	ST 226-01 38
Isopropyl alcohol (isopropanol)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Isopropyl amine	OSHA CSI		5		90	15	1000	1000	1.5	15	GC-FID	IMP 225-36-2 67 IT 225-22 67
N-Isopropyl aniline	OSHA 78	1228			100		1000		100 min		HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
Isopropyl benzen (cumene)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Isopropyl bromide	OSHA CSI				12		100		2		GC-FID	ST 226-01 38
Isopropyl CELLOSOLVE solvent *(see ethylene glycol isopropyl ether)*	OSHA CSI											
Isopropyl ether	NIOSH 1618		500		0.1-3		10-50		varies		GC-FID	ST 226-01 38
Isopropyl ether	OSHA 07	1146	500		3	0.75	20	50	2.5	15	GC-FID	ST 226-01 38
Isopropyl glycidyl ether	NIOSH 1620			50 (15 min)		3		200		15	GC-FID	ST 226-01 38
Isopropyl glycidyl ether	OSHA 07	1145	50		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Isopropyl m-chlorocarbanilate	OSHA CSI				30		1000		30 min		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Isovaleraldehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
Isovaleraldehyde (Aldehydes, Screening)	NIOSH 2539				5		20		4		GC-FID & GC-MS	ST 226-118 40
Jet fuel	OSHA CSI					3		200		15	GC-FID	ST 226-01 38
Kaolin (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Kaolin (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Kaolin (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Kaolin (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Kathon 886 (kathon biocide)	NON 55				50	7.5	200	500	4	15	HPLC-UV	ST 226-99 40
Kepone	NIOSH 5508		1 µg/m³		480		1000		8		GC-ECD	F/CST 225-3-01 90 IMP 225-36-1 67 IT 225-22 67
Kepone	OSHA CSI				480		1000		8		GC-ECD	F/CST 225-3-01 90 IMP 225-36-1 67 IT 225-22 67
Kerosene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Kerosene	OSHA PV2139				20		100		200 min		GC-FID	ST 226-01 38

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Kerosene (naphthas)	NIOSH 1550		100 mg/m³		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Ketene	OSHA CSI		0.5		50	15	1000	1000	50 min	15	CLR	IMP 225-36-2 67 IT 225-22 67
Ketones	EPA TO-5	1671			< 80 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Ketones (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Ketones I *(see specific compounds)*	NIOSH 1300		varies		varies		10-200		varies		GC-FID	ST 226-01 38
Ketones I *(see specific compounds)*	NIOSH 2555				varies		varies		varies		GC-FID	ST NA SKC
Ketones II *(see specific compounds)*	NIOSH 1301		varies		varies		varies		8		GC-FID	ST 226-01 38
Ketones II *(see specific ketone)*	NIOSH 2553		varies	varies	1-25	1-25	10-200	10-200	varies	varies	GC-FID	ST NA SKC
Lactic Acid	OSHA CSI				800		2000		400 min		IC	ST 226-01 pp cc
Lactose powder	NON 53											F/CST 225-1725 or FLT 225-2714 and CST 225-2257 and SP 225-2901 103
Lake Red C	OSHA CSI				300		2000		2.5		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Landrin	OSHA CSI				60		1000		1		HPLC-UV	ST 226-30-16 38
Lanthanum (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Lanthanum (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Lanthanum (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455			5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Lanthanum (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Lasso (aroclor)	OSHA PV2035				100		1000		100 min		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Lead	NIOSH 7082	1034	< 0.1 mg/m³		720		1500		8		AAS-F	F/CST 225-3-01 90 C/HLD 225-1 102
Lead	NIOSH 7105	1034	< 0.1 mg/m³		720		1500		8		AAS-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Lead (by field portable XRF)	NIOSH 7702		< 0.1 mg/m³		960		2000		8		XRF	F/CST 225-3-01 90
Lead (by portable ultrasound extraction/ASV)	NIOSH 7701		0.05 mg/m³		20-1500		1000-4000		varies		P ASV	F/CST 225-3-01 90 C/HLD 225-1 102
Lead (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.05 mg/m³		4-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Lead (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.05 mg/m³		50-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Lead (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.5 mg/m³		35-100,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Lead (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1034	0.05 mg/m³		50-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Lead (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Lead (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206				480		2000		4		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Lead (in dust wipes)	NIOSH 9105										SPOT	W 550-001 or W 550-002 139
Lead (in surface dust)	ASTM E 1792				bulk						Varies	W 225-2414 140 TMP 225-2403 140
Lead (in surface dust)	OSHA ID 125G				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 140
Lead (in workplace air)	ASTM D 6785				varies		varies		varies		AAS-F	IOM 225-70A 108 FLT 225-1930 88
Lead (on surfaces)	NIOSH 9100										AA-F or AA-GF or ICP	W 225-2401A 140
Lead chromate (as Pb)	OSHA CSI		50 µg/m³		960		2000		8		AA	F/CST 225-3-01 90 C/HLD 225-1 102
Lead chromate (as Pb) *(see lead, inorganic fumes & dusts or chromic acid & chromates)*	OSHA CSI											
Lead chromate (CR(VI))	OSHA ID 215 (V2)	1439	0.005 mg/m³		960		2000		8		IC-UV	F/CST 225-802 93 C/HLD 225-1 102
Lead oxide (as lead)	NIOSH 7082	1034	< 0.1 mg/m³		720		1500		8		AAS-F	F/CST 225-3-01 90 C/HLD 225-1 102
Lead oxide (as Pb)	NIOSH 7105	1034	< 0.1 mg/m³		720		1500		8		AAS-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Lead oxide (by field portable XRF)	NIOSH 7702		< 0.1mg/m³		960		2000		8		XRF	F/CST 225-3-01 90
Lead oxide (by portable ultrasound extraction/ASV)	NIOSH 7701		0.05 mg/m³		20-1500		1000-4000		varies		P ASV	F/CST 225-3-01 90 C/HLD 225-1 102
Lead sulfide (as Pb)	NIOSH 7505		< 0.1 mg/m³		750		2500		5		XRD	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Lead, inorganic fumes & dusts (as Pb)	OSHA ID 121	1196	0.05 mg/m³		960	30	2000	2000	8	15	AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Lead, inorganic fumes & dusts (as Pb)	OSHA ID 125G		0.05 mg/m³		480	30	2000	15	4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Lead, inorganic surface dusts (as Pb)	OSHA ID 121	1179									AA or AES	W 225-2401A 140
Limestone (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Limestone *(see calcium carbonate)*												
Limestone *(see dust, total & respirable nuisance)*												
Limonene	OSHA PV2036				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Limonene (terpenes)	NIOSH 1552				24		50		8		GC-FID	ST 226-01 38
Lindane	OSHA CSI		0.5 mg/m³		240		1000		4		GC-ECD	F/CST 225-706 96 C/HLD 225-1 102 IMP 225-36-1 67 IT 225-22 67

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Lindane (gamma-BHC)	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Linuron	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Linuron	OSHA CSI				240		1000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Lithium	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Lithium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Lithium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				100-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Lithium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455			100-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Lithium hydride (as Li)	OSHA ID 121		0.025 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Lithium hydroxide (alkaline dust)	NIOSH 7401				960		2000		8		TITRA	F/CST 225-1715 94 C/HLD 225-1 102
Lithium hydroxide (as Li)	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Machette	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Magnesite (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Magnesite (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Magnesite *(see dust, total & respirable nuisance)*	OSHA CSI											
Magnesium	OSHA ID 121	1192			960	30	2000	2000	8	15	AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Magnesium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				1-330		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Magnesium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		10 mg/m³ (fume, as oxide)		5-67		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Magnesium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				1-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Magnesium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	10 mg/m³ (fume, as oxide)		5-67		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Magnesium oxide (as Mg, elements by ICP)	NIOSH 7303		10		5-33000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Magnesium oxide fume (respirable dust)	OSHA ID 121	1214	5 mg/m³		960		2000		8		GR & AA or GR & AES	F/CST 225-3-01 90 C/HLD 225-1 102 CYC 225-105 110
Magnesium oxide fume (total dust)	OSHA ID 121	1213	15 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Malathion	ASTM D 4861				240-7200		1000-5000		4-24		GC-NPD	PUF 226-92 44
Malathion	OSHA 62	1397	15 mg/m³		60		1000		1		GC-FPD	ST 226-30-16 38
Malathion (Organophosphorus Pesticides)	NIOSH 5600		10 mg/m³		60		1000		1		GC-FPD	ST 226-58 39
Malbranchea species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Malbranchea species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Maleic anhydride	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
Maleic anhydride	NIOSH 3512		0.25		360		1000		6		HPLC-UV	IMP 225-36-2 67 IT 225-22 67
Maleic anhydride	OSHA 25		0.25		20		100		3.3		HPLC-UV	ST 226-30-07 38 ST 226-30 38
Maleic anhydride	OSHA 86		0.25		60		500		2		HPLC-UV	CF/CST 225-9021 †† 64 C/HLD 225-1 102
Maneb	OSHA 107				500		2000		250		HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
Maneb	OSHA CSI										W	W 225-2401A 140
Manganese & compounds (as Mn)	OSHA ID 121	1194		5 mg/m³ (C)	960	10	2000	2000	8	5	AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Manganese & compounds (as Mn)	OSHA ID 125G			5 mg/m³		10		2000		5	ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Manganese (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		1 mg/m³	3 mg/m³	1-1000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Manganese (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		1 mg/m³	3 mg/m³	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Manganese (Elements by ICP HNO_3 Digestion))	NIOSH 7303		1 mg/m³	3 mg/m³	0.05-10,000	0.05-10,000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Manganese (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	1 mg/m³	3 mg/m³	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Manganese (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2415 140 TMP 225-2403 or
Manganese cyclopentadienyl tricarbonyl (as Mn)	OSHA CSI				480		1000		8		AA	F/CST 225-3-01 90 IT 225-22 67 IMP 225-36-2 67
Manganese fume	OSHA ID 125G			5 mg/m³	480	30	2000	2000	4	15	ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Manganese fume (as Mn)	OSHA ID 121	1195		5 mg/m³ (C)	960	10	2000	2000	8	5	AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Manganese in welding fume	NON 58			5 mg/m³ *	varies		750		varies		GR	FLT 225-8050 C/HLD 225-6200 CST 225-6201
Manganese tetroxide (as Mn)	OSHA ID 121	1191			960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Manganese tetroxide (as Mn)	OSHA ID 125G				480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Marble (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Marble (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Marble *(see dust, total and respirable nuisance)*												
MCPA (2-methyl-4-chlorophenoxyacetic acid)	OSHA CSI				240		500		8		HPLC	F/CST 225-706 96 C/HLD 225-1 102
MCPP	OSHA CSI				240		1000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
MDI (4,4-methylene bisphenyl isocyanate)	OSHA 47		50 µg/m³	200 µg/m³		10		1000		10	HPLC-UV	CF/CST 225-9002 or CF/CST 225-9013 64 C/HLD 225-1 102
MDI (4,4-methylenebis[phenyl isocyanate]) (isocyanates, total)	NIOSH 5525		50 µg/m³	200 µg/m³ (10 min) C	1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
MDI (4,4'-methylenebisphenyl isocyanate) (isocyanates)	NIOSH 5521	1001	50 µg/m³	200 µg/m³ (10 min) C	480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1 67 IT 225-22 67
MEK *(see methyl ethyl ketone)*												
Melamine	OSHA CSI				40		1000		40 min		HPLC	F/CST 225-709 96 C/HLD 225-1 102
Melengestrol acetate	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Menadione	OSHA CSI				10		20(50)		8(3.3)		HPLC-UV	ST 226-30 38
Mercaptans *(see specific compounds)*	NIOSH 2542	1330		0.5 (15 min)	48	12	100	200	8	60	GC-FPD	CF/CST 225-9007 64 C/HLD 225-1 102
Mercaptoethanol	OSHA CSI				10		20(50)		8(3.3)		GC-FPD	ST 226-10 38
Mercury	NIOSH 6009		0.05 mg/m³		48		200		4		AA	ST 226-17-1A 38 F/CST 225-3-01 90
Mercury (Rathje & Marcero)	NON 17				48		100		8		AA	ST 226-17-1A 38
Mercury (Rathje & Marcero)	NON 17				varies		1000-3000		varies		AA	ST 226-17-3A 38
Mercury (vapor)	OSHA ID 140	1677	0.1 mg/m³		3-100		200		varies		AA	ST 226-17-1A 38 F/CST 225-3-01 90
Mercury (vapor)	OSHA ID 140	1677	0.1 mg/m³		9.6		20		8		AA	CH 520-03 86 C 520-02A 86
Mercury, Particulate (in Workplace Atmospheres, air samples)	OSHA ID 145			0.01 mg/m³		30		2000		15	AA	F/CST 225-3-01 90 C/HLD 225-1 102
Mercury, Particulate (in Workplace Atmospheres, wipe samples)	OSHA ID 145			0.01 mg/m³							wipe	SM TB 225-24 140
Mesityl oxide	OSHA 07	1144	25		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Mesityl oxide (Ketones II)	NIOSH 2553		10		1-25		10-200		varies		GC-FID	ST NA SKC
Mesityl oxide (Ketones II)	NIOSH 1301		10		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Mesitylene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Mestranol	OSHA PV2068				480		2000		4		HPLC	F/CST 225-802 93 C/HLD 225-1 102
Metal & metalloid particulates	OSHA ID 121	1177	varies	varies	960	30	2000	2000	8	15	AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Metal & metalloid particulates	OSHA ID 125G	1371	varies	varies	480	30	2000	2000	4	15	ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Metal removal fluid (aerosol)	ASTM D 7049				960		2000		8		GR	FLT 225-27-07 94 CST 225-2LF 97 C/HLD 225-1 102
Metal working fluids (aerosols)	ASTM D 7049				960		2000		8		GR	FLT 225-27-07 94 CST 225-2LF 97 C/HLD 225-1 102
Metals (in settled dust)	ASTM D 6966				wipe		wipe		wipe		Varies	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Metals in workplace atmospheres	ASTM D 4185	1426			varies		2000		varies		AAS	F/CST 225-3-01 90 C/HLD 225-1 102
Metals, trace (Elements by ICP $HNO_3/HClO_4$ Ashing)	NIOSH 7300	1455	varies	varies	varies	varies	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Metalworking fluids (thoracic particulates)	NIOSH 5524 ●		0.4 mg/m³ (thoracic particulates)		2000		varies		varies		GR	PPI 225-381 112 FLT 225-27-07 94 IS 225-388 95 SP 225-27 or SCN 225-26 103
Metalworking fluids (total particulates)	NIOSH 5524 ●	1726	0.5 mg/m³ (total particulates)		1000 (min)		2000		varies		GR	FLT 225-27-07 94 CST 225-4 97 C/HLD 225-1 102
Methacrylic acid	OSHA PV2005				24		100		4		HPLC-UV	ST 226-30-08 38
Metham sodium	OSHA CSI				40		1000		40 min		HPLC-UV	ST 226-58 39
Methamidophos	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Methamidophos (Organophosphorus Pesticides)	NIOSH 5600				240		1000		4		GC-FPD	ST 226-58 39
Methanol (methyl alcohol)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methanol (methyl alcohol)	NIOSH 2000		200	250	5	3	20	200	4	15	GC-FID	ST 226-51 39
Methidathion	OSHA PV2074				60		1000		1		GC-ECD	ST 226-58 39
Methiocarb (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Methomyl	OSHA PV2114				60		1000		1		HPLC-UV	ST 226-30-16 38
Methomyl (Organonitrogen Pesticides)	NIOSH 5601		2.5 mg/m³		240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Methotrexate	OSHA PV2146				120		1000		2		HPLC-UV	ST 226-30-16 38

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA	CLG/STEL	Rate (ml/min) TWA	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
2-Methoxy-1-propanol	OSHA 99				10		100		100 min		GC-FID	ST 226-01 38
2-Methoxy-1-propyl acetate	OSHA 99				10		100		100 min		GC-FID	ST 226-01 38
1-Methoxy-2-propanol	OSHA 99				10		100		100 min		GC-FID	ST 226-01 38
1-Methoxy-2-propanol (glycol ethers)	NIOSH 2554				3-25		100-200		varies		GC-FID	ST 226-81A 39
1-Methoxy-2-propyl acetate	OSHA 99				10		100		100 min		GC-FID	ST 226-01 38
1-Methoxy-2-propyl acetate (glycol ethers)	NIOSH 2554				3-25		100-200		varies		GC-FID	ST 226-81A 39
Methoxychlor	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Methoxychlor	OSHA PV2038		15 mg/m^3		60		1000		1		GC-ECD	ST 226-30-16 38
2-Methoxyethanol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
2-Methoxyethanol (methyl CELLOSOLVE solvent)	OSHA 79	1277	25		48	15	100	1000	8	15	GC-FID	ST 226-01 38
2-Methoxyethanol (methyl CELLOSOLVE solvent) (alcohols IV)	NIOSH 1403	1274	0.1 (skin)		6-50		10-50		varies		GC-FID	ST 226-01 38
2-Methoxyethyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
2-Methoxyethyl acetate (methyl CELLOSOLVE acetate)	OSHA 79	1277	25		48	15	100	1000	8	15	GC-FID	ST 226-01 38
Methoxyflurane	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
2-Methoxyphenol	OSHA PV2039				20		200		100 min		GC-FID	ST 226-95 40
3-Methoxyphenol	OSHA PV2039				20		200		100 min		GC-FID	ST 226-95 40
4-Methoxyphenol	OSHA PV2039				20		200		100 min		GC-FID	ST 226-95 40
Methoxypropanol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
6-Methoxytetralone	OSHA CSI				10		20(50)		8(3.3)		HPLC-UV	ST 226-30 38
Methyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methyl acetate	NIOSH 1458		200	250	5	3	20	200	4	15	GC-FID	ST 226-01 38
Methyl acetate	OSHA 07	1143	200		5	3	20	200	4	15	GC-FID	ST 226-01 38
Methyl acetylene-propadiene mixture	OSHA 07	1142	1000		2	0.75	20	50	100 min	15	GC-FID	ST 226-01 38
Methyl acrylate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methyl acrylate	NIOSH 1459		10		5		20		4		GC-FID	ST 226-01 38
Methyl acrylate	NIOSH 2552		10		1-5		10-200		varies		GC-FID	ST NA SKC
Methyl acrylate	NON 54		5	15	10	3	20	200	8	15	GC-FID	ST 226-81A 39
Methyl acrylate	OSHA 92		10		12		50		4		GC-FID	ST 226-73 39
Methyl acrylonitrile	OSHA 37				20		200		100 min		GC-NPD	ST 226-01 38
Methyl alcohol (methanol)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methyl alcohol (methanol)	NIOSH 2000		200	250	5	3	20	200	4	15	GC-FID	ST 226-51 39
Methyl alcohol (RH < 50% at 25 C)	OSHA 91	1328	200		3	0.75	50	50	1	15	GC-FID	ST 226-82 40
Methyl alcohol (RH > 50% at 25 C)	OSHA 91	1328	200		5	0.75	50	50	100 min	15	GC-FID	ST 226-82 40
Methyl amine	OSHA 40		10		10		20		8		HPLC-UV	ST 226-96 40
Methyl arsonic acid (arsenic, organo-)	NIOSH 5022				480		1000		8		IC-AA	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Methyl bromide	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Methyl bromide	OSHA PV2040			20		3		200		15	GC-FID	ST 226-83 40
Methyl butyl ketone (Ketones I)	NIOSH 2555				1-10		10-200		varies		GC-FID	ST NA SKC
Methyl butyl ketone (MBK, 2-hexanone) (Ketones I)	NIOSH 1300		1		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Methyl CELLOSOLVE acetate (2-methoxyethyl acetate)	NIOSH 1451		0.1		12		50		4		GC-FID	ST 226-01 38
Methyl CELLOSOLVE acetate (2-methoxyethyl acetate)	OSHA 79	1277	25		48	15	100	1000	8	15	GC-FID	ST 226-01 38
Methyl CELLOSOLVE solvent (2-methoxyethanol)	OSHA 79	1277	25		48	15	100	1000	8	15	GC-FID	ST 226-01 38
Methyl CELLOSOLVE solvent (2-methoxyethanol) (alcohols IV)	NIOSH 1403	1274	0.1 (skin)		6-50		10-50		varies		GC-FID	ST 226-01 38
Methyl chloride	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Methyl chloride	NIOSH 1001		LFC			0.5		100		5	GC-FID	ST 226-09 38 ST 226-01 38
Methyl chloroform	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Methyl chloroform (1,1,1-Trichloroethane)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methyl chloroform (1,1,1-trichloroethane)	OSHA 14		350		3	3	20	200	2.5	15	GC-FID	ST 226-01 38
Methyl chloroform (1,1,1-trichloroethane) (hydrocarbons, halogenated)	NIOSH 1003			350		3		10-200		varies	GC-FID	ST 226-01 38
Methyl cyclohexane	OSHA 07	1069	500		5		20		4		GC-FID	ST 226-01 38
Methyl cyclohexane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500		400		4		10-200		varies		GC-FID	ST 226-01 38

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA	Vol. (liter) CLG/STEL	Rate (ml/min) TWA	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
Methyl demeton	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
N-Methyl dicyclohexylamine	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-10 38
Methyl ethyl ketone	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methyl ethyl ketone	OSHA 1004		200		12		50		4		GC-FID	ST NA SKC
Methyl ethyl ketone (Ketones I)	NIOSH 2555				1-10		10-200		varies		GC-FID	ST NA SKC
Methyl ethyl ketone (MEK) *(see 2-butanone)*												
Methyl ethyl ketone (MEK) *(see 2-butanone)*	NIOSH 2500	1012	200	300	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-81A 39
Methyl ethyl ketone (MEK, 2-butanone)	OSHA 1004		200				16.88		8		GC-FID	PS 575-002 75
Methyl ethyl ketone peroxide	NIOSH 3508	1002		0.2 (15 min)		120		1000		120	VAS	IMP 225-36-1 67 IT 225-22 67
Methyl ethyl ketone peroxide	OSHA 77					15		1000		15	HPLC-UV	ST 226-93 40
Methyl formate	OSHA PV2041		100		3		50		1		GC-FID	ST 226-83 40
Methyl iodide	NIOSH 1014		2		48		100		8		GC-FID	ST 226-01 38
Methyl iodide	OSHA CSI		5		50		200		4		GC-FID	ST 226-01 38
Methyl isoamyl acetate (Esters I)	NIOSH 1450		50		1-10		10-200		varies		GC-FID	ST 226-01 38
Methyl isoamyl ketone	OSHA PV2042		100		24		50		8		GC-FID	ST 226-01 38
Methyl isobutyl carbinol (methyl amyl alcohol)	OSHA 07	1068	25		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Methyl isobutyl carbinol (methyl amyl alcohol) (alcohols combined)	NIOSH 1405		25	40 (skin)	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Methyl isobutyl carbinol (methyl amyl alcohol) (Alcohols III)	NIOSH 1402		25	40	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Methyl isobutyl ketone	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methyl isobutyl ketone	OSHA 1004		100		12		50		4		GC-FID	ST NA SKC
Methyl isobutyl ketone (hexone)	OSHA 07	1070	100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Methyl isobutyl ketone (hexone)	OSHA 1004		100				13.62		8		GC-FID	PS 575-002 75
Methyl isobutyl ketone (hexone) (Ketones I)	NIOSH 1300		50	75	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Methyl isobutyl ketone (Ketones I)	NIOSH 2555		50		1-10		10-200		varies		GC-FID	ST NA SKC
Methyl isocyanate (MIC)	OSHA 54		0.02		15		50		5		HPLC-FD	ST NA SKC
Methyl isopropyl ketone	OSHA CSI				10		20		8		GC-FID	ST 226-01 38
Methyl isothiocyanate	OSHA CSI				120		1000		2		GC-FID	ST 226-01 38
Methyl mercaptan	NIOSH 2542	1330		0.5 (15 min)	48	12	100	200	8	60	GC-FPD	CF/CST 225-9007 64 C/HLD 225-1 102
Methyl mercaptan	NON 42	1412			12		1000		12 min		GC-FPD	SB 231-10 54
Methyl mercaptan	OSHA 26			10	20		200		100 min		GC-FPD	CF/CST 225-9007 64 C/HLD 225-1 102
Methyl methacrylate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methyl methacrylate	NIOSH 2537		100		1-8		10-50		varies		GC-FID	ST 226-30-06 38
Methyl methacrylate	NON 54		50	75	10	3	20	200	8	15	GC-FID	ST 226-81A 39
Methyl methacrylate	OSHA 94		100		3		50		1		GC-FID	ST 226-73 39
4-Methyl morpholine	OSHA CSI				30		100		5		GC-FID	ST 226-98 40
Methyl n-amyl ketone (2-heptanone) (Ketones II)	NIOSH 2553		100		1-25		10-200		varies		GC-FID	ST NA SKC
Methyl parathion	ASTM D 4861				240-7200		1000-5000		4-24		GC-NPD	PUF 226-92 44
Methyl parathion	OSHA PV2112				480		1000		8		GC-FPD	ST 226-30-16 38
Methyl parathion (Organophosphorus Pesticides)	NIOSH 5600		0.2 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Methyl propyl ketone (2-pentanone)	OSHA 07		200		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Methyl propyl ketone (Ketones I)	NIOSH 2555				1-10		10-200		varies		GC-FID	ST NA SKC
Methyl silicate	OSHA CSI				9		50		3		GC-FID	ST 226-30-04 38
alpha-Methyl styrene	OSHA 07	1066		100 (C)	30	3	200	200	2.5	15	GC-FID	ST 226-01 38
alpha-Methyl styrene (Hydrocarbons, Aromatic)	NIOSH 1501		50	100	1-30	1-30	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
beta-Methyl styrene (Hydrocarbons, Aromatic)	NIOSH 1501		50	100	1-30	1-30	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Methyl styrene (vinyl toluene)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
17-a-Methyl testosterone	OSHA PV2001				60		1000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Methyl-2-cyanoacrylate	OSHA 55				12		100		2		HPLC-UV	ST 226-98 40
3-Methyl-2-cyclopentene-2-ol-one	OSHA CSI				10		200		50 min		HPLC-UV	ST 226-30-04 38
1-Methyl-2-ethyl benzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
1-Methyl-2-pyrrolidinone	OSHA PV2043				10		200		50 min		GC-FID	ST 226-01 38
N-Methyl-2-pyrrolidinone	NIOSH 1302				96		200		8		GC-NPD, FID	ST 226-01 38
N-Methyl-2-pyrrolidinone	OSHA PV2043				10		200		50 min		GC-FID	ST 226-01 38

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References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
1-Methyl-3-ethyl benzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
5-Methyl-3-heptanone (ketones II)	NIOSH 2553		25		1-25		10-200		varies		GC-FID	ST NA SKC
5-Methyl-3-heptanone (ketones II)	NIOSH 1301		25		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1-Methyl-4-ethyl benzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
2-Methyl-4-isothiazolin-3-one (Kathon 886)	NON 55		1.5 mg/m³	4.5 mg/m³	50	7.5	200	500	4	15	HPLC-UV	ST 226-99 40
Methylacetylene (propyne)	OSHA CSI		1000		2		50		40 min		GC-FID	ST 226-01 38
Methylal (dimethoxymethane)	NIOSH 1611		1000		1.8		20		1.5		GC-FID	ST 226-01 38
Methylal *(see dimethoxymethane)*												
6-Methylcoumarin	OSHA CSI				10		20(50)		8(3.3)		HPLC-UV	ST 226-30 38
Methylcyclohexanol	NIOSH 1404		50		12		25		8		GC-FID	ST 226-01 38
Methylcyclohexanol	OSHA CSI		100		12		25		8		GC-FID	ST 226-01 38
Methylcyclohexanone	NIOSH 2521		50	75	3		50		1		GC-FID	ST 226-115 40
o-Methylcyclohexanone	OSHA CSI		100		6	0.75	50	50	2	15	GC-FID	ST 226-115 40
Methylcyclopentadienyl manganese tricarbonyl (as Mn)	OSHA CSI			5 (C)	10		200		1		AA	ST 226-30 38
N-Methyldiethanolamine	OSHA CSI				20		100		3.3		GC-NPD	ST 226-42-02 39
4,4-Methylene bisphenyl isocyanate (MDI)	OSHA 47	1242		200 µg/m³		15		1000		15	HPLC-UV	CF/CST 225-9002 or CF/CST 225-9013 64 C/HLD 225-1 102
4,4-Methylene bisphenyl isocyanate (MDI) (isocyanates)	NIOSH 5521	1001	50 µg/m³	200 µg/m³ (10 min) C	480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1 67 IT 225-22 67
4,4-Methylene bisphenyl isocyanate (MDI) (isocyanates)	OR-OSHA 1010		0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67 IT 225-22 67 CF/CST 225-9029 64
Methylene chloride	NIOSH 1005	1018	LFC		2	1.5	20	100	1.6	15	GC-FID	ST 226-01 38
Methylene chloride	OSHA 59	1358	25	125	10	0.25	50	50	3.3	5	GC-FID	ST 226-09-02 38
Methylene chloride	OSHA 80		25	125	3	0.25	50	50	1	5	GC-FID	ST NA SKC
Methylene chloride (dichloromethane)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
4,4-Methylene diphenyl isocyanate (MDI)	NIOSH 5522		50 µg/m³	200 µg/m³ (10 min) C	360	20	1000	2000	6	10	HPLC-FD	IMP 225-36-1 67 IT 225-22 67
4,4'-Methylenebis(2-chloroaniline) (MOCA)	OSHA 71	1234			100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
2,2'-Methylene-bis(4-chlorophenol)	OSHA CSI				750		2000		6.25		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Methylene-bis-(4-cyclohexylisocyanate)	OSHA PV2092					15		1000		15	HPLC-UV	CF/CST 225-9013 64 C/HLD 225-1 102
Methylene-bis-(4-cyclohexylisocyanate) (isocyanates, total)	NIOSH 5525			110 µg/m³ (10 min) C		1-500		1000-2000		varies	HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
4,4-Methylenebisphenyl isocyanate (MDI) (isocyanates, total)	NIOSH 5525		50 µg/m³	200 µg/m³ (10 min) C	1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
4,4'-Methylenedianiline (MDA)	NIOSH 5029		LFC		480		1000		8		HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
4,4'-Methylenedianiline (MDA)	OSHA 57	1240			100		1000		100		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
Methyl-n-amyl ketone (2-heptanone)	OSHA CSI		100		24		200		2		GC-FID	ST 226-01 38
Methyl-n-amyl ketone (2-heptanone) (Ketones II)	NIOSH 1301		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
5-Methyl-o-anisidine	OSHA CSI				60		1000		1		HPLC-UV	ST 226-30-04 38
2-Methylpentane	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
3-Methylpentane	OSHA CSI				5		20		4		GC	ST 226-01 38
Methylphenols	EPA TO-8	1668			< 80 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Methyl-t-butyl-ether (MTBE)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Methyl-tert-butyl ether	NIOSH 1615	1017			96		200		8		GC-FID	ST 226-37 39
Methyltetrahydrophthalic anhydride	NON 28				200	20	40	1000	8	20	GC-FID	ST 226-30 38
Methyltin dichloride	NIOSH 5526		0.1 mg/m³		60	60	250	1000	4	60	GC-FPD	ST 226-30-16 38
Methyltin mercaptide (tin, organic compounds [as Sn])	OSHA CSI				480		1000		8		AA-GF	ST 226-30-16 38
Metolachlor	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Metolachlor	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
Metribuzin	OSHA PV2044				240		1000		4		GC-FPD	ST 226-30-16 38
Mevinphos (phosdrin)	OSHA CSI		0.1 mg/m³		480	15	1000	1000	8	15	GC-FPD	ST 226-30-16 38
Mevinphos (phosdrin) (Organophosphorus Pesticides)	NIOSH 5600		0.01		240		1000		4		GC-FPD	ST 226-58 39
Mexacarbate	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
MIBK *(see methyl isobutyl ketone)*												
MIC (methyl isocyanate)	OSHA 54		0.02		15		50		5		HPLC-FD	ST NA SKC
Mica *(see Respirable dust)*	OSHA ID 142											
Mineral spirits (naphthas)	NIOSH 1550		350 mg/m³	1800 mg/m³	3	1	20	200	2.5	5	GC-FID	ST 226-01 38

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Mineral wool fiber	OSHA CSI				960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Mineral wool fiber (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Mineral wool fiber (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Mirex	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
MOCAP	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Mold spores (in air)					15-150		15000		1-10 min		varies	STC 225-9820 101
Molybdenum (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				1-330		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Molybdenum (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		5 mg/m³ (soluble) 10 mg/m³ (insoluble)		5-67		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 225-1 102 F/CST 225-803 ¥ 93
Molybdenum (Elements by ICP HNO_3 Digestion))	NIOSH 7303		5 mg/m³ (soluble) 10 mg/m³ (insoluble)		0.5-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Molybdenum (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	5 mg/m³ (soluble) 10 mg/m³ (insoluble)		6-67		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Molybdenum (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Molybdenum insolubles (as Mo)	OSHA ID 125G		15 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Molybdenum insolubles (as Mo) (respirable fraction)	OSHA ID 121	1212	15 mg/m³ (total dust)		960		2000		8		GR & AA or GR & AES	F/CST 225-3-01 90 C/HLD 225-1 102 CYC 225-105 110
Molybdenum solubles (as Mo)	OSHA ID 121	1211	5 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Monensin	OSHA CSI				960		2000		8		CLR	F/CST 225-706 96 C/HLD 225-1 102
Monilia species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Monilia species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Monochloroacetic acid	OSHA CSI				96		200		8		IC	ST 226-47-01 39
Monochloroacetic acid (chloroacetic acid)	NIOSH 2008				48		100		8		IC-CD	ST 226-47-01 39
Monocrotophos (Azodrin)	OSHA PV2045				480		1000		8		GC-FPD	ST 226-30-16 38
Monocrotophos (Organophosphorus Pesticides)	NIOSH 5600		0.25 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Monoethanolamine (2-aminoethanol)	NIOSH 3509		3	6	240		1000		4		IC	IMP 225-36-1 67 IT 225-22 67
Monoethanolamine *(see 2-aminoethanol)*												
Monomethyl aniline	NIOSH 3511		0.5		100		1000		100 min		GC-FID	IMP 225-36-2 67 IT 225-22 67
Monomethyl aniline	OSHA CSI		2		100		1000		100 min		GC-FID	IMP 225-36-2 67 IT 225-22 67
Monomethyl hydrazine	NIOSH 3510		0.04 (120 min)		15		1000		15		VAS	IMP 225-36-2 67 IT 225-22 67
Monomethyl hydrazine	OSHA 20		0.2		4.5		300		15		HPLC-UV	ST 226-42-02 39
Monuron	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Morpholine	OSHA PV2123		20		10		100		100 min		GC-FID	ST 226-98 40
Mortierella species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Mortierella species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Mucor (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Mucor (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Mycobacteria	NIOSH 0801				50-300		28300		varies		GC-FID	BI 225-9611 120
Mycobacterium tuberculosis (airborne)	NIOSH 0900				1920		4000		8		PCR	FLT 225-2705 94 SP 225-27 103 CST 225-3LF 97 C/HLD 225-1 102
Mycotoxins (fungi in air)	NON 48				62.5-375		12500 +		5-30		varies	BS 225-9595 122 VT 225-9598A◊ 122
Naphtha (coal tar)	NIOSH 1550		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Naphtha (coal tar)	OSHA 48		100		3		200		15 min		GC-FID	ST 226-01 38
Naphthalene	OSHA 35	1060	10		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-110 40
Naphthalene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Naphthalene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Naphthalene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506		10	15	480		2000		4		HPLC-UV	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
1,5-Naphthalene diisocyanate	OSHA PV2046				60		1000		1		HPLC-UV-FD	CF/CST 225-9013 64 C/HLD 225-1 102
1,5-Naphthalene diisocyanate (isocyanates, total)	NIOSH 5525		40 µg/m³	70 µg/m³ (10 min) C	1-500	1-500	1000-2000	1000-2000	varies	varies	HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
Naphthas *(see specific compounds)*	NIOSH 1550		varies		varies		varies		8		GC-FID	ST 226-01 38
beta-Naphthol	OSHA CSI				60		1000		1		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
alpha-Naphthylamine	OSHA 93	1232			100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
beta-Naphthylamine	OSHA 93	1232			100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
Naphthylamines (alpha- & beta-)	NIOSH 5518				96		200		8		GC-FID	FLT 225-16 96 CST 225-32 102 ST 226-51 39
Naphthylene diisocyanate (NDI) (isocyanates)	NIOSH 5521		40 µg/m³	70 µg/m³ (10 min) C	480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Naphthylthiourea *(see ANTU)*												
Neurospora species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Neurospora species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Nickel (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.015 mg/m³		2-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Nickel (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.015 mg/m³		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Nickel (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.012 mg/m³		1-50,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Nickel (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.15 mg/m³		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Nickel (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Nickel (metal & insoluble compounds as Ni)	OSHA ID 125G		1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Nickel (metal, soluble, & insoluble compounds as Ni)	OSHA ID 121	1044	1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Nickel (soluble compounds as Ni)	OSHA ID 121	1197	1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Nickel (soluble compounds as Ni)	OSHA ID 125G		1 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Nickel carbonyl	NIOSH 6007		0.001		72		150		8		AA-GF	ST NA SKC F/CST 225-3-01 90
Nickel carbonyl	OSHA CSI		0.001		480		1000		8		AA-GF	F/CST 225-709 96 C/HLD 225-1 102 IMP 225-36-2 67 IT 225-22 67
Nicotine	NIOSH 2544		0.5 mg/m³		360		1000		6		GC-NPD	ST 226-30-04 38
Nicotine	NIOSH 2551		0.5 mg/m³		480		1000		8		GC-NPD	ST 226-93 40
Nicotine	NON 19				120		1000		2		GC	ST 226-93 40
Nicotine	NON 49				90-720		1500		1- 8		GC-NSD	ST 226-170 41
Nicotine & 3-ethenylpyridine	ASTM D 5075	1427			varies		1500		varies		GC-NPD	ST 226-93 40
Nigrospora species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Nigrospora species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Niobium (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.012 mg/m³		0.1-3300		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Nitric acid	NIOSH 7907		2	4	600	30	2000	2000	5	15	IC-CD	CF/CST 225-9032 64 C/HLD 225-1 102
Nitric acid	OSHA ID 165SG		2		96	7.5	200	500	8	15	IC	ST 226-10-03 38
Nitric oxide	OSHA ID 190		25		6		25		4		IC	ST 226-40 39
Nitric oxide & nitrogen dioxide	NIOSH 6014	1390	25 (NO)	1 (NO_2)	1.5-6		25		1-4		VAS	ST 226-40 39
5-Nitro-2-furaldehyde semicarbazone	OSHA CSI				240		1000		24 min		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
p-Nitroaniline	NIOSH 5033		3 mg/m³		240		1000		4		HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
p-Nitroaniline	OSHA CSI		1 mg/m³		90		1500		1		HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
Nitrobenzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Nitrobenzene	NIOSH 2005		1		48		100		8		GC-FID	ST 226-10 38
Nitrobenzene	NIOSH 2017		1		24		200		2		GC-FID	CF/CST 225-9004 64 ST 226-15 38
4-Nitrobiphenyl	OSHA CSI				240		500		8		GC-FID	ST 226-30-16 38
p-Nitrochlorobenzene	OSHA CSI		1 mg/m³		150		1000		2.5		GC-FID	ST 226-10 38
p-Nitrochlorobenzene (nitrobenzenes)	NIOSH 2005		0.1		96		200		8		GC-FID	ST 226-10 38
Nitrochloroform	NON 51		0.1		144		100		24		GC-MSD	ST 226-175 41
Nitrochloromethane	NON 51		0.1		144		100		24		GC-MSD	ST 226-175 41
4-Nitrodiphenyl	OSHA PV2082				240		500		8		GC-FID	ST 226-30-16 38
Nitroethane	NIOSH 2526		100		2.4		20		2		GC-FID	ST 226-3002A 42
Nitrofurazone	OSHA PV2069				240		1000		4		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Nitrogen dioxide	NIOSH 6014			1 (NO_2)	1.5-6		25-200		varies		VAS	ST 226-40-02 39
Nitrogen dioxide	OSHA ID 182	1406		5 (C)		3		200		15	IC	ST 226-40 or ST 226-40-02 39
Nitrogen dioxide & nitric oxide	NIOSH 6014	1390	25 (NO)	1 (NO_2)	1.5-6		25		1-4		VAS	ST 226-40 39
Nitrogen dioxide & nitric oxide	NON 11					0.75		50		15	CLR	ST 226-40 39
Nitrogen dioxide & nitric oxide	OSHA ID 182	1389	25 (NO)	5 (NO_2)	6	3	25	200	4	15	IC	ST 226-40 39
Nitroglycerin	NIOSH 2507			0.1 mg/m³		3		200		15	GC-ECD	ST 226-35-03 39
Nitroglycerin	OSHA 43			0.1 mg/m³		15		1000		15	HPLC	ST 226-35-03 39
Nitromethane	NIOSH 2527				2.4		20		2		GC-NSD	ST 226-111A 40

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Nitromethane	OSHA CSI		100		3		50		1		GC-NPD	ST 226-111A 40
p-Nitrophenol	OSHA CSI				100		1000		100 min		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
1-Nitropropane	OSHA 46		25		3		100		30 min		GC-FID	ST 226-93 40
2-Nitropropane	NIOSH 2528		LFC		2		20		1.5		GC-FID	ST 226-110 40
2-Nitropropane	OSHA 46		25		3		100		30 min		GC-FID	ST 226-93 40
1-Nitropyrene	OSHA CSI				960		2000		8		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
1-Nitropyrene in diesel particulates	NIOSH 2560				480-960		1000-2000		varies		GC-NCD	FLT 225-7 96 SP 225-27 103 SPC 225-23 103
N-Nitrosodiethanolamine	OSHA 31				480		2000		4		GC-TEA	F/CST 225-706 96 C/HLD 225-1 102
N-Nitrosodiphenylamine	OSHA 23				240		1000		4		HPLC-UV	IMP 225-36-2 67 IT 225-22 67
Nitrotoluene (m-isomer)	OSHA CSI		5		30		200		2.5		GC-FID	ST 226-10 38
m-Nitrotoluene (nitroaromatic compounds)	NIOSH 2005		2 ppm		96		200		8		GC-FID	ST 226-10 38
o-Nitrotoluene (nitroaromatic compounds)	NIOSH 2005		2 ppm		96		200		8		GC-FID	ST 226-10 38
p-Nitrotoluene (nitroaromatic compounds)	NIOSH 2005		2 ppm		96		200		8		GC-FID	ST 226-10 38
Nitrotoluene (nitrobenzenes)	NIOSH 2005		2 ppm		96		200		8		GC-FID	ST 226-10 38
Nitrous oxide	NIOSH 6600	1028	25		3		100-4000		varies		P IR	SB 231-05 54
trans-Nonachlor	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Nonane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Nonane	OSHA CSI				3		50		1		GC-FID	ST 226-01 38
n-Nonane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500		200		4		10-200		varies		GC-FID	ST 226-01 38
Nonpolar organic compounds	NON 38		varies		varies				varies		GC	PUF 226-129 45
Non-sporulating fungi	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Non-sporulating fungi	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Nonyl alcohol	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Nonylphenol	OSHA CSI				24		100		4		HPLC-UV	ST 226-95 40
Norethindrone	OSHA PV2070				480		2000		4		HPLC-UV	F/CST 225-802 93 C/HLD 225-1 102
Nuisance dust (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Nuisance dust (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Nuisance dust *(see dust, respirable nuisance)*												
Octachloronaphthalene	OSHA CSI		0.1 mg/m³		30	15	1000	1000	0.5	15	GC-ECD	F/CST 225-3-01 90 C/HLD 225-1 102
Octadecanol	OSHA CSI				10		100		100 min		GC-FID	ST 226-01 38
Octane	OSHA 07	1141	500		5	3	20	200	4	15	GC-FID	ST 226-01 38
n-Octane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
n-Octane	OSHA PV2138		500		4		50		80 min		GC-FID	ST 226-01 38
n-Octane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500		75	385	4	4	0-200	0-200	varies	varies	GC-FID	ST 226-01 38
1-Octanethiol	NIOSH 2510			0.5 (15 min)		3		200		15	GC-FPDS	ST 226-35-03 39
Octanol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Octyl alcohol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
di-n-Octyl phthalate (DNOP)	OSHA 104				240		1000		4		GC-FID	ST 226-56 39
Oil mist (mineral)	NIOSH 5026	1526	5 mg/m³	10 mg/m³	480	30	1000	2000	8	15	IR	F/CST 225-3-01 or F/CST 225-802 93 C/HLD 225-1 102
Oil mist (mineral)	OSHA ID 128		5 mg/m³		960		2000		8		FLUOR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Oil mist (mineral)	OSHA ID 178SG		5 mg/m³		960		2000		8		GR & IR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Oil mist (total aerosol)	NON 46		5 mg/m³		varies		2000		varies		GR	IOM 225-70A 108 FLT 225-5-25 93
Oil mist (vegetable) *(see dust, total & respirable nuisance)*												
Organic vapors (charcoal tube method)	ASTM D 3686				varies	varies	varies	varies	varies	varies	GC	ST 226-01 38
Organic vapors (diffusive sampler method)	ASTM D 4597				varies	varies	varies	varies	varies	varies	GC	PS 575-001 or PS 575-002 75
Organonitrogen pesticides *(see specific compounds)*	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Organophosphorus pesticides *(see specific compounds)*	NIOSH 5600		varies		varies		varies		8		GC-FPD	ST 226-58 39
Organotin compounds as Sn *(see specific compounds)*	NIOSH 5504		0.1 mg/m³		480		1000		8		HPLC & AA-GF	ST 226-30 38 F/CST 225-709 96 C/HLD 225-1 102
Organotincompounds as Sn *(see specific compounds)*	NIOSH 5526		0.1 mg/m³		60	60	250	1000	4	60	GC-FPD	ST 226-30-16 38
Orthene (acephate)	OSHA CSI				240		1000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Oryzalin	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102 IMP 225-36-1 67 IT 225-22 67

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Oxalic acid	OSHA PV2115		1 mg/m³		100		1000		100 min		IC	FLT 225-701 90 CST 225-3LF 97 C/HLD 225-1 102
Oxamyl (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Oxamyl (Vydate)	OSHA CSI				60		1000		1		HPLC	ST 226-30-16 38
Oxychlordane	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Oxydemeton methyl	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Ozone	OSHA ID 214		0.1		90		500		3		IC	CF/CST 225-9014 64 ST Special C/HLD 225-1 102 order ∑
Paecilomyces species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Paecilomyces species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
PAHs (Polynuclear Aromatic Hydrocarbons by GC, *see specific compounds*)	NIOSH 5515	1464			480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
PAHs (Polynuclear Aromatic Hydrocarbons by GC-MS, *see specific compounds*)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
PAHs (Polynuclear Aromatic Hydrocarbons by HPLC, *see specific compounds*)	NIOSH 5506	1464			480		2000		4		HPLC-UV	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Palladium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				0.1-3.300		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Palladium *(see dust, total nuisance)*	OSHA CSI											
Pancreatin	OSHA CSI				480		2000		4		IRA	F/CST 225-1713 94 C/HLD 225-1 102
Papain	OSHA CSI				60,000		1000 L/min		1		GC-FID	FLT 225-7-07 96
Paper fiber (cellulose) (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Paper fiber (cellulose) (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
PAPI	OSHA CSI				15		1000		15 min		HPLC-UV	FLT 225-7 ‡ 96 CST 225-3LF 97 C/HLD 225-1 102
Paraffin wax fume	OSHA PV2047				100		1000		100 min		GC-FID	F/CST 225-706 96 C/HLD 225-1 102
Paraquat	NIOSH 5003		0.1 mg/m³		480		1000		8		HPLC-UV	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Paraquat (respirable dust)	OSHA CSI		0.5 mg/m³		960		4000		4		HPLC-UV	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Parathion	OSHA 62	1398	0.1 mg/m³		480		1000		8		GC-FPD	ST 226-30-16 38
Parathion (Organophosphorus Pesticides)	NIOSH 5600		0.05 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Particulates not otherwise regulated (total dust)	OSHA CSI		15 mg/m³		720		1500		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Particulates not otherwise regulated, respirable	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Particulates not otherwise regulated, respirable fraction	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Particulates, inorganic (bioaerosols)					15-150		15000		1-10 min		varies	STC 225-9820 101
Particulates, respirable	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Particulates, total *(see specific compounds)*	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Particulates, total *(see specific compounds)*	NIOSH 0501				120		2000		1		GR	AC 225-8516GLA 93 C/HLD 225-1 102 CST 225-2LF 97
PCBs (42% Cl) *(see polychlorobiphenyls)*	NIOSH 5503											
PCBs (54% Cl) *(see polychlorobiphenyls)*	NIOSH 5503											
PCBs (polychlorinated biphenyls)	EPA TO-4A	1670					200-280 L/min		24 hrs		varies	PUF 226-131 41 FLT 225-1808 95
Penicillium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Penicillium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Pentaborane	OSHA CSI		0.005		480	15	1000	1000	8	15	ICP	IT 225-22 67 IMP 225-36-2 67
Pentac (bis [pentachloro-2,4-cyclopentadien-1-yl])	OSHA CSI				120		1000		2		HPLC-UV	FLT 225-9 88 CST 225-3LF 97 IMP 225-36-1 67 IT 225-22 67 C/HLD 225-1 102
Pentachlorobenzene	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Pentachlorobenzene (polychlorobenzenes)	NIOSH 5517				12		25		8		GC-ECD	FLT 225-17-03 94 CST Special ST 226-30-04 38 order
Pentachloroethane	NIOSH 2517				10		20		8		GC-ECD	ST 226-59-04 39
Pentachloroethane	OSHA CSI				10		20		8		GC-ECD	ST 226-59-04 39
Pentachloronaphthalene	OSHA CSI		0.5 mg/m³		90		1000		1.5		GC-ECD	ST 226-30-16 38
Pentachlorophenol	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Pentachlorophenol	NIOSH 5512		0.5 mg/m³		480		1000		8		HPLC-UV	CST 225-3LF 97 SCN 225-26 103 IMP 225-36-2 67 IT 225-22 67 FLT 225-5 88
Pentachlorophenol	OSHA 39		0.5 mg/m³		48		200		4		HPLC-UV	ST 226-97 40

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Pentaerythritol (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Pentaerythritol (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Pentaerythritol (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Pentaerythritol (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Pentamethyldiethylenetriamine	OSHA CSI				480		1000		8		GC-NPD	IMP 225-36-1 67 IT 225-22 67
Pentamidine isethionate	NIOSH 5032				960		2000		8		HPLC-FD	CST 225-4 97 FLT 225-5-37-P 93 C/HLD 225-1 102
Pentane	OSHA 07	1140	1000		2	0.75	20	50	1.6	15	GC-FID	ST 226-01 38
n-Pentane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
n-Pentane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500		120	610	4	4	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
2,3-Pentanedione	OSHA 1016				10	3	50	200 (min)	200	15	GC-FID	ST 226-183 41
2-Pentanone (Ketones I)	NIOSH 2555				1-10		10-200		varies		GC-FID	ST NA SKC
2-Pentanone (methyl propyl ketone)	OSHA 07	1139	200		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
2-Pentanone (methyl propyl ketone) (Ketones I)	NIOSH 1300		150		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1-Pentene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Peracetic acid	NON 57					15		1000 *		15	MAS/HPLC-UV	CF/CST 225-9030 64 ST 226-193 or ST 226-199 39
Perchloric acid	OSHA ID 115SG				120		500		4		CLR	IMP 225-36-2 67 IT 225-22 67
Perchloroethylene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Perchloroethylene	Indoor	1689					13.1 ml/min		8-24 hrs		TD, GC	PS 690-101 or PS 690-103 or PS 690-104 84
Perchloroethylene (tetrachloroethylene)	OSHA 1001		100	200 (C)	12	0.75	50	50	4	5	GC-FID	ST 226-01 38
Perchloroethylene (tetrachloroethylene)	OSHA 1001		100	200 (C)			13.06		8	5	GC-FID	PS 575-002 75
Perchloroethylene (tetrachloroethylene) (hydrocarbons, halogenated)	NIOSH 1003		LFC		3		10-200		varies		GC-FID	ST 226-01 38
Perchloroethylene (tetrachloroethylene) (portable GC)	NIOSH 3704		LFC		1		20-5000		varies		P GC	SB 232-01 55
Perchloryl fluoride	OSHA CSI		3		240	15	1000	1000	4	15	ISE	IMP 225-36-2 67 IT 225-22 67
Perlite (< 1% Quartz) *(see dust, total & respirable nuisance)*												
cis-Permethrin	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
trans-Permethrin	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Peroxyacetic acid (peracetic acid) & Hydrogen peroxide	NON 57					15		1000 *		15	MAS/HPLC-UV	CF/CST 225-9030 64 ST 226-193 or ST 226-199 39
Pesticides	EPA IP-8	1675					1-5 L/min		4-24 hrs		GC-ECD	PUF 226-92 or PUF 226-124 41
Pesticides	EPA TO-10A	1675					1-5 L/min		4-24 hrs		GC-ECD	PUF 226-92 or PUF 226-124 41
Pesticides, carbamate	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Pesticides, organochlorine	ASTM D 4861	1253			240-7200		1000-5000		4-24		varies	PUF 226-92 or PUF 226-124 44
Pesticides, organochlorine	EPA TO-4A	1670					200-280 L/min		24 hrs		varies	PUF 226-131 41 FLT 225-1808 95
Pesticides, organonitrogen *(see specific compounds)*	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Pesticides, organophosphorus	ASTM D 4861	1253			240-7200		1000-5000		4-24		varies	PUF 226-92 or PUF 226-124 44
Pesticides, pyrethrin	ASTM D 4861				240- 7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Pesticides, triazine	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV or GC-ECD	PUF 226-92 44
Petroleum distillate (naphthas)	NIOSH 1550		350 mg/m³	1800 mg/m³	3.6	1.5	20	100	3	15	GC-FID	ST 226-01 38
Petroleum distillate fractions (PDF)	OSHA 48		500		3		20		2.5		GC-FID	ST 226-01 38
Petroleum ether (benzin) (naphthas)	NIOSH 1550		350 mg/m³	1800 mg/m³	3	1.5	20(50)	100	2.5(1)	15	GC-FID	ST 226-01 38
Petroleum naphtha (naphthas)	NIOSH 1550		350 mg/m³	1800 mg/m³	3	1.5	20(50)	100	2.5(1)	15	GC-FID	ST 226-01 38
Peziza species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Peziza species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Phenanthrene	OSHA 58				960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 CST 225-2LF 97 C/HLD 225-1 102
Phenanthrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Phenanthrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515				480		2000		4		GC-FID	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Phenanthrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-UV	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Phenol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Phenol	EPA TO-8	1668			< 80 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Phenol	OSHA 32	1019	5		24		100		4		HPLC-UV	ST 226-95 40
Phenol (cresols)	NIOSH 2546		5	15.6 (15 min)	24	3	100	200	4	15	GC-FID	ST 226-95 40
Phenolics (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Phenothiazine	OSHA PV2048				100		1000		1		GC-NPD	F/CST 225-706 96 C/HLD 225-1 102
2-Phenoxyethanol	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
2-Phenoxyethyl acrylate	OSHA CSI				24		100		4		GC-FID	ST 226-22 38
1-Pheny-1-cyclohexene	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
Phenyl ether	NIOSH 1617		1		48		100		8		GC-FID	ST 226-01 38
Phenyl ether	OSHA 07	1138	1		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Phenyl ether	OSHA PV2022		1		20		200		100 min		GC-FID	ST 226-95 40
Phenyl ether-biphenyl mix	NIOSH 2013		1		24		50		8		GC-FID	ST 226-10 38
Phenyl ether-biphenyl mix	OSHA CSI		1		10		20(50)		8(3.3)		GC-FID	ST 226-95 40
Phenyl glycidyl ether	NIOSH 1619			1 (15 min)		80		1000		80	GC-FID	ST 226-01 38
Phenyl glycidyl ether	OSHA 07	1137	10		48		100		8		GC-FID	ST 226-01 38
Phenyl hydrazine	NIOSH 3518			0.14 (120 min)		120		1000		120	VAS	IMP 225-36-2 67 IT 225-22 67
Phenyl hydrazine	OSHA CSI		5		100	15	1000	1000	100 min	15	CLR	IMP 225-36-2 67 IT 225-22 67
Phenyl mercaptan	OSHA PV2075				20		200		100 min		GC-FID	CF/CST 225-9007 64 C/HLD 225-1 102
N-Phenyl-1-naphthylamine	OSHA 96				240		2000		4		HPLC-FD	FLT 225-703 ‡ 96 C/HLD 225-1 102 CST 225-309 97
N-Phenyl-2-naphthylamine	OSHA 96				240		1000		4		HPLC-FD	FLT 225-703 ‡ 96 C/HLD 225-1 102 CST 225-309 97
N-Phenyl-2-naphthylamine	OSHA CSI										W	W 225-2401A 140
4-Phenylcyclohexene	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
m-Phenylenediamine	OSHA 87	1231			100		1000		100 min		HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
o-Phenylenediamine	OSHA 87	1231			100		1000		100 min		HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
p-Phenylenediamine	OSHA 87	1231	0.1 mg/m³		100		1000		100 min		HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
Phenyloxirane *(see styrene oxide)*	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-35 38
o-Phenylphenol	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
o-Phenylphenol	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-35 38
Phoma species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Phoma species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Phorate	ASTM D 4861				240-7200		1000-5000		4-24		GC-NPD	PUF 226-92 44
Phorate (Organophosphorus Pesticides)	NIOSH 5600		0.05 mg/m³	0.2 mg/m³	240		1000		4		GC-FPD	ST 226-58 39
Phorate (Thimet)	OSHA CSI				480	15	1000	1000	8	15	GC-FPD	ST 226-30-16 38
Phosdrin (mevinphos)	OSHA CSI		0.1 mg/m³		480	15	1000	1000	8	15	GC-FPD	ST 226-30-16 38
Phosdrin (mevinphos) (Organophosphorus Pesticides)	NIOSH 5600		0.01	0.03	120	15	1000	1000	2	15	GC-FPD	ST 226-58 39
Phosgene	EPA TO-6	1669			< 50 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Phosgene	OSHA 61		0.1		240		1000		4		GC-NPD	ST 226-117 40
Phosgene & chloroformates	NON 40				24		50		8		GC-FPD	ST 226-153 41
Phosmet (Imidan)	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Phosphine	NIOSH 6002		0.3	1	12	3	100	200	8	15	UV-VIS	ST 226-165A †† 41
Phosphine	OSHA 1003	1698	0.3		240	30	1000	2000	4	15	ICP-AES	CF/CST 225-9018 †† 64 C/HLD 225-1 102
Phosphoric acid	NIOSH 7908		1 mg/m³	3 mg/m³	960	30	2000	2000	8	15	IC-cd	CF/CST 225-9033 64 C/HLD 225-1 102
Phosphoric acid	OSHA ID 111	1466	1 mg/m³		960	30	2000	2000	8	15	IC	F/CST 225-3-01 90 C/HLD 225-1 102
Phosphoric acid	OSHA ID 165SG		1 mg/m³		960	30	2000	2000	8	15	IC	ST 226-10-03 38
Phosphorous (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.1 mg/m³		250-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Phosphorus	NIOSH 7905		0.1 mg/m³		12		200		1		GC-FPD	ST 226-35-03 39
Phosphorus (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.1 mg/m³		9-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Phosphorus (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.1 mg/m³		25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Phosphorus (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.1 mg/m³		25-200		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Phosphorus (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2415 140 TMP 225-2403 or
Phosphorus (yellow)	OSHA CSI		0.1 mg/m³		96		200		8		GC-FPD	ST 226-35-03 39
Phosphorus oxychloride	OSHA CSI				240		1000		4		IC	IMP 225-36-2 67 IT 225-22 67

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Phosphorus pentachloride	OSHA CSI		1 mg/m³		48		200		4		CLR	F/CST 225-803 93; IMP 225-36-2 67; IT 225-22 67; SCN 225-26 103
Phosphorus pentasulfide	OSHA ID 128SG		1 mg/m³		960	30	2000	2000	8	15	IC	F/CST 225-802 93; C/HLD 225-1 102
Phosphorus pentoxide	OSHA ID 111				480		1000		8		IC	F/CST 225-3-01 90; C/HLD 225-1 102
Phosphorus trichloride	NIOSH 6402		0.2	0.5	24		200		2		VAS	IMP 225-36-2 67; IT 225-22 67
Phosphorus trichloride	OSHA CSI		0.5		96	3	200	200	8	15	CLR	IMP 225-36-2 67; IT 225-22 67
Phosvel	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Phthalates *(see specific compounds)*												
Phthalic acid	OSHA CSI				10		200		50 min		HPLC	ST 226-01 38
Phthalic anhydride	OSHA 90		2		75		1000		1.25		HPLC-UV	FLT 225-7 ‡ 96; CST 225-3LF 97; C/HLD 225-1 102
m-Phthalodinitrile	OSHA CSI				20		200		100 min		GC-NPD	ST 226-01 38
Picloram (tordon) (total dust)	OSHA PV2049		15 mg/m³		60		1000		1		GR	F/CST 225-803 93; C/HLD 225-1 102
Picloram (tordon) (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93; C/HLD 225-1 102; CYC 225-105 110; CST 225-3LF 97
Picric acid	OSHA CSI		0.1 mg/m³		180		1500		2		HPLC-UV	F/CST 225-3-01 90; C/HLD 225-1 102
Pindone	OSHA CSI		0.1 mg/m³		180		1000		3		HPLC-UV	FLT 225-17-01 94; CST 225-2LF 97; ST 226-35-03 39; C/HLD 225-1 102
alpha-Pinene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
beta-Pinene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
alpha-Pinene (terpenes)	NIOSH 1552				24		50		8		GC-FID	ST 226-01 38
beta-Pinene (terpenes)	NIOSH 1552				24		50		8		GC-FID	ST 226-01 38
Piperazine dihydrochloride	OSHA CSI				96		200		8		GC-NPD	F/CST 225-709 96; C/HLD 225-1 102
Piperidine	OSHA CSI				6		200		30 min		GC-FID	ST 226-01 38
Piperonyl butoxide	OSHA PV2110				30		1000		30 min		HPLC-UV	ST 226-30-16 38
Pipron	OSHA CSI				90		1000		1.5		GC-ECD	F/CST 225-706 96; C/HLD 225-1 102; IMP 225-36-1 67; IT 225-22 67
Pirimiphos methyl	OSHA PV2071				120		1000		2		GC-ECD	ST 226-30-16 38
Pithomyces species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90; C/HLD 225-1 102
Pithomyces species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Plaster of Paris (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93; C/HLD 225-1 102; CYC 225-01-02 111; CST 225-3LF 97
Plaster of Paris (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93; C/HLD 225-1 102; CST 225-2LF 97
Plaster of Paris *(see dust, respirable nuisance)*	OSHA CSI											
Platinum	OSHA ID 130SG				90		1000		1.5		AA	F/CST 225-3-01 90; C/HLD 225-1 102
Platinum (Elements by ICP HNO_3 Digestion))	NIOSH 7303				200-25,000,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90; C/HLD 225-1 102
Platinum (as Pt), metal	OSHA CSI				960		2000		8		AA-GF	F/CST 225-3-01 90; C/HLD 225-1 102
Platinum (as Pt), metal	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90; C/HLD 225-1 102
Platinum (as Pt), soluble salts	OSHA ID 121		2 µg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90; C/HLD 225-1 102
PM2.5	EPA IP-10A	1663					9 L/min		24 hrs		GR	CI 225-370 117; FLT 225-1709 94; FLT 225-2708 94
PM2.5	EPA IP-10A	1663					10 L/min		24 hrs		GR	PEM 761-203B 114; FLT 225-1709 94
PNAs (Polynuclear Aromatic Hydrocarbons by GC, *see specific compounds*)	NIOSH 5515	1464			480		2000		4		GC-FID	F/CST 225-1713 94; ST 226-30-04 38; C/HLD 225-1 102
PNAs by HPLC *(see specific compounds)*	NIOSH 5506	1464			480		2000		4		HPLC-UV	F/CST 225-1713 94; ST 226-30-04 38; C/HLD 225-1 102
PNAs selected	OSHA 58				960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96; CST 225-2LF 97; C/HLD 225-1 102
Pollen (in air)					15-150		15000		1-10 min		varies	STC 225-9820 101
Pollen (in air)	NON 48				62.5-375		12500 +		5-30		varies	BS 225-9595 122; VT 225-9598A◊ 122
Polychlorinated biphenyls	ASTM D 4861	1252			240-7200		1000-5000		4-24		varies	PUF 226-92 or PUF 226-124 44
Polychlorinated biphenyls	NIOSH 5503		0.001 mg/m³ (10 hr)		48		100(200)		8(4)		GC-ECD	FLT 225-16 96; CST 225-32 102; ST 226-39 39
Polychlorinated biphenyls	OSHA CSI				60		1000		1		GC-ECD	ST 226-30-16 38
Polychlorobenzenes *(see specific compounds)*	NIOSH 5517		varies		varies		varies		8		GC-ECD	FLT 225-17-03 94; ST 226-30-04 38; CST Special order; C/HLD 225-1 102
Polychlorobiphenyls (42% Cl)	NIOSH 5503		0.001 mg/m³ (10 hr)		48		100(200)		8(4)		GC-ECD	FLT 225-16 96; CST 225-32 102; ST 226-39 39
Polychlorobiphenyls (54% Cl)	NIOSH 5503		0.001 mg/m³ (10 hr)		48		100(200)		8(4)		GC-ECD	FLT 225-16 96; CST 225-32 102; ST 226-39 39
Polycyclic aromatic compounds (PACs), total	NIOSH 5800				960	30	2000	2000	8	15	FLUOR	F/CST 225-1713 94; ST 226-30-04 38; C/HLD 225-1 102

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Polycyclic aromatic hydrocarbons (PAHs)	EPA IP-7				30,000 L		20 L/min				GC-FID, -MS, HPLC	PUF 226-131 41 FLT 225-1808 95
Polycyclic aromatic hydrocarbons (PAHs)	EPA TO-13A	1672					220 L/min		24 hrs		GC-MS	PUF 226-131 41 FLT 225-1808 95
Polyfunctional aziridine	OSHA CSI				100		1000		100 min		GC-FID	ST 226-57 39
Polynuclear aromatic hydrocarbons (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209		varies		350 m^3 (max)		225 L/min		4-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Polynuclear aromatic hydrocarbons by HPLC *(see specific compounds)*	NIOSH 5506	1464	varies		480		2000		4		HPLC-UV	F/CST 225-1713 94 C/HLD 225-1 102 ST 226-30-04 38
Polynuclear aromatic hydrocarbons(polynuclear aromatic hydrocarbons by GC, *see specific compounds*)	NIOSH 5515	1464	varies		480		2000		4		GC-FID	F/CST 225-1713 94 C/HLD 225-1 102 ST 226-30-04 38
Portland cement (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 CYC 225-01-02 111 C/HLD 225-1 102 CST 225-3LF 97
Portland cement (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Portland cement (respirable dust) *(see Respirable dust)*	OSHA ID 142											
Portland cement (total dust)	OSHA ID 207		15 mg/m^3		240		1000		4		XRD	F/CST 225-803 93 C/HLD 225-1 102
Potassium & compounds	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Potassium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Potassium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Potassium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455			5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Potassium chromate (CR(VI))	OSHA ID 215 (V2)	1439	0.005 mg/m^3		960		2000		8		IC-UV	F/CST 225-802 Ω 93 C/HLD 225-1 102
Potassium cyanide (cyanides)	NIOSH 7904			5 mg/m^3 (10 min)	15		1000		15		ISE	FLT 225-2705 Δ 94 IMP 225-36-2 67 C/HLD 225-1 102 CST 225-2LF 97 IT 225-22 67
Potassium hydroxide (alkaline dust)	NIOSH 7401				960		2000		8		TITRA	F/CST 225-1715 94 C/HLD 225-1 102
Potassium hydroxide (as K)	OSHA ID 121	1199			10		2000		5		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Pramitol	OSHA CSI				100		1000		100 min		HPLC-UV	ST 226-30-16 38
Progesterone	OSHA PV2001				60		1000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Propane	OSHA CSI		1000		5		100		50 min		GC-FID	ST NA SKC
1,2,3-Propanetriol trinitrate	OSHA 43				15		1000		15 min		HPLC-UV	ST 226-35-03 39
n-Propanol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
Propargyl alcohol	OSHA 97				6		50		2		GC-ECD	ST 226-178 41
Propazine	ASTM D 4861				240-7200		1000-5000		4-24		GC-NPD	PUF 226-92 44
Propham (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
Propionaldehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
Propionaldehyde (Aldehydes, Screening)	NIOSH 2539				5		20		4		GC-FID & GC-MS	ST 226-118 40
Propionic acid	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-15 38
Propionitrile	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
Propoxur (Baygon)	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Propoxur (Baygon)	OSHA PV2007				60		1000		1		HPLC-UV	ST 226-30-16 38
Propoxur (Organonitrogen Pesticides)	NIOSH 5601		0.5 mg/m^3		240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
2-Propoxyethanol	OSHA CSI				6		200		30 min		GC-FID	ST 226-01 38
n-Propyl acetate	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
n-Propyl acetate	OSHA 07	1136	200		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
n-Propyl acetate (Esters I)	NIOSH 1450		200	250	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
Propyl alcohol	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
Propyl alcohol	OSHA 07		200		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
n-Propyl alcohol (alcohols combined)	NIOSH 1405		200	250 (skin)	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
n-Propyl alcohol (alcohols II)	NIOSH 1401		200	250	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
n-Propyl benzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
Propyl bromide	OSHA CSI				12		100		2		GC-FID	ST 226-01 38
n-Propyl nitrate	OSHA 07		25	40	48		100		8		GC-FID	ST 226-81A 39
Propyl paraben	OSHA CSI										HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Propylene dichloride (1,2-dichloro propane)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Propylene dichloride (1,2-dichloro propane)	NIOSH 1013		LFC		3		20		2.5		GC-ECN	ST 226-81A 39

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Propylene dichloride (1,2-dichloro propane)	OSHA 07		75		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Propylene glycol	NIOSH 5523	1403			60		1000		1		GC-FID	ST 226-57 39
Propylene glycol	OSHA PV2051				60	15	1000	1000	1	15	GC-FID	ST 226-57 39
1,2-Propylene glycol dinitrate	OSHA CSI				15		1000		15 min		HPLC	ST 226-35-03 39
Propylene glycol monomethyl ether	OSHA CSI				10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Propylene glycol monomethyl ether (glycol ethers)	NIOSH 2554				3-25		100-200		varies		GC-FID	ST 226-81A 39
Propylene glycol monomethyl ether acetate	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Propylene glycol monomethyl ether acetate (glycol ethers)	NIOSH 2554				3-25		100-200		varies		GC-FID	ST 226-81A 39
Propylene oxide (1, 2-epoxypropane)	NIOSH 1612		LFC		5		20		4.2		GC-FID	ST 226-01 38
Propylene oxide (1, 2-epoxypropane)	OSHA 88	1325	100		5	5	100	1000	50 min	5	GC-FID	ST 226-81A 39
Propyleneimine	OSHA CSI		2		48		200		4		HPLC-UV	IMP 225-36-2 67 IT 225-22 67
Pyrene	OSHA 58				960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 96 CST 225-2LF 97 C/HLD 225-1 102
Pyrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209				350 m³ (max)		225 L/min		1-24		GC-MS	PUF 226-131 45 FLT 225-1808 95
Pyrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506				480		2000		4		HPLC-FD	F/CST 225-1713 94 ST 226-30-04 38 C/HLD 225-1 102
Pyrethrin pesticides *(see specific compounds)*	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Pyrethrum	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Pyrethrum	NIOSH 5008		5 mg/m³		100		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102 SP 225-27 103
Pyrethrum	OSHA 70	1400	5 mg/m³		60		1000		1		GC-ECD	ST 226-30-16 38
Pyridine	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Pyridine	NIOSH 1613		5		48		100		8		GC-FID	ST 226-01 38
Pyridine	OSHA 07	1180	5		48		100		8		GC-FID	ST 226-01 38
Pyridine	OSHA PV2295		5		10		100		100 min		GC-FID	ST 226-95 40
1-(2-Pyridyl)piperazine	OSHA CSI										W	W 225-2401A 140
Pyrimethamine	OSHA CSI				10		1000		100 min		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Quartz (respirable) in coal dust, (silica in coal mine dust)	NIOSH 7603		0.05 mg/m³		300-1000		2500		varies		IR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Quartz *(see Silica, respirable crystalline)*	OSHA ID 142											
Quartz (silica, crystalline [respirable]) by XRD	NIOSH 7500	1370	0.05 mg/m³		400-1000		2500		varies		XRD	F/CST 225-803 93 CYC 225-01-02 111 C/HLD 225-1 102
Quartz (silica, crystalline by IR)	NIOSH 7602		0.05 mg/m³		400-800		2500		varies		IR	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Quartz (silica, crystalline by VAS)	NIOSH 7601	1041	0.05 mg/m³		400-800		2500		varies		VAS	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Quinone	OSHA CSI		0.1		24		100		4		HPLC-UV	ST 226-30-04 38
Rabon	OSHA CSI				480		1000		8		GC-ECD	ST 226-30-16 38
Radon progeny (on dust, in mines)	NON 56				5		2000		5 min		DRI	FLT 225-702 96 CST 225-1107 102
Ramrod (propachlor)	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Resmethrin	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Resmethrin	OSHA PV2052				60		1000		1		HPLC-UV	ST 226-30-16 38
Resorcinol	NIOSH 5701		10		120		500		4		GC-FID	ST 226-57 39
Respirable Dust using Aluminum Cyclone	OSHA ID 142		50 µg/m³		1200		2500		8		GR & XRD	FLT 225-5-37-P 93 CST 225-3050LF 97 C/HLD 225-1 110 CYC 225-01-02 97
Respirable Dust using GS-3 Cyclone	OSHA ID 142		50 µg/m³		1320		2750		8		GR & XRD	FLT 225-5-37-P 93 CST 225-3050LF 97 C/HLD 225-1 110 CYC 225-100 97
Respirable Dust using PPI Samplers	OSHA ID 142		50 µg/m³		960		2000		8		GR & XRD	FLT 225-5-37-P 93 PPI 225-385 112
Rhizopus species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Rhizopus species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Rhodamine B	OSHA PV2072				240		1000		4		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Rhodium metal fume & dust (as Rh)	OSHA CSI		0.1 mg/m³		960		2000		8		AA-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Rhodium soluble salts (as Rh)	OSHA CSI		1 µg/m³		960		2000		8		AA-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Rhodotorula species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Rhodotorula species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Ribavirin	NIOSH 5027				480		1000		8		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Ronnel	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-92 44
Ronnel	OSHA PV2054		15 mg/m³		60		1000		1		GC-FPD	ST 226-30-16 38
Ronnel (Organophosphorus Pesticides)	NIOSH 5600		10 mg/m³		60		1000		1		GC-FPD	ST 226-58 39
Rosaniline	OSHA CSI				bulk						HPLC	

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Rotenone	NIOSH 5007		5 mg/m³		120		1000		2		HPLC-UV	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Rotenone (commercial)	OSHA CSI		5 mg/m³		240		2000		2		HPLC-UV	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Rouge (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Rouge (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Rouge (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Rouge (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Roundup	OSHA CSI				90		1000		1.5		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Rozol	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Rubber solvent (naphthas)	NIOSH 1550		350 mg/m³	1800 mg/m³	10	1.5	20(50)	100	8(3.3)	15	GC-FID	ST 226-01 38
Rubidium	OSHA CSI				480		1000		8		AA-GF	F/CST 225-709 96 C/HLD 225-1 102 IMP 225-36-2 67 IT 225-22 67
Safrotin	OSHA PV2050				60		1000		1		GC-ECD	F/CST 225-709 96 C/HLD 225-1 102
Saphrophyte (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Saphrophyte (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Sarin	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Scopolamine methyl nitrate	OSHA PV2144				120		1000		2		HPLC-UV	F/CST 225-709 or 102 C/HLD 225-1 F/CST 225-706 96
Scopulariopsis species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Scopulariopsis species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Selenium	OSHA ID 121		0.2 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Selenium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.2 mg/m³		2-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Selenium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.2 mg/m³		13-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 93
Selenium (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.2 mg/m³		8-250,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Selenium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.2 mg/m³		13-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Selenium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or 140 TMP 225-2415 140
Selenium compounds (as Se)	OSHA CSI		0.2 mg/m³		960		2000		8		AA-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Sevin *(see carbaryl)*												
Sevoflurane	OSHA CSI				3		50		1		GC-FID	ST 226-81A 39
Silica (quartz) in coal dust (quartz in coal mine dust by IR)	NIOSH 7603		0.05 mg/m³		300-1000		2500		varies		IR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Silica, amorphous (respirable)	NIOSH 7501		6 mg/m³		50-400		2500		varies		XRD	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Silica, crystalline (respirable) by XRD	NIOSH 7500	1370	0.05 mg/m³		400-1000		2500		varies		XRD	F/CST 225-803 93 CYC 225-01-02 111 C/HLD 225-1 102
Silica, crystalline by IR	NIOSH 7602		0.05 mg/m³		400-800		2500		varies		IR	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Silica, crystalline by VAS	NIOSH 7601	1041	0.05 mg/m³		400-800		2500		varies		VAS	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Silica, fused *(see Silica, respirable crystalline)*	OSHA ID 142											
Silica, respirable crystalline (as quartz, cristobalite, tridymite) using Aluminum Cyclone	OSHA ID 142		50 µg/m³		1200		2500		8		XRD	FLT 225-5-37-P 93 CST 225-3050LF 97 C/HLD 225-1 110 CYC 225-01-02 97
Silica, respirable crystalline (as quartz, cristobalite, tridymite) using GS-3 Cyclone	OSHA ID 142		50 µg/m³		1320		2750		8		XRD	FLT 225-5-37-P 93 CST 225-3050LF 97 C/HLD 225-1 110 CYC 225-100 97
Silica, respirable crystalline (as quartz, cristobalite, tridymite) using PPI Samplers	OSHA ID 142		50 µg/m³		960		2000		8		XRD	FLT 225-5-37-P 93 PPI 225-385 112
Silicon	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Silicon (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Silicon (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Silicon (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Silicon carbide (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Silicon carbide (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Silicon carbide (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Silicon carbide (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Silicon tetrahydride (silane)	OSHA CSI				480		1000		8		AA-GF	IMP 225-36-2 67 IT 225-22 67
Silver (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.01 mg/m³		6-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Silver (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				250-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Silver (Elements by ICP $HNO_3/HClO_4$ Ashing)	NIOSH 7300	1455	0.01 mg/m³ (metal, sol)		250-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Silver (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2415 140 TMP 225-2403 or
Silver, metal & soluble compounds (as Ag)	OSHA ID 121	1198	0.01 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Silver, metal & soluble compounds (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206	1279	0.01 mg/m³		960		2000		8		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Silvex	OSHA CSI										W	W 225-2401A 140
Simazine	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Simazine	NIOSH 5602				480		1000		8		GC-ECD	ST 226-58 39
Simazine	OSHA CSI				120		1000		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Soapstone (respirable dust)	OSHA CSI		20 mppcf		varies		varies		varies		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-105 110 CST 225-3LF 97
Soapstone (total dust)	OSHA CSI		20 mppcf		960		2000		8		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Sodium azide	OSHA ID 211					5		1000		5	IC-UV	ST 226-55 39 FLT 225-5-37-P 93 CST 225-2LF 97 SPC 225-23 103 C/HLD 225-1 102
Sodium bisulfite	OSHA ID 121	1203			960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Sodium carbonate *(see dust, respirable nuisance)*	OSHA CSI											
Sodium fluoride (fluorides)	NIOSH 7902		2.5 mg/m³		480	30	1000	2000	8	15	ISE	CF/CST 225-9001 64 C/HLD 225-1 102
Sodium fluoride (fluorides)	NIOSH 7906		2.5 mg/m³		960	30	2000	2000	8	15	IC-CD	CF/CST 225-9031 64 C/HLD 225-1 102
Sodium fluoroacetate	OSHA CSI		0.05 mg/m³		960	30	2000	2000	8	15	AA	F/CST 225-3-01 90 C/HLD 225-1 102
Sodium hexafluoroaluminate (fluorides)	NIOSH 7902		2.5 mg/m³		480	30	1000	2000	8	15	ISE	CF/CST 225-9001 64 C/HLD 225-1 102
Sodium hexafluoroaluminate (fluorides)	NIOSH 7906		2.5 mg/m³		960		2000		8		IC-CD	CF/CST 225-9031 64 C/HLD 225-1 102
Sodium hydroxide	OSHA ID 121	1042	2 mg/m³		960	30	2000	2000	8	15	AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Sodium hydroxide (alkaline dust)	NIOSH 7401			2 mg/m³ (15 min)	360		1500		4		TITRA	F/CST 225-1715 94 C/HLD 225-1 102
Sodium metabisulfite	OSHA ID 121				960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Sodium metasilicate	OSHA CSI										NVM	F/CST 225-3-01 90 C/HLD 225-1 102
Sodium nitrate	OSHA CSI				960		2000		8		AA or IC	F/CST 225-3-01 90 C/HLD 225-1 102
Sodium nitrite	OSHA CSI				960		2000		8		AA or IC	F/CST 225-3-01 90 C/HLD 225-1 102
Sodium o-phenyl phenate	OSHA CSI				10		20(50)		8(3.3)		GC-FID	F/CST 225-706 96 ST 226-35 38 C/HLD 225-1 102
Sodium polyacrylate *(see super absorbent polymer)*												
Solanesol (environmental tobacco smoke, respirable particles)	ASTM D 6271				150-3600		2500		1-24		HPLC-UV	FLT 225-2705 94 CST 225-3LF 97 CYC 225-01-02 111 C/HLD 225-1 102
Solder fume (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206				480		2000		4		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Soot *(see elemental carbon)*	NIOSH 5040										TOA-FID	
Spores (bacterial, fungal) (in air)					15-150		15000		1-10 min		varies	STC 225-9820 101
Spores (bacterial, fungal) (in air)	NON 48				62.5-375		12500 +		5-30		varies	BS 225-9595 122 VT 225-9598A◊ 122
Sporothrix species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Sporothrix species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Stachybotrys chartarum (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Stachybotrys chartarum (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Stachybotrys species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Stachybotrys species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Stannous-2-ethyl hexanoate (tin, organic compounds [as Sn])	OSHA CSI				480		1000		8		AA-GF	ST 226-30-16 38
Starch (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Starch (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Starch *(see dust, total and respirable nuisance)*												
Stoddard solvent	OSHA 48		500		3		200		15 min		GC-FID	ST 226-01 38
Stoddard solvent (naphthas)	NIOSH 1550		350 mg/m³	1800 mg/m³	10	1.5	20(50)	100	8(3.3)	15	GC-FID	ST 226-01 38
Strontium	OSHA CSI				480		1000		8		AA	F/CST 225-3-01 90 C/HLD 225-1 102

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Strontium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Strontium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				10-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Strontium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				300-100,000,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Strontium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.5 mg/m³		10-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Strontium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Strychnine	NIOSH 5016		0.15 mg/m³ (10 hr)		180		1500		2		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Strychnine	OSHA CSI		0.15 mg/m³		1000		3000		5.5		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Styrene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
Styrene (phenylethylene)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Styrene (phenylethylene)	NON 54				10	3	20	200	8	15	GC-FID	ST 226-81A 39
Styrene (phenylethylene)	OSHA 09		100	200 (C)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Styrene (phenylethylene)	OSHA 1014		100	200 (C)			13.55	13.55	8	15	HPLC-UV	PS 575-006 75
Styrene (phenylethylene)	OSHA 89	1368	100	200 (C)	12	0.75	50	50	4	15	GC-FID	ST 226-73 39
Styrene (phenylethylene) (Hydrocarbons, Aromatic)	NIOSH 1501		50	100	1-14	1-14	10-1000	10-1000	varies	varies	GC-FID	ST 226-01 38
Styrene oxide	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-35 38
Subtilisins (proteolytic enzymes)	OSHA CSI										Bulk	
Sucrose (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 CYC 225-01-02 111 C/HLD 225-1 102 CST 225-3LF 97
Sucrose (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 CST 225-2LF 97 C/HLD 225-1 102
Sucrose *(see dust, total or dust, respirable nuisance)*	OSHA CSI											
Sudan I	OSHA CSI				90		1000		2		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Sudan III	OSHA CSI				90		1000		1.5		HPLC	F/CST 225-709 96 C/HLD 225-1 102
Sulfamethazine	OSHA CSI				100		1000		1.5		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Sulfamic acid	OSHA CSI				100		1000		100 min		IC	F/CST 225-709 96 C/HLD 225-1 102
m-Sulfobenzoic acid	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
Sulfur *(see dust, total & respirable nuisance)*												
Sulfur dioxide	NIOSH 6004	1331	2	5	180	15	1000	1000	3	15	IC	CF/CST 225-9005 64 C/HLD 225-1 102
Sulfur dioxide	OSHA 1011		5 ppm		12	7.5	50	500	4	15	IC	ST 226-177 41
Sulfur dioxide	OSHA ID 104		5		60	15	1000	1000	1	15	IC	F/CST 225-3-01 90 IT 225-22 67 IMP 225-36-2 67
Sulfur dioxide	OSHA ID 200	1461	5		12	1.5	100	100	2	15	IC	ST 226-80 39
Sulfur dioxide (using prefilter)	OSHA ID 200	1622	5		12	1.5	100	100	2	15	IC	ST 226-80 39 CST 225-3-23 97 FLT 225-2708 94 C/HLD 225-1 102
Sulfur hexafluoride by portable GC	NIOSH 6602	1023	1000		varies		20-100		varies		P GC-ECD	SB 232-03 or SB 231-03 54
Sulfur monochloride	OSHA CSI			1		5		1000		5	IC	IMP 225-36-2 67 IT 225-22 67
Sulfur tetrafluoride	OSHA ID 110					5		1000		5	ISE	IMP 225-36-2 67 IT 225-22 67
Sulfuric acid	NIOSH 7908		0.2 mg/m³ *		960		2000		8		IC	PPI 225-381 112 IS 225-388 95 FLT 225-1827 88 SP 225-27 103
Sulfuric acid	NIOSH 7908		1 mg/m³		960		2000		8		IC-CD	CF/CST 225-9033 64 C/HLD 225-1 102
Sulfuric acid	OSHA ID 113	1465	1 mg/m³		480		2000		4		IC	F/CST 225-3-01 90 C/HLD 225-1 102
Sulfuric acid	OSHA ID 113		0.2 mg/m³ *		480		2000		4		IC	PPI 225-381 112 IS 225-388 95 FLT 225-5 88 SP 225-27 103
Sulfuric acid	OSHA ID 165SG		1 mg/m³		96		200		8		IC	ST 226-10-03 38
Sulfuric acid mist	ASTM D 4856	1431			40		1000		40 min		IC	F/CST 225-3-01 90 C/HLD 225-1 102
Sulfuryl fluoride	NIOSH 6012		5	10	10		20		8		IC-CD	ST 226-16 38
Sulfuryl fluoride	OSHA CSI		5		24	1.5	100	100	4	15	IC	ST 226-16 38
Sulprofos	OSHA PV2037				240		1000		4		GC-FPD	ST 226-30-16 38
Sulprofos (Organophosphorus Pesticides)	NIOSH 5600		1 mg/m³		240		1000		4		GC-FPD	ST 226-58 39
Super absorbent polymers	NIOSH 5035				960		2000		8		ICP-AES or AA	F/CST 225-802 93 C/HLD 225-1 102
Syncephalastrum species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Syncephalastrum species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Systox *(see demeton)*												
2,4,5-T	OSHA CSI		10 mg/m³		200		3000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Talc (containing asbestos) *(see asbestos)*	OSHA ID 160											
Talc (respirable, with no asbestos)	OSHA CSI		20 mppcf		varies		varies		varies		GR	FLT 225-5-37-P 93 CYC 225-105 110 C/HLD 225-1 102 CST 225-3LF 97

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Tannin	OSHA CSI				60		1000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Tantalum (metal, oxide dusts)	OSHA CSI		5 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
2,4-TDI (toluene diisocyanate)	ASTM D 5932				15		1000		15		HPLC-UV-FD	CF/CST 225-9022 64 C/HLD 225-1 102
2,4-TDI (toluene diisocyanate)	NIOSH 5522		LFC		360	20	1000	2000	6	10	HPLC-FD	IMP 225-36-1 67 IT 225-22 67
2,4-TDI (toluene diisocyanate)	OSHA 42	1458		0.02 (C)	240	15	1000	1000	4	15	HPLC-UV or HPLC-FD	CF/CST 225-9002 or 225-1 C/HLD 102 CF/CST 225-9013 64
2,6-TDI (toluene diisocyanate)	ASTM D 5932				15		1000		15		HPLC-UV-FD	CF/CST 225-9022 64 C/HLD 225-1 102
2,6-TDI (toluene diisocyanate)	NIOSH 5522		LFC		360	20	1000	2000	6	10	HPLC-FD	IMP 225-36-1 67 IT 225-22 67
2,6-TDI (toluene diisocyanate)	OSHA 42	1458				15		2000		15	HPLC-UV or HPLC-FD	CF/CST 225-9002 or 225-1 C/HLD 102 CF/CST 225-9013 64
2,4-TDI (Toluene diisocyanate) (isocyanates)	OR-OSHA 1010		0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67 IT 225-22 67 CF/CST 225-9029 64
2,6-TDI (Toluene diisocyanate) (isocyanates)	OR-OSHA 1010		0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67 IT 225-22 67 CF/CST 225-9029 64
2, 4-TDI (toluene diisocyanate) (isocyanates, total)	NIOSH 5525		LFC		1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
2, 6-TDI (toluene diisocyanate) (isocyanates, total)	NIOSH 5525		LFC		1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ 96 CST 225-4 97 SP 225-27 or IOM 225-76A 108 FLT 225-702 ‡ 96
TEDP	OSHA CSI		0.2 mg/m³		480		1000		8		GC-FPD	ST 226-30-16 38
Tellurium	OSHA ID 121		0.1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Tellurium	OSHA ID 132SG	1215	0.1 mg/m³		100 to 1000		1500 to 2000		varies		AA-GF	F/CST 225-3-01 90 C/HLD 225-1 102
Tellurium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				7-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Tellurium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.1 mg/m³		25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 225-1 C/HLD 102 F/CST 225-803 ¥ 93
Tellurium (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.1 mg/m³		125-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Tellurium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.1 mg/m³		25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Tellurium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Tellurium hexafluoride (as Te)	OSHA CSI		0.02		480		1000		8		AA	ST 226-01 38 F/CST 225-3-01 90
Temephos (respirable dust)	OSHA PV2056		5 mg/m³		varies		varies		varies		GC-FPD	F/CST 225-706 96 C/HLD 225-1 102
Temephos (total dust)	OSHA CSI		15 mg/m³		480		1000		8		GC-FPD	ST 226-30-16 38
TEPP	OSHA CSI		0.05 mg/m³		480		1000		8		GC-FPD	ST 226-30-16 38
Terbufos	OSHA CSI				480		1000		8		GC-FPD	ST 226-30-16 38
Terbufos (Organophosphorus Pesticides)	NIOSH 5600				240		1000		4		GC-FPD	ST 226-58 39
Terbuthiuron	ASTM D 4861				240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92 44
Tergitol NP-33	OSHA CSI				100		1000		1.6		HPLC-UV	ST 226-57 39
Terpenes (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Terpenes *(see specific compounds)*	NIOSH 1552	1463			24		50		8		GC-FID	ST 226-01 38
o-Terphenyl	NIOSH 5021			0.5		30		2000		15	GC-FID	F/CST 225-1713 94 C/HLD 225-1 102
o-Terphenyl *(see terphenyls)*	OSHA CSI											
Terphenyls	OSHA CSI			1 (C)		8.5		1700		5	HPLC-FD	F/CST 225-709 96 C/HLD 225-1 102
Terpineol	OSHA CSI				10		200		50 min		GC-FID	ST 226-01 38
Testosterone	OSHA PV2001				60		1000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Tetrabromobisphenol A	OSHA CSI				100		1000		100 min		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
1,1,2,2-Tetrabromoethane	NIOSH 2003				96		200		8		GC-FID	ST 226-10 38
Tetrabutyltin (organotin compounds as Sn)	NIOSH 5504		0.1 mg/m³		480		1000		8		HPLC & AA-GF	ST 226-30 38 C/HLD 225-1 102 F/CST 225-709 96
1,1,2,2-Tetrachloro-1,2-difluoroethane	NIOSH 1016		500		2		20		1.5		GC-FID	ST 226-01 38
1,1,2,2-Tetrachloro-1,2-difluoroethane	OSHA 07	1182	500		2		50		40 min		GC-FID	ST 226-01 38
1,1,1,2-Tetrachloro-2,2-difluoroethane	NIOSH 1016		500		2		20		1.5		GC-FID	ST 226-01 38
1,1,1,2-Tetrachloro-2,2-difluoroethane	OSHA 07	1181	500		2		50		40 min		GC-FID	ST 226-01 38
1,2,3,4-Tetrachlorobenzene	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF 226-124 44
1,2,3,5-Tetrachlorobenzene	OSHA CSI				12		100		2		GC-ECD	FLT 225-17-03 94 CST Special order ST 226-30-04 38 C/HLD 225-1 102
1,2,4,5-Tetrachlorobenzene (polychlorobenzenes)	NIOSH 5517				12		25		8		GC-ECD	FLT 225-17-03 94 CST Special order ST 226-30-04 38 C/HLD 225-1 102
2,3,7,8-Tetrachlorodibenzofuran	OSHA CSI				30		1000		0.5		NVM	IMP 225-36-1 67 IT 225-22 67
2,3,7,8-Tetrachlorodibenzo-p-dioxin	OSHA CSI				30		1000		0.5		NVM	IMP 225-36-1 67 IT 225-22 67

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA	CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA	CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
1,1,1,2-Tetrachloroethane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
1,1,2,2-Tetrachloroethane	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
1,1,2,2-Tetrachloroethane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
1,1,2,2-Tetrachloroethane	NIOSH 1019		1		24		50		8		GC-FID	ST 226-81A 39
1,1,2,2-Tetrachloroethane	NIOSH 2562		1		3-30		10-200		varies		GC-FID	ST NA SKC
1,1,2,2-Tetrachloroethane	OSHA 07		5		30		200		2.5		GC-FID	ST 226-81A 39
Tetrachloroethylene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Tetrachloroethylene	Indoor	1689					13.1 ml/min		8-24 hrs		TD, GC	PS 690-101 or PS 690-103 or PS 690-104 84
Tetrachloroethylene (hydrocarbons, halogenated)	NIOSH 1003		LFC		3		10-200		varies		GC-FID	ST 226-01 38
Tetrachloroethylene (perchloroethylene)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Tetrachloroethylene (perchloroethylene)	OSHA 07		100	200	24		50		8		GC-FID	ST 226-01 38
Tetrachloroethylene (perchloroethylene)	OSHA 1001	1747	100	200 (C)	12	0.75	50	50	4	5	GC-FID	ST 226-01 38
Tetrachloroethylene (perchloroethylene)	OSHA 1001	1747	100	200 (C)			13.06		8	5	GC-FID	PS 575-002 75
Tetrachloroethylene (perchloroethylene) (portable GC)	NIOSH 3704		LFC		1		20-5000		varies		P GC	SB 232-01 55
Tetrachloronaphthalene	OSHA CSI		2 mg/m³		90		1000		1.5		GC-FID	ST 226-30-16 38
2,3,4,6-Tetrachlorophenol	OSHA 45				48		200		4		HPLC-UV	ST 226-97 40
Tetraethyl lead (as Pb)	NIOSH 2533		0.075 mg/m³		120		1000		2		GC-PID	ST 226-30-04 38
Tetraethyl lead (as Pb)	OSHA CSI		75 µg/m³		480		1000		8		AA	ST 226-01 38 F/CST 225-706 96 C/HLD 225-1 102
Tetraethyl pyrophosphate	NIOSH 2504		0.05 mg/m³		24		50		8		GC-FPD	ST NA SKC
Tetraethyl tin	OSHA 110		0.1 mg/m³		48	3	200	200	4	15	GC-FID	ST 226-95 40
Tetraethylene glycol	NIOSH 5523				60		1000		1		GC-FID	ST 226-57 39
Tetraethylene glycol diacrylate	OSHA CSI				10		20(50)		8(3.3)		HPLC-UV	ST 226-95 40
Tetraethylene glycol dimethacrylate	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-95 40
Tetraethylenepentamine	OSHA CSI					15		1000		15	HPLC-UV	FLT 225-7 ‡ 96 CST 225-2LF 97 C/HLD 225-1 102
Tetrahydrofuran	NIOSH 1609		200	250	9	1.5	20(50)	100	7(3)	15	GC-FID	ST 226-01 38
Tetrahydrofuran	OSHA 07	1064	200		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Tetrahydrofurfuryl acrylate	OSHA PV2131		1 mg/m³		48		200		4		GC-FID	ST 226-110 40
Tetrakis(hydroxymethyl)phosphonium chloride	NIOSH 5046				1-480		1000-1700		varies		HPLC-UV	CF/CST 225-9003 64
Tetramethyl lead (as Pb)	NIOSH 2534		75 µg/m³		96		200		8		GC-PID	ST 226-30-06 38
Tetramethyl lead (as Pb)	OSHA CSI		75 µg/m³		480		1000		8		AA	F/CST 225-709 96 ST 226-01 38 C/HLD 225-1 102
Tetramethyl succinonitrile	OSHA 07	1183	0.5		10		20		8		GC-FID	ST 226-01 38
Tetramethyl thiouram disulfide *(see thiram)*												
Tetramethyl thiourea	NIOSH 3505				96		200		8		VAS	IMP 225-36-1 67 IT 225-22 67
Tetramethyl tin	OSHA PV2057		0.1 mg/m³		20		200		100 min		GC-FID	ST 226-01 38
1,2,3,4-Tetramethylbenzene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1,2,3,5-Tetramethylbenzene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1,2,4,5-Tetramethylbenzene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Tetramethyldiaminobenzophenone	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
N,N,N',N'-Tetramethylethylenediamine	OSHA CSI				480		1000		8		GC-NPD	IMP 225-36-1 67 IT 225-22 67
Tetranitromethane	NIOSH 3513		1		240		1000		4		GC-NPD	IMP 225-36-1 67 IT 225-22 67
Tetranitromethane	OSHA CSI		1		240		1000		4		GC-NPD	IMP 225-36-1 67 IT 225-22 67
Tetrasodium pyrophosphate	OSHA ID 111				960		2000		8		GR & IC	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Tetrasodium pyrophosphate	OSHA ID 121				960		2000		8		AA or AES	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Tetryl (2,4,6-trinitrophenyl-methylnitramine)	OSHA CSI		1.5 mg/m³		90		1500		1		CLR	F/CST 225-3-01 90 C/HLD 225-1 102
Thalium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.1 mg/m³ (skin, sol)		25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Thallium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.1 mg/m³ (skin)		7-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Thallium (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.1 mg/m³ (skin, sol)		35-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Thallium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.1 mg/m³ (skin, sol)		25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Thallium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA	Vol. (liter) CLG/STEL	Rate (ml/min) TWA	Rate (ml/min) CLG/STEL	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
Thallium (soluble compounds) (as Tl)	OSHA ID 121	1202	0.1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Thimet (phorate)	OSHA CSI				480	15	1000	1000	8	15	GC-FPD	ST 226-30-16 38
Thiobencarb (Organonitrogen Pesticides)	NIOSH 5601				240		1000		4		HPLC-UV	ST 226-58 or ST 226-30-16 38
4,4'-Thiobis(6-tert-butyl-m-cresol) (respirable dust)	OSHA CSI		5 mg/m³		varies		varies		varies		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102 CYC 225-105 110
4,4'-Thiobis(6-tert-butyl-m-cresol) (total dust)	OSHA CSI		15 mg/m³		60		1000		1		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Thioglycolic acid	OSHA CSI				120		1000		2		HPLC-UV	IMP 225-36-1 67 IT 225-22 67
Thionyl chloride	OSHA CSI					15		1000		15	IC	IMP 225-36-2 67 IT 225-22 67
Thiophanate	OSHA CSI				180		1000		3		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Thiophanate-methyl	OSHA PV2058				240		1000		4		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Thiophanate-methyl in air	NIOSH 5606				20-480		10-1000		varies		HPLC-UV	ST 226-58 39
Thiophene	OSHA CSI				48		100		8		GC-FPD	ST 226-01 38
Thiourea	OSHA PV2059				480		2000		4		HPLC-UV	F/CST 225-706 96 C/HLD 225-1 102
Thiram	NIOSH 5005		5 mg/m³		120		1000		2		HPLC-UV	FLT 225-17-01 94 C/HLD 225-1 102 CST 225-2LF 97
Thorium	OSHA CSI				960		2000		8		N ACT	F/CST 225-3-01 90 C/HLD 225-1 102
L-Thyroxine	OSHA PV2117				240		1000		4		HPLC-UV	F/CST 225-709 96 C/HLD 225-1 102
Tin (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		2 mg/m³		1-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Tin (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		2 mg/m³		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Tin (Elements by ICP HNO_3 Digestion))	NIOSH 7303		2 mg/m³		1-25000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Tin (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	2 mg/m³		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Tin (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206		2 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Tin (inorganic compounds, except oxides) (as Sn)	OSHA ID 121	1201	2 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Tin (organic compounds) (as Sn) (organotin compounds)	NIOSH 5504		0.1 mg/m³		480		1000		8		HPLC & AA-GF	ST 226-30 38 F/CST 225-706 96 C/HLD 225-1 102
Tin (organic compounds, *see specific compounds*) (as Sn)	OSHA CSI											
Tin oxide ((Stannous Oxide) as Sn)	OSHA ID 121	1200	0.1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Titanium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Titanium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or 102 C/HLD 225-1 F/CST 225-803 ¥ 93
Titanium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				0.1-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Titanium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455			5-100		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Titanium *(see titanium dioxide)*	OSHA CSI											
Titanium dioxide (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Titanium dioxide (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Titanium dioxide (total dust)	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
TNT (2,4,6-trinitrotoluene)	OSHA 44		1.5 mg/m³		60		1000		1		GC-TEA-EAP	ST 226-56 39
o-Tolidine	OSHA 71	1236			100		1000		100 min		GC-ECD	CF/CST 225-9004 64 C/HLD 225-1 102
o-Tolidine based dyes	OSHA CSI				480		1000		8		HPLC-UV	FLT 225-17A 94 C/HLD 225-1 102 CST 225-3LF 97
o-Tolidine dyes (dyes, benzidine)	NIOSH 5013		LFC		480		1000		8		HPLC-UV	FLT 225-17A 94 C/HLD 225-1 102 CST 225-3LF 97
m-Tolualdehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
o-Tolualdehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
p-Tolualdehyde	ASTM D 5197				varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
o-Toluamide	OSHA CSI		5 mg/m³		240		1000		4		HPLC	F/CST 225-709 96 C/HLD 225-1 102
Toluene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Toluene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 CPC 224-26-CPC 51 TH 224-26-02 51
Toluene	OSHA 07		200	300	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Toluene	OSHA 111	1748	200	300 (C)	12	0.5	50	50	4	10	GC-FID	ST 226-81A 39 ST 226-01 38
Toluene (Hydrocarbons, Aromatic)	NIOSH 1501		100	150	1-8	1-8	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
2,4-Toluene diisocyanate	ASTM D 5836	1432			15		1000		15		HPLC-UV or HPLC-FD	CF/CST 225-9002 64 C/HLD 225-1 102
2,4-Toluene diisocyanate	ASTM D 5932				15		1000		15		HPLC-UV-FD	CF/CST 225-9022 64 C/HLD 225-1 102

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References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
2,4-Toluene diisocyanate	OSHA 42	1458		0.02 (C)	240	15	1000	1000	4	15	HPLC-UV or HPLC-FD	CF/CST 225-9002 or 225-9013 64; C/HLD 225-1 102
2,6-Toluene diisocyanate	ASTM D 5836	1432			15		1000		15		HPLC-UV or HPLC-FD	CF/CST 225-9002 64; C/HLD 225-1 102
2,6-Toluene diisocyanate	ASTM D 5932				15		1000		15		HPLC-UV-FD	CF/CST 225-9022 64; C/HLD 225-1 102
2,6-Toluene diisocyanate	OSHA 42	1458			240		1000		4		HPLC-UV or HPLC-FD	CF/CST 225-9002 or 225-9013 64; C/HLD 225-1 102
2,4-Toluene diisocyanate (isocyanates)	NIOSH 5521		LFC		480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1 67; IT 225-22 67
2,4-Toluene diisocyanate (isocyanates)	OR-OSHA 1010		0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67; IT 225-22 67; CF/CST 225-9029 64
2,6-Toluene diisocyanate (isocyanates)	NIOSH 5521		LFC		480		1000		8		HPLC-ELCHM & HPLC-UV	IMP 225-36-1 67; IT 225-22 67
2,6-Toluene diisocyanate (isocyanates)	OR-OSHA 1010		0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 67; IT 225-22 67; CF/CST 225-9029 64
2,4-Toluene diisocyanate (isocyanates, total)	NIOSH 5525		LFC		1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ 96; SP 225-27 or IOM 225-76A 108; FLT 225-702 ‡ 96; CST 225-4 97
2,6-Toluene diisocyanate (isocyanates, total)	NIOSH 5525		LFC		1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ 96; SP 225-27 or IOM 225-76A 108; FLT 225-702 ‡ 96; CST 225-4 97
p-Toluene sulfonic acid	NIOSH 5043				960	45	2000	3000	8	15	HPLC-UV	FLT 225-16 96; CST 225-32 102
p-Toluene sulfonic acid	OSHA CSI				120		1000		2		HPLC-UV	IMP 225-36-1 67; IT 225-22 67
Toluene-2,4-diamine	OSHA 65	1237		0.02 (C)	100		1000		100 min		GC-ECD	CF/CST 225-9004 64; C/HLD 225-1 102
2,4-Toluenediamine	NIOSH 5516		LFC		480		1000		8		HPLC-UV	IMP 225-36-1 67; IT 225-22 67
2,4-Toluenediamine	OSHA 65	1237		0.02 (C)	100		1000		100 min		GC-ECD	CF/CST 225-9004 64; C/HLD 225-1 102
2,6-Toluenediamine	NIOSH 5516		LFC		480		1000		8		HPLC-UV	IMP 225-36-1 67; IT 225-22 67
2,6-Toluenediamine	OSHA 65	1237			100		1000		100 min		GC-ECD	CF/CST 225-9004 64; C/HLD 225-1 102
2,6-Toluenediamine	OSHA 65	1237			100		1000		100 min		GC-ECD	CF/CST 225-9004 64; C/HLD 225-1 102
m-Toluidine	OSHA 73	1230			100		1000		100 min		GC-ECD	CF/CST 225-9004 64; C/HLD 225-1 102
o-Toluidine	NIOSH 2017		LFC		24		200		2		GC-FID	CF/CST 225-9004 64; ST 226-15 38
o-Toluidine	OSHA 73	1230	5		100		1000		100 min		GC-ECD	CF/CST 225-9004 64; C/HLD 225-1 102
p-Toluidine	OSHA 73	1230			100		1000		100 min		GC-ECD	CF/CST 225-9004 64; C/HLD 225-1 102
o-Toluidine (Amines, Aromatic)	NIOSH 2002	1057	LFC		48		100		8		GC-FID or GC-NSD	ST 226-10 38
o-Toluidine based dyes	OSHA CSI				480		1000		8		HPLC-UV	FLT 225-17-04 94; C/HLD 225-1 102; CST 225-3LF 97
Torak	OSHA CSI										W	W 225-2401A 140
Torula species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90; C/HLD 225-1 102
Torula species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Toxaphene *(see chlorinated camphene)*												
Tremolite *(see asbestos fibers)*	NIOSH 7400											
Tremolite fibers *(see asbestos)*	OSHA ID 160											
Trially isocyanurate	OSHA CSI				10		20(50)		8(3.3)		GC-NPD	ST 226-01 38
Triazine pesticides	ASTM D 4861				960		2000		8		GC-ECD	PUF 226-92 44
Tributyl phosphate	NIOSH 5034		0.2		90		1500		1		GC-FPD	F/CST 225-3-01 90; C/HLD 225-1 102
Tributyl phosphate	OSHA CSI		5 mg/m³		90		1500		1		GC-FPD	F/CST 225-3-01 90; C/HLD 225-1 102
Tributyl phosphorotrithioate	OSHA CSI				480		1000		8		GC-FPD	IMP 225-36-1 67; IT 225-22 67
Tributyl phosphorotrithioate	OSHA CSI				480		1000		8		GC-FID	IMP 225-36-1 67; IT 225-22 67
Tributyltin benzoate {tin, organic compounds (as Sn)}	OSHA ID 222SG				200		2000		100 min		AA-GF	F/CST 225-803 93; C/HLD 225-1 102
Tributyltin chloride (organotin compounds as Sn)	NIOSH 5504		0.1 mg/m³		480		1000		8		HPLC & AA-GF	ST 226-30 38; C/HLD 225-1 102; F/CST 225-709 96
Tributyltin fluoride {tin, organic compounds (as Sn)}	OSHA ID 223SG				200		2000		100 min		AA-GF	F/CST 225-803 93; C/HLD 225-1 102
Tributyltin neodecanoate *(see tin, organic compounds)*												
Trichlorfon	OSHA CSI				390		1000		6.5		GC-FPD	ST 226-30-16 38
1,1,2-Trichloro-1,2,2-trifluoroethane	OSHA 113		1000		1		50		20 min		GC-FID	ST NA SKC
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	NIOSH 1020	1061	1000	1250	2.4	0.3	20	20	2	15	GC-FID	ST 226-01 38
1,1,1-Trichloro-2,2,2-trifluoroethane	OSHA CSI				3		20		2.5		GC-FID	ST 226-01 38
Trichloroacetic acid	OSHA PV2017				10		200		50		HPLC-UV	ST 226-10 38

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA	CLG/STEL	Rate (ml/min) TWA	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
					Sample Time or Air Volume		Flow/Sampling Rate					
1,2,3-Trichlorobenzene	ASTM D 4861				240-7200		1000- 5000		4 to 24		GC-ECD	PUF 226-124 44
1,2,3-Trichlorobenzene	OSHA CSI				12		50		4		GC-ECD	FLT 225-17-03 94 CST Special order 102 ST 226-30-04 38 C/HLD 225-1
1,2,4-Trichlorobenzene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
1,2,4-Trichlorobenzene	OSHA CSI					5		1000		5	GC-ECD	FLT 225-17-03 94 CST Special order ST 226-30-04 38 C/HLD 225-1 102
1,2,4-Trichlorobenzene (polychlorobenzenes)	NIOSH 5517			5	12	3	25	200	8	15	GC-ECD	FLT 225-17-03 94 CST Special order ST 226-30-04 38 C/HLD 225-1 102
1,1,2-Trichloroethane	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
1,1,2-Trichloroethane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
1,1,2-Trichloroethane	OSHA 11	1071	10		10		200		1		GC-FID	ST 226-01 38
1,1,2-Trichloroethane (hydrocarbons, halogenated)	NIOSH 1003		10 (skin)		10		10-200		varies		GC-FID	ST 226-01 38
1,1,1-Trichloroethane (methyl chloroform)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
1,1,1-Trichloroethane (methyl chloroform) (hydrocarbons, halogenated)	NIOSH 1003			350		3		10-200		varies	GC-FID	ST 226-01 38
Trichloroethylene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Trichloroethylene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Trichloroethylene	NIOSH 1022		25	2 (1 hr)	10	2	20(50)	200	8(3.3)	10	GC-FID	ST 226-01 38
Trichloroethylene	OSHA 07	1184	100	200 (C)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Trichloroethylene	OSHA 1001	1747	100	200 (C)	12	0.75	50	50	4	5	GC-FID	ST 226-01 38
Trichloroethylene	OSHA 1001	1747	100	200 (C)			14.24		8	5	GC-FID	PS 575-002 75
Trichloroethylene (hydrocarbons, halogenated)	NIOSH 1003				10		10-200		varies		GC-FID	ST 226-01 38
Trichloroethylene by portable GC	NIOSH 3701	1030	25	2 (1 hr)	varies	varies	20-50	varies	varies	varies	P GC-PID	SB 232 Series 55
Trichlorofluoromethane (fluorotrichloromethane)	NIOSH 1006			1000		5		20		240	GC-FID	ST 226-09 38
Trichloronaphthalene	OSHA CSI		5 mg/m³		90		1000		1.5		GC-ECD	ST 226-30-16 38
Trichloronitromethane	NON 51		0.1		144		100		24		GC-MSD	ST 226-175 41
2,4,5-Trichlorophenol	ASTM D 4861				240-7200		1000- 5000		4 to 24		GC-ECD	PUF 226-92 44
2,4,5-Trichlorophenoxyacetic acid *(see 2,4,5-T)*												
1,2,3-Trichloropropane	OSHA 07	1185	50		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
1,2,3-Trichloropropane (hydrocarbons, halogenated)	NIOSH 1003		10 (skin)		0.6-60		10-200		varies		GC-FID	ST 226-01 38
2,3,6-Trichlorotoluene	OSHA CSI				10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Trichoderma species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Trichoderma species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Tricyclohexyltin hydroxide (organotin compounds as Sn)	NIOSH 5504		0.1 mg/m³		480		1000		8		HPLC & AA-GF	ST 226-30 38 F/CST 225-709 96 C/HLD 225-1 102
Tridymite *(see Silica, respirable crystalline)*	OSHA ID 142											
Tridymite (silica, crystalline (respirable)) by XRD	NIOSH 7500	1370	0.05 mg/m³		400-1000		2500		varies		XRD	F/CST 225-803 93 CYC 225-01-02 111 C/HLD 225-1 102
Tridymite (Silica, crystalline by IR)	NIOSH 7602		0.05 mg/m³		400-800		2500		varies		IR	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Triethanolamine (TEA)	OSHA PV2141				120		1000		2		GC-FID	F/CST 225-709 96 C/HLD 225-1 102
Triethanolamine (TEA) (Aminoethanol Compounds II)	NIOSH 3509				240		1000		4		IC	IMP 225-36-1 67 IT 225-22 67
Triethylamine	OSHA PV2060		25		5	3	100	200	50 min	15	GC-FID	ST 226-98 40
Triethylene glycol	NIOSH 5523				60		1000		1		GC-FID	ST 226-57 39
Triethylenetetramine (TETA)	OSHA 60	1286			10		100		100 min		HPLC-UV	ST 226-30-18 38
Trifluorobromomethane	NIOSH 1017		1000		1		20		50 min		GC-FID	ST 226-01 38 ST 226-09 38
2,2,2-Trifluoroethanol	OSHA CSI				5		20		4		GC-FID	ST 226-01 38
Trifluoromonobromomethane	OSHA 07		1000		1		20		50 min		GC-FID	ST 226-01 38 ST 226-09 38
Trifluoromonobromomethane (trifluorobromomethane)	NIOSH 1017		1000		1		20		50 min		GC-FID	ST 226-01 38 ST 226-09 38
Trifluralin	ASTM D 4861				240-7200		1000- 5000		4 to 24		GC-ECD	PUF 226-92 44
Trifluralin	OSHA CSI				48		100		8		HPLC-UV	ST 226-56 39
1,3,5-Triglycidyl isocyanurate	OSHA PV2055				60		1000		1		GC-ECD	CF/CST 225-9027 64 C/HLD 225-1 102
Trimellitic anhydride (TMA)	NIOSH 5036		0.005 (10 hr)		960		2000		8		GC-FID	F/CST 225-802 93 C/HLD 225-1 102
Trimellitic anhydride (TMA)	OSHA 98				480		2000		4		HPLC-UV	CF/CST 225-9010 †† 64 C/HLD 225-1 102
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	OSHA PV2002				10		100		100 min		GC-FID	ST 226-110 40
Trimethylamine	OSHA CSI				10	1.5	100	100	100 min	15	GC-NPD	ST 226-98 40
1,2,3-Trimethylbenzene	OSHA PV2091				10		100		100 min		GC-FID	ST 226-01 38
1,2,4-Trimethylbenzene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

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Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
1,2,4-Trimethylbenzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
1,2,4-Trimethylbenzene	OSHA PV2091				10		100		100 min		GC-FID	ST 226-01 38
1,3,5-Trimethylbenzene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
1,3,5-Trimethylbenzene (mesitylene)	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
1,3,5-Trimethylbenzene (mesitylene)	OSHA PV2091				10		100		100 min		GC-FID	ST 226-01 38
3,5,5-Trimethylcyclohex-2-enone (isophorone)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
Trimethylolethane trinitrate	OSHA CSI				15		1000		15 min		HPLC-UV	ST 226-35-03 39
Trimethylolpropane triacrylate	OSHA CSI				10		20(50)		8(3.3)		HPLC-UV	ST 226-95 40
Trimethyltin dichloride	NIOSH 5526		0.1 mg/m³		60	60	250	1000	4	60	GC-FPD	ST 226-30-16 38
2,4,7-Trinitro-9-fluorenone	OSHA CSI				480		1000		8		HPLC-UV	FLT C/HLD 225-17A 225-1 94 102 CST 225-3LF 97
2,4,7-Trinitrofluoren-9-one	NIOSH 5018				480		3000		2.7		HPLC-UV	FLT C/HLD 225-17-04 225-1 94 102 CST 225-3LF 97
2,4,6-Trinitrotoluene (TNT)	OSHA 44		1.5 mg/m³		60		1000		1		GC-TEA-EAP	ST 226-56 39
Triorthocresyl phosphate	NIOSH 5037		0.1 mg/m³		90		1000		1.5		GC-FPD	F/CST 225-3-01 90 C/HLD 225-1 102
Triphenyl phosphate	NIOSH 5038		3 mg/m³		240		1000		4		GC-FPD	F/CST 225-3-01 90 C/HLD 225-1 102
Triphenyl tin chloride (as Sn)	NIOSH 5527		0.1 mg/m³ (skin)		100-2000		1000-4000		varies		HPLC & ICP-AES	FLT 225-5-37-P 93 C/HLD 225-1 102
Triphenylamine	OSHA CSI				240		1000		4		HPLC-UV	IMP 225-36-2 67 IT 225-22 67
Triphenyltin fluoride (tin, organic compounds [as Sn])	OSHA CSI		0.1 mg/m³		960		2000		8		AA-GF	F/CST 225-709 96 C/HLD 225-1 102
Triphenyltin hydroxide {tin, organic compounds (as Sn)}	OSHA ID 225SG		0.1 mg/m³		200		2000		100 min		AA-GF	F/CST 225-709 96 C/HLD 225-1 102
Tripoli *(see Silica, respirable crystalline)*	OSHA ID 142											
Tripropylene glycol diacrylate	OSHA CSI				10		20(50)		8(3.3)		HPLC-UV	ST 226-95 40
Tripropylene glycol diacrylate (TPGDA)	NON 39				480		1000		8		GC-FID	ST 226-56 39
Trydymite (silica, crystalline by VAS)	NIOSH 7601	1041	0.05 mg/m³		400-800		2500		varies		VAS	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Trypsin	OSHA CSI				480		2000		4		IRA	F/CST 225-1713 94 C/HLD 225-1 102
Tuberculosis (mycobacterium tuberculosis), airborne	NIOSH 0900				1920		4000		8		PCR	FLT 225-2705 94 SP 225-27 103 CST 225-3LF 97 C/HLD 225-1 102
Tungsten & compounds (insoluble) (as W)	OSHA ID 213				480	30	2000	2000	4	15	ICP	F/CST 225-3-01 90 C/HLD 225-1 102
Tungsten & compounds (soluble) (as W)	OSHA ID 213				480	30	2000	2000	4	15	ICP	F/CST 225-3-01 90 C/HLD 225-1 102
Tungsten (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		5 mg/m³	10 mg/m³	Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Tungsten (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		5 mg/m³	10 mg/m³	50-1000	50-1000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Tungsten (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	5 mg/m³	10 mg/m³	5-1000	5-1000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Tungsten insoluble	NIOSH 7074		5 mg/m³	10 mg/m³	480		1000		8		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Tungsten soluble	NIOSH 7074		1 mg/m³	3 mg/m³	480		1000		8		AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Turpentine	NIOSH 1551		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
n-Undecane	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
n-Undecane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500		2		2		10 - 50		varies		GC-FID	ST 226-01 38
Uranium (as U) soluble compounds	OSHA CSI		0.05 mg/m³		960		2000		8		DPCSP	F/CST 225-803 93 C/HLD 225-1 102
Uranium (insoluble compounds)	OSHA CSI		0.25 mg/m³		960	30	2000	2000	8	15	ICP	F/CST 225-3-01 90 C/HLD 225-1 102
Uranium (soluble compounds)	OSHA ID 170SG		0.05 mg/m³		240		2000		2		POL	F/CST 225-803 93 C/HLD 225-1 102
Urea pesticides	ASTM D 4861				240-7200		1000-5000		4 to 24		GC-ECD	PUF 226-92 44
n-Valeraldehyde	ASTM D 5197				varies		500-1200		5 min to 24 hrs		HPLC-UV	ST 226-120 ° or ST 226-119 40
n-Valeraldehyde	NIOSH 2536		50		10		20		8		GC-FID	ST 226-118 40
n-Valeraldehyde	OSHA 85				3		50		1		HPLC-UV	CF/CST 225-9020 64 C/HLD 225-1 102
n-Valeraldehyde (Aldehydes, Screening)	NIOSH 2539		50		5		20		4		GC-FID & GC-MS	ST 226-118 40
Vanadium (Elements by ICP HNO_3 Digestion))	NIOSH 7303		0.05 mg/m³		2.5-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Vanadium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	0.05 mg/m³		5-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Vanadium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.05 mg/m³ C (as pentoxide)		Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Vanadium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.05 mg/m³		5-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Vanadium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Vanadium fume (as V_2O_5)	OSHA ID 125G		0.05 mg/m³	0.1	480	20	2000	1000	4	20	ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Vanadium oxides	NIOSH 7504			0.05 mg/m³ (15 min)	600		2600		4		XRD	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-01-02 111
Vanadium pentoxide (V_2O_5) *(see vanadium oxides)*	NIOSH 7504											
Vanadium pentoxide (V_2O_5) (confirmation of)	OSHA ID 185		0.05 mg/m³	0.05 mg/m³	varies		varies		varies		XRD	F/CST 225-803 93 C/HLD 225-1 102 CYC 225-105 110
Vanadium respirable dust (as V_2O_5)	OSHA ID 125G			0.5 mg/m³		varies		varies		varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102 CYC 225-105 110
Vanadium trioxide *(see vanadium oxides)*	NIOSH 7504											
Vegetable oil mist *(see dust, respirable & total nuisance)*	OSHA CSI											
Vermiculite *(see dust, total & respirable nuisance)*												
Verticillium species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Verticillium species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Vinyl acetate	NON 21				24		50		8		GC	ST 226-68 39
Vinyl acetate	OSHA 51				24	3	100	200	4	15	GC-FID	ST NA SKC
Vinyl bromide	NIOSH 1009		LFC		10		20(50)		8(3.3)		GC-FID	ST 226-09 38
Vinyl bromide	OSHA 08	1074			5		20		4		GC-FID	ST 226-01 38
Vinyl chloride	ASTM D 4766	1434			24		100 or 50		4 or 8		GC-FID	ST 226-16 38
Vinyl chloride	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Vinyl chloride	NIOSH 1007		LFC		5		50		1.6		GC-FID	ST 226-01 38
Vinyl cyclohexene dioxide	OSHA PV2083				10		20(50)		8(3.3)		GC-FID	ST 226-30 38
Vinyl toluene	OSHA 07		100		10		20(50)		8(3.3)		GC-FID	ST 226-01 38
Vinyl toluene (methyl styrene)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
N-Vinyl-2-pyrrolidinone	OSHA PV2106				10		100		100 min		GC-FID	ST 226-01 38
Vinylidene chloride	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Vinylidene chloride	NIOSH 1015		LFC		5		20		4		GC-FID	ST 226-01 38
Vinylidene chloride	OSHA 19				3	3	200	200	15 min	15	GC-FID	ST 226-01 38
Viruses (in air)	NON 48				62.5-375		12500 +		5-30		varies	BS 225-9595 122 VT 225-9598A◊ 122
VM&P naphtha	OSHA 48				3	3	20	200	2.5	15	GC-FID	ST 226-01 38
VM&P naphtha (naphthas)	NIOSH 1550		350 mg/m³	1800 mg/m³	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Volatile organic compounds (screening)	NIOSH 2549				5		20		4		GC-MS	ST 226-330 42
Volatile organic compounds (VOCs) (canister)	EPA TO-14A	1676			varies		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Volatile organic compounds (VOCs) (canister)	EPA TO-15	1676			varies		varies		varies		GC-MS	CAN 228 Series PK 228 Series
Volatile organic compounds (VOCs) (sample bag)	EPA 0040	1665					250-1000 ml/min		1-2 hrs		GC-MS	VAC 231-939 or VAC 231-940 with SB 236-004 or SB 232-939 or SB 236-001 or SB 232-01
Volatile organic compounds (VOCs) (thermal desorption tube)	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
VOST (volatile organic sampling train)	EPA 0031				20 min		1 L/min		20 min		TD, GC-MS	ST 226-134 £ 41 ST Special Order
Vydate (oxamyl)	OSHA CSI				60		1000		1		HPLC	ST 226-30-16 38
Wallemia species (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Wallemia species (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Warfarin	NIOSH 5002		0.1 mg/m³		360		1500		4		HPLC-UV	FLT 225-17-01 94 CST 225-2LF 97 C/HLD 225-1 102
Welding fumes (total particulate)	OSHA ID 125G				480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Wemicide CW 104	OSHA CSI				480		1000		8		HPLC-UV	ST 226-30-16 38
Wollastonite *(see dust, total and respirable nuisance)*	OSHA CSI											
Wood alcohol (methanol)	NIOSH 2000		200	250	5	3	20	200	4	15	GC-FID	ST 226-51 39
Wood dust (except western red cedar)	OSHA CSI				960	30	2000	2000	8	30	GR	F/CST 225-803 93 C/HLD 225-1 102
Wood dust (western red cedar)	OSHA CSI		2.5 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Wood dust, hardwood	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Wood dust, softwood	OSHA CSI		15 mg/m³		960		2000		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Wood spirit (methanol)	NIOSH 2000		200	250	5	3	20	200	4	15	GC-FID	ST 226-51 39
m-Xylene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
m-Xylene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
m-Xylene	OSHA 1002	1746	100				13.82		8		GC-FID	PS 575-002 75
o-Xylene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series

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References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	CLG/STEL	Rate (ml/min) TWA Flow/Sampling Rate	CLG/STEL	Time TWA (hrs)	CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
o-Xylene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
o-Xylene	OSHA 1002	1746	100				14.24		8		GC-FID	PS 575-002 75
p-Xylene	ASTM D 5466				6		varies		varies		GC-MS	CAN 228 Series PK 228 Series
p-Xylene	EPA TO-17	1689			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series 42 TH 224-26-02 51 CPC 224-26-CPC 51
p-Xylene	OSHA 1002	1746	100				13.94		8		GC-FID	PS 575-002 75
m-Xylene (Hydrocarbons, Aromatic)	NIOSH 1501		100		2-23		10-200		varies		GC-FID	ST 226-01 38
o-Xylene (Hydrocarbons, Aromatic)	NIOSH 1501		100	150	2-23	2-23	10-200	10-200	varies	varies	GC-FID	ST 226-01 38
p-Xylene (Hydrocarbons, Aromatic)	NIOSH 1501		100		2-23		10-200		varies		GC-FID	ST 226-01 38
Xylene (o-, m-, & p-isomers)	OSHA 07	1186	100		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01 38
Xylene (o-, m-, & p-isomers)	OSHA 1002	1746	100		12		50		4		GC-FID	ST 226-01 38
m-Xylenediamine (mXDA)	OSHA 105	1405				15		1000		15	HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
p-Xylenediamine (pXDA)	OSHA 105	1405				15		1000		15	HPLC-UV	CF/CST 225-9004 64 C/HLD 225-1 102
Xylidine	OSHA CSI		5		24		50		8		GC-FID	ST 226-10 38
2,4-Xylidine (Amines, Aromatic)	NIOSH 2002	1056	2		10		20(50)		8(3.3)		GC-FID or GC-NSD	ST 226-10 38
Yeast (fungi, molds, spores)	OSHA CSI				120		1000		2		varies	F/CST 225-3-01 90 C/HLD 225-1 102
Yeast (fungi, molds, spores)	OSHA CSI				141.5		28300		5 min		varies	BI 225-9611 120
Yttrium	OSHA ID 121		1 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Yttrium (Elements by ICP HNO_3 Digestion))	NIOSH 7303				0.1-50,000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Yttrium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		1 mg/m³		1-2000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Yttrium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Yttrium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455			5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Yttrium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Zectran	OSHA CSI										W	W 225-2401A 140
Zinc	OSHA ID 121	1204			960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Zinc	OSHA ID 125G				480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Zinc & compounds (as Zn)	NIOSH 7030		5 mg/m³ (ZnO)	15 mg/m³ (ZnO)	240	30	1000	2000	4	15	AA-F	F/CST 225-3-01 90 C/HLD 225-1 102
Zinc (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		5 mg/m³	15 mg/m³ C (dust) 10 mg/m³ (fume)	Varies		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Zinc (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				5-200		1000-4000		varies		ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Zinc (Elements by ICP HNO_3 Digestion))	NIOSH 7303		5 mg/m³ (ZnO)	15 mg/m³ (ZnO)	0.5-10,000	0.5-10,000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Zinc (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	5 mg/m³ (ZnO)	10 mg/m³ (ZnO)	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Zinc (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Zinc bromide *(see dust, total and nuisance)*												
Zinc chloride fume	OSHA ID 121	1207	1 mg/m³		960	30	2000	2000	8	15	AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Zinc chloride fume	OSHA ID 125G		1 mg/m³		480	30	2000	2000	4	15	ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Zinc chromate (CR(VI))	OSHA ID 215 (V2)	1439	0.005 mg/m³		960		2000		8		IC-UV	F/CST 225-802 Ω 93 C/HLD 225-1 102
Zinc chromates (as CrO_3)	OSHA ID 215 (V2)	1439	0.005 mg/m³		960		2000			15	IC-UV	F/CST 225-802 Ω 93 C/HLD 225-1 102
Zinc dibutyldithiocarbamate	OSHA PV2065				180		1000		3		HPLC-UV	ST 226-30-16 38
Zinc oxide	NIOSH 7502		5 mg/m³	15 mg/m³ (15 min)	240	30	1000	2000	4	15	XRD	FLT 225-2705 93 CST 225-3-23 97
Zinc oxide (Elements by ICP HNO_3 Digestion))	NIOSH 7303		5 mg/m³	15 mg/m³	0.5-10,000	0.5-10,000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Zinc oxide (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Zinc oxide (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Chemical Hazard	Agency Reference	Chem F File	SAMPLING ∞ Agency Standard TWA (ppm)	Agency Standard CLG/STEL (ppm)	Vol. (liter) TWA Sample Time or Air Volume	Vol. (liter) CLG/STEL Sample Time or Air Volume	Rate (ml/min) TWA Flow/Sampling Rate	Rate (ml/min) CLG/STEL Flow/Sampling Rate	Time TWA (hrs)	Time CLG/STEL (min)	Analytical Method	SKC Collecting Equipment & Page Number
Zinc oxide dust *(see dust, total & respirable)*	OSHA CSI											
Zinc oxide fume	OSHA ID 121		5 mg/m³		960	30	2000	2000	8	15	AA or AES	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Zinc oxide fume	OSHA ID 125G		5 mg/m³		480	30	2000	2000	4	15	ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Zinc oxide fume	OSHA ID 143		5 mg/m³		960	30	2000	2000	8	15	XRD	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Zinc oxide fume (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206		5 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Zinc stearate (particulates, respirable)	NIOSH 0600	1038			375		2500		2.5		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CYC 225-01-02 111 CST 225-3LF 97
Zinc stearate (particulates, total)	NIOSH 0500	1035			120		2000		1		GR	FLT 225-5-37-P 93 C/HLD 225-1 102 CST 225-2LF 97
Zinc stearate (respirable dust)	OSHA CSI		5 mg/m³		912		1900		8		GR	F/CST 225-803 93 C/HLD 225-1 102
Zinc stearate (total dust)	OSHA ID 121		15 mg/m³		960		2000		8		AA or AES	F/CST 225-3-01 90 C/HLD 225-1 102
Zinc stearate (total dust)	OSHA ID 125G		15 mg/m³		480		2000		4		ICP-AES	F/CST 225-3-01 or F/CST 225-3100 or F/CST 225-803 or F/CST 225-8215 93 C/HLD 225-1 102
Zineb	OSHA 107				500		2000		250 min		HPLC-UV	F/CST 225-3-01 90 C/HLD 225-1 102
Ziram	OSHA PV2073				120		1000		2		HPLC-UV	ST 226-30-16 38
Zirconium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		5 mg/m³	10 mg/m³	1-1000		1000-4000		Varies		ICP-AES	SC 225-8517 90 C/HLD 225-1 102
Zirconium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		5 mg/m³	10 mg/m³	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 or F/CST 225-803 ¥ 93 C/HLD 225-1 102
Zirconium (Elements by ICP HNO_3/$HClO_4$ Ashing)	NIOSH 7300	1455	5 mg/m³	10 mg/m³	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01 90 C/HLD 225-1 102
Zirconium (Elements on Wipes)	NIOSH 9102				wipe						ICP-AES	W 225-2414 140 TMP 225-2403 or TMP 225-2415 140
Zirconium compounds (as Zr)	OSHA ID 121		5 mg/m³		960	30	2000	2000	8	15	AA or AES	F/CST 225-803 93 C/HLD 225-1 102

Symbols and Notes

∞ ..... *The sampling parameters shown are suggestions based on the ranges of volume, flow, and time specified in the methods. It is the responsibility of the analyst performing the sampling and analysis to adjust parameters so that the required detection limits can be obtained. It is the responsibility of the user to research published methods to determine validation level and suitability for unique applications.*

C ..... *Ceiling Value*

CSI ..... *OSHA Chemical Sampling Information*

EL ..... *Excursion Limit*

LFC ..... *NIOSH standard: Lowest Feasible Concentration*

LOQ ..... *Limit of Quantitation*

NA SKC ..... *Not available from SKC*

NON ..... *Non-agency reference*

NVM ..... *No validated method*

OEL ..... *U.S. Army Occupational Exposure Limit*

OR-OSHA ..... *Oregon OSHA method and target concentrations*

PV ..... *Provisional Method*

Special order ..... *Because of limited shelf-life, certain sampling media are available only as special order items.*

** ..... *Optional, use filter if particulates are present*

‡ ..... *Filter or tube must be chemically treated before sampling.*

♠ ..... *Modified procedure or sampler*

◊ ..... *Other collection liquids may be more suited to target microorganisms.*

¥ ..... *This method does not digest PVC filters (Cat. No. 225-803) completely.*

Δ ..... *1.0-micron PTFE filter is a NIOSH recommended substitute filter for the 0.8-micron PVC filter originally recommended in NIOSH Method 7904.*

∑ ..... *Use an oxidizer tube if sulfur dioxide is present.*

+ ..... *Sonic flow*

o ..... *Use sorbent tube Cat. No. 226-120 when sampling in atmospheres containing ozone.*

†† ..... *Special order/limited shelf-life; contact SKC*

▼ ..... *The MOPIP Derivatizing Solution, Cat. No. 225-9050, is needed to analyze for monomer/oligimer aerosol.*

Ω ..... *For sampling in Chromium plating operations, PVC filters (225-802) require special treatment after receipt at the laboratory. Alternatively quartz fiber filters (225-1827) treated with NaOH may be used. Refer to the method for details.*

● ..... *NIOSH Method 5524 analysis requires a Filter Funnel which is available from Case Custom Environmental Equipment, Erlanger, KY, Telephone 859-250-8558.*

£ ..... *Collect six samples at 20 minutes each. Use two Cat. No. 226-134 per sample.*

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

References and abbreviations are found on pages 212-213.

Abbreviations

Collecting Equipment

AC	Accu-CAP Cassette Insert
BI	Bioaerosol Impactor
BS	BioSampler
C	Capsule
C/HLD	Filter Cassette and Cyclone Holder
CAN	Canister
CF/CST	Coated Filter in Preloaded Cassette
CH	Capsule Holder
CI	Cascade Impactor
CPC	Constant Pressure Controller
CST	Filter Cassette
CYC	Cyclone
DR	Direct-reading
DRI	Direct-reading Instrument
DRT	Drying Tube
DT	Detector Tube, Color
EPAM	Environmental Particulate Monitor
F/CST	Filter in Preloaded Cassette
FLT	Filter
FLT/CL	Filter Cassette with Cowl
FOAM	Foam
IMP	Impinger
IOM	IOM Particulate Sampler
IS	Impaction Substrate
IT	Impinger Trap
JAR	Jar
MVC	Microvacuum Cassette
PK	Passive Kit
PPI	Parallel Particle Impactor
PS	Passive Sampler
PUF	PUF Cartridge
SB	Sample Bag
SCN	Screen
SCRN	Stainless Steel Screen
SH	Sampling Head
SM TB	Smear Tab
SP	Support Pads
SPC	Spacer
SSC	Stainless Steel Cassette
ST	Sorbent Tube
STC	Spore Trap Cassette
SV	Sorbent Vial
T	Tape
TH	Tube Holder
TK	Test Kit
TMP	Template
VAC	Vac-U-Chamber
VT	ViaTrap for use with BioSampler
W	Wipe

Analytical Methods

AA	Atomic absorption
AAS	Atomic absorption spectroscopy
AED	Atomic emission detection
AES	Atomic emission spectroscopy
CA	Chromotropic acid assay
CD	Conductivity detection
CI	Colorimetric
CLR	Spectrophotometric method or colorimeter
DET TB	Detector tube, color-indicating
DID	Discharge ionization detector
DPCSP	Differential pulse cathodic stripping polarography
DPP	Differential pulse polarography
DR	Direct-reading
DRI	Direct-reading instrument
EAP	Explosives analysis package
ECD	Electron capture detector
ECN	Electrolytic conductivity detector
EGA-TOS	Evolved gas analysis with thermal-optical sensor
ELCHM	Electrochemical detector
F	Flame
FAME	Fatty acid methyl ester
FD	Fluorescence detector
FID	Flame ionization detector
FLAG	Flame arsine generation
FLUOR	Fluorescence
FPD	Flame photometric detector
FPDS	Flame photometric detector sulfur specific
GC	Gas chromatography
GF	Graphite furnace
GR	Gravimetric analysis
HGA	Heated graphite atomizer
HPLC	High-performance liquid chromatography
HRGC	High resolution gas chromatography
HRMS	High resolution mass spectrometry
IC	Ion chromatography
IC-CD	Ion chromatography detector
ICP	Inductively coupled plasma
ICP-DCP	Inductively coupled plasma-directly coupled plasma spectroscopy
IR	Infrared spectrophotometry
IRA	Immunoradiometric assay
ISE	Ion-specific electrode
MAS	Molecular absorption spectometry
MD	Multi-detector
MS	Mass spectrometry
MSD	Mass selective detector
N ACT	Neutron activation
NCD	Nitrogen chemiluminescence detector
NPD	Nitrogen-phosphorus detector
NSD	Nitrogen-specific detector
NVM	No validated method
P FLUOR	Portable fluorescence
P GC	Portable gas chromatography
P IR	Portable infrared spectro-photometry
P IS	Portable infrared spectrophotometer
P VAS	Portable visible absorption spectrophotometry
PASV	Portable anodic stripping voltammetry
PCD	Post-column derivatization
PCM	Phase contrast microscopy
PCR	Polymerase chain-reaction
PDA	Photo diode array detector
PES	Plasma emission spectrometry
PID	Photoionization detector
PLM	Polarized light microscopy
POL	Polarography
SCD	Sulfur chemiluminescence detector
SEM	Scanning electron microscopy
SPOT	Chemical spot test
TCD	Thermal conductivity detector
TD	Thermal desorption
TEA	Thermal energy analyzer
TEM	Transmission electron microscopy
TITRA	Titration
TOA	Thermal-optical analysis
UV	Ultraviolet detector
VAS	Visible absorption spectrophotometry
VIS	Visual
W	Wipe
XRD	X-ray diffraction
XRF	X-ray fluorescence
XRFS	X-ray fluorescence spectroscopy

References

SKC Sampling Guides are abstracted from publications by the National Institute of Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), American Society for Testing and Materials (ASTM) International, the Environmental Protection Agency (EPA), Health and Safety Executive (HSE), and published non-agency methods.

NIOSH, OSHA, EPA, HSE, and ASTM International Agency References

NIOSH Manual of Analytical Methods, Fifth Edition, 2016

OSHA Analytical Methods Manual, published 1985 with updates through 1994; method number only for organics, method number with ID prefix for inorganics

OSHA Chemical Sampling Information (CSI) on the OSHA website, previously the OSHA Chemical Information Manual (CIM), a resource for on-site sampling used by OSHA compliance officers. Chemical entries are listed alphabetically. *Go to www.osha.gov and search on "chemical sampling information."*

EPA Compendium of Methods, Toxic Organic (TO) Jan. 1997, Inorganic (IO) Feb. 1997, Indoor Air (IP) Apr. 1990

Methods for Determination of Hazardous Substances (MDHS) is a series published by Health and Safety Executive (HSE) Books in the U.K. that describes procedures for the measurement of personal exposure to contaminants in air. *Go to www.hse.gov.uk/pubns/mdhs/.*

ASTM International, Annual Book of Standards, Section 11 - Water and Environmental Technology, Volume 11.03. Occupational Health & Safety; Protective Clothing

Non-agency References

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46. ***Oil Mist Aerosol;*** *Am. Ind. Hyg. Assoc. J., Vol. 57 (Dec. 1996), pp. 1149-1152*
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Tech Tips

- *Access online SKC Sampling Guides for the most up-to-date sampling information. Visit www.skcinc.com and click on Sampling Guides on the left side navigation bar.*
- *Get fast access to agency and organization websites from www.skcinc.com by clicking Links on the left side navigation bar.*

Air Sampling Terms

8-Hour Time-weighted Average (TWA)

The average full-shift exposure level calculated by weighting concentrations throughout a workday with respect to time. The denominator "eight hours" is used because OSHA standards are based on an 8-hour workday. OSHA and ACGIH use the following formula to calculate TWA:

$$TWA = \frac{C1T1 + C2T2 + C3T3 \ldots CnTn}{8\ hrs}$$

TWA = Time-weighted average concentrations in ppm or mg/m³
C = Concentration of contaminant during an incremental exposure time
T = Time — incremental exposure time

Absorption

The penetration of airborne chemicals into a collection medium, such as impinger fluid, where the chemicals will dissolve or react chemically

Active Sampling

The collection of airborne contaminants by means of a forced movement of air by a sample pump through appropriate collection media

Adsorption

The collection of gases and vapors onto the surface of a collection medium such as the sorbent material in sorbent tubes

Aerodynamic Diameter

A description of the shapes and densities of dust particles; the diameter of a unit-density sphere having the same settling velocity as the particle in question

Aerosol

Microscopic liquid or solid particles dispersed into the air

Air Volume

The total amount of air passed through a sampling medium; determined by multiplying flow rate in ml/min or L/min by the sample time in minutes

Ambient Air

Air that is external to buildings and accessible to the general public

Back Pressure

The pressure drop, i.e., resistance to flow created by the collected sample or the sample media itself

Bioaerosols

Airborne particles, molecules, or volatile compounds ranging in size from 100 microns to 0.01 micron that are living, contain living organisms, or were released from living organisms

Blank Sample

A representative sampling medium sent as a control with the actual sample to a lab. Blanks are subjected to the same procedures as samples, except no air is drawn through them.

Ceiling Value

The concentration that should not be exceeded during any part of the work day

Closed-face Sampling

Filter sampling using a two or three-piece cassette with the cassette inlet section in place and the sealing plugs removed

Constant Flow

A feature available on air sample pumps that allows the pump to automatically compensate for flow restrictions and variations, ensuring the flow rate is held constant throughout the sampling period

50% Cut-point

Describes the performance of cyclones and other particle size-selective devices. For personal sampling, the 50% cut-point is the size of the dust that the device collects with 50% efficiency.

Cyclone

A sampling device used to collect and separate respirable particulate mass. The cyclone functions as a centrifuge; the rapid circulation of air separates particles according to size.

Desorption Efficiency

A measure of how much analyte can be recovered from the sorbent tube

Dust

Solid particles rendered airborne during the crushing or grinding of hard, rock-like materials

Fugitive Emissions

Emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening

Fume

Solid airborne particles formed by the vaporization of solid materials, oxidation of the vapor, and condensation of the oxide

Gas

A state of matter consisting of molecules in constant random motion that is neither a defined volume nor shape and remains in this state at normal temperature (25 C) and pressure (1 atmosphere)

Grab Sampling

The direct collection of an air-contaminant mixture into a device such as a sample bag or detector tube over a brief period

Gravimetric Analysis

Sample analysis of filters by determining sample weight

High Flow Sampling

The collection of airborne contaminants (typically particulates) at flow rates greater than 1000 ml/min

Indoor Environmental Quality

The impacts of the indoor environment, including but not limited to air quality, lighting, and thermal comfort, on occupant health, comfort, and performance

Integrated Sampling

The collection of air contaminants over an extended period

LEED

Leadership in Energy and Environmental Design (LEED) is a program that provides building owners/operators with a framework for identifying and implementing practical and measurable green building design, construction, operation, and maintenance solutions.

Low Flow Sampling

The sampling of airborne contaminants (typically gases and vapors) at flow rates less than 500 ml/min

Matched-weight Filters

Two filters that match in weight; the top filter collects contaminants, the bottom filter serves as a control. After sampling, both filters are weighed and the difference between weights is the sample weight.

Mist

Droplets rendered airborne by rubbing, boiling, splashing, or otherwise agitating a liquid

Nanoparticle

Intentionally manufactured particles with at least one dimension in the range of 1 to 100 nanometers (nm)

Near-roadway Monitoring

An EPA network of monitors established near major roadways to monitor/assess NO_2 mobile source emissions from vehicles in areas where people live, work, play, attend school, and commute. The network also provides the ability to collocate monitors to assess mobile contribution to particulate matter (PM10, 2.5, and ultrafine) exposure.

Air Sampling Terms

Open-face Sampling
Filter sampling using a three-piece cassette with the cassette inlet section removed; this is typically used for sampling asbestos and other fibers

Particulate Matter (PM)
A mix of solid particles and liquid droplets suspended in air. Origin, shape, size, and composition vary. Standards exist for PM10 (diameter ≤ 10 µm) and PM2.5 (diameter ≤ 2.5 µm) because they are easily trapped in the lungs and are most likely to cause adverse health effects. Additional particles of concern are PM1.0 (diameter ≤ 1 µm) and PM Coarse (diameter < 10 µm and > 2.5 µm).

Passive (Diffusive) Samplers

Small air samplers or "badges" that collect airborne gases or vapors without the use of a pump. Chemicals diffuse through a diffusion barrier onto a sorbing medium inside the sampler at a fixed rate that can be scientifically determined.

Preloaded Filter Cassettes
Ready-to-use cassettes that comprise a cassette, filter, support pad, and sealing plugs

Preweighed Filters
Individual filters that are weighed to within 5 decimals before they are loaded into a cassette

Sampling Parameters — Rate, Time, and Volume
Consult specific methods to determine the range given for each parameter. In the SKC Sampling Guide under "Sampling," some chemicals have two different recommendations for sampling rates and times; the sampling rate for an 8-hour sample is listed with the shorter period rate in parentheses. The choice of rate depends on sampling requirements.

Sampling Train
The entire sampling system: sampling medium (sorbent tube, filter, cyclone, IOM, etc.) connected to a sample pump with flexible tubing

Short-term Exposure Limit (STEL)
A 15-minute time-weighted average exposure that should not be exceeded during any part of the workday

Smoke
Particles resulting from the incomplete combustion of organic matter and consisting predominantly of carbons and oxides of carbon

Solvent Desorption
The process of extracting adsorbed chemicals from sorbent material through the use of solvents

Source Emissions
Particulate or gaseous emissions generated from a stationary source, such as a stack

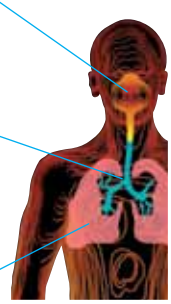
Thermal Desorption
The process of extracting adsorbed chemicals from sorbent material through the use of heat

TLV-TWA
An ACGIH-defined concentration level in air, typically for inhalation or skin exposure, to which it is believed a worker can be exposed day after day (8 hours per day, 40 hours per work week) for a working lifetime without adverse health effects

Traditional Workplace Exposure Guidelines
- *Total Dust*
  Dust that is collected using closed-face 37-mm cassettes fitted with suitable filters
- *Respirable Dust*
  Particles that penetrate to the gas exchange regions of the lung; collected using a filter cassette with suitable filter and a cyclone

Ultrafine Particulate Matter
Ultrafine particles less than 100 nanometers (0.1 micron) result from combustion, friction, or natural processes in the air or water. While nano-sized, ultrafine particles are not nanoparticles because they are neither intentionally manufactured nor of a constant composition or size.

Updated Workplace Exposure Guidelines
The concept of size-selective sampling of industrial aerosol is based on the measurement of particles associated with a specific human health effect, i.e., how deeply particles penetrate into the respiratory tract. ACGIH recommends that particle size-selective threshold limit values (TLVs) be expressed in three forms:



- ***Inhalable*** *Particulate Mass (100-µm 50% cut-point), hazardous when deposited anywhere in the respiratory tract*
- ***Thoracic*** *Particulate Mass (10-µm 50% cut-point), hazardous when deposited anywhere in the lung airways and the gas exchange regions*
- ***Respirable*** *Particulate Mass (4-µm 50% cut-point), hazardous when deposited in the gas exchange regions of the lungs*

Vapor
The gaseous form of a substance that is typically a liquid at normal temperature (25 C) and pressure (1 atm)

Vapor Intrusion
Volatile chemicals in buried wastes and/or contaminated groundwater emit vapors that migrate through subsurface soils into indoor air spaces of overlying buildings.

Whole Air Sampling
The collection of air into a sealable container such as a stainless steel canister or sampling bag for subsequent analysis

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