

Chemical Guide for Carbon-Filtered Enclosures



LABCONCO®

Chemical Guide for Carbon-Filtered Enclosures

CAUTION

THIS GUIDE SHOULD ONLY BE USED AS SUPPORTING REFERENCE IN THE DETERMINATION OF A CHEMICAL'S SAFE USE WITH A LABCONCO CARBON-FILTERED ENCLOSURE. VARIABLES IN CONCENTRATION, TEMPERATURES, PHASES AND REACTIONS WITH OTHER CHEMICALS CONTRIBUTE TO UNCERTAINTY. **THOROUGH ANALYSIS BY YOUR ON-SITE TRAINED CHEMICAL SAFETY OFFICER MUST BE DONE FOR EACH APPLICATION.**

This guide is not an approved list of chemicals. You must request a Chemical Assessment to receive Labconco's recommendations. You and your on-site safety officer are responsible for determining the appropriate chemicals, enclosure and filters to ensure your safety. The data in this guide is compiled from public sources such as chemicals listed in the National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards and the OSHA General Industry Air Contaminants Standard. It may contain inaccurate or outdated information. Visit labconco.com/chemicalguide for an online version of this guide.

"Exposure Limits" documented in this guide are for reference only. Consult the latest regulatory limits that apply to your location and industry.

Labconco manufactures Paramount® Ductless (Carbon-Filtered) Hoods, Protector® Echo™ and Airo™ Filtered Fume Hoods, Fume Adsorbers and FilterMate™ Portable Exhausters for the treatment of chemical fumes. You or your employer must establish a formal chemical hygiene program where Labconco chemical filtration equipment is used with hazardous chemicals. The program should include education, training and maintenance to ensure the proper application, use and performance of the equipment. Appropriate personal protection clothing, gloves and eyewear along with proper handling of chemicals in the enclosure or fume hood are the responsibility of you and your employer.

DUCTLESS ENCLOSURES WILL NOT PROTECT AGAINST ALL CHEMICALS IN THE WORK ENVIRONMENT. CHEMICAL FILTRATION EQUIPMENT SHOULD ONLY BE USED BY THOSE WHO HAVE FULLY REVIEWED THE USER'S MANUAL AND UNDERSTAND THE SPECIFIED LIMITATIONS. **FAILURE TO HEED WARNINGS MAY RESULT IN SICKNESS OR DEATH.**

Chemical Guide for Carbon-Filtered Enclosures

How to use the guide

This guide is designed to provide chemical specific data to assist in determining the suitability of ductless filtration for your application. It is not an approved list of chemicals, but a tool to help determine suitability. You and your on-site trained chemical safety officer must ultimately determine which chemicals and what quantities are appropriate to ensure your personal safety.

The following information, when applicable, is provided for each chemical.

Chemical Name

From the Occupational Safety and Health Administration (OSHA) General Industry Air Contaminants Standard and National Institute for Occupational Safety and Health (NIOSH) Pocket Guide

CAS#

The Chemical Abstracts Service (CAS) registry number from CAS, a division of the American Chemical Society

Rating

A general guideline for using the chemical in a filtered enclosure. Every rating, except when a ducted hood is required, contains a link to the Labconco's online Chemical Assessment Form. You must complete the Chemical Assessment Form before selecting a filter for a Labconco carbon-filtered enclosure or filtered fume hood.

Filter Type

Filter Type shows carbon and/or HEPA appropriate for the chemical. Reference your Labconco enclosure's User's Manual for specific filter information. A link is provided to the corresponding filter page on Labconco.com.

Filter Capacity Percentage

Filter Capacity value is the theoretical adsorption capacity of the filter provided by the activated carbon manufacturers. It is listed as a percentage of the filter weight at a 10 ppm evaporative concentration. Concentrations higher than 10 ppm have higher filter capacities and concentrations lower than 10ppm have lower filter capacities.

Paramount Nominal Width	Weight of Carbon in Filters	Theoretical Weight of Toluene Adsorbed
2'	15 lbs. (7 kg)	3 lbs. (1 kg)
3'	30 lbs. (14 kg)	6 lbs. (3 kg)
4'	45 lbs. (20 kg)	9 lbs. (4 kg)
5'	45 lbs. (20 kg)	9 lbs. (4 kg)
6'	60 lbs. (27 kg)	9 lbs. (4 kg)

Humidity, temperature, inlet concentration and the presence of other chemicals are just a few of the factors that influence carbon adsorption and thus the filter capacity of the filters. These values presented are theoretical and can vary depending on your application.

To determine the specific filter life of a chemical filter, refer to your Labconco User's Manual.

Chemical Guide for Carbon-Filtered Enclosures

NIOSH Exposure Limit

The National Institute for Occupational Safety and Health (NIOSH) provides recommended exposure limits (RELs) in its NIOSH Pocket Guide To Chemical Hazards .

TWA indicates a time-weighted average (TWA) concentration for up to a 10-hour workday during a 40-hour week.

“ST” preceding the value represents a short-term exposure limit (STEL). STEL is a 15-minute TWA exposure that should not be exceeded at any time during a workday, unless noted otherwise.

“C” preceding the value represents a ceiling REL. Unless noted otherwise, the ceiling value should not be exceeded at any time.

“Ca” preceding the value represents a substance NIOSH considers a potential occupational carcinogen.

OSHA Exposure Limit

The OSHA permissible exposure limits are from the OSHA General Industry Air Contaminants Standard 329 CFR 1910.1000) that were made effective July 1, 1993, and which are enforced by OSHA at the date of this publication.

TWA concentrations for OSHA PELs must not be exceeded during any 8-hour work shift of a 40-hour workweek.

“ST” preceding the value represents an STEL. STEL is a 15-minute TWA exposure that should not

be exceeded at any time during a workday, unless noted otherwise.

“C” preceding the value represents an OSHA ceiling concentration that should not be exceeded during any time of the workday. If instantaneous monitoring is not feasible, the ceiling must be assessed as a 15-minute TWA exposure.

Odor Threshold Value in ppm

Odor Threshold is the lowest concentration, in parts per million (ppm), of a chemical in the air that is detectable by smell. Odor threshold should only be regarded as an estimate. Odor thresholds are commonly determined under controlled laboratory conditions using people trained in odor recognition. Since odor thresholds vary widely from person to person, you should not depend solely on odor for determining filter saturation. Some solvents produce olfactory fatigue—rapid loss of ability to smell the odor over a period of time.

Warnings

This section lists specific circumstances that should be acknowledged and considered before using the chemical in a Labconco carbon-filtered or filtered fume hood.

- **Carcinogen.** Chemical is known or suspected to be a carcinogen
- **Exposure Limit Not Established.** Exposure limits have not been established by NIOSH or OSHA
- **Low Odor Threshold.** Odor threshold is less than 1ppm. Since odor is so strong, extremely low concentrations in the room may be objectionable

Chemical Guide for Carbon-Filtered Enclosures

- **Very Low Odor Threshold Warning.** Less than 0.1 ppm
- **Poor Odor Warning.** Odor threshold is higher than the exposure limit. Exposure limit is exceeded before the chemical can be detected by smell.
- **Filter Capacity Warning.** Less than 5%
- **Low Filter Capacity Warning.** Less than 3%
- **Short Filter Life.** Filter capacity of 1% or less
- **Unknown Odor Threshold.** Odor threshold has not been established for the chemical
- **Unknown Filter Effectiveness.** Filter capacity is unknown and the chemical should only be used in quantities below the exposure limit

Notes

Additional pertinent comments or information are listed here.

Working with vaporous chemicals

Follow these guidelines to minimize your risk.

Criteria for suitability

- Is the chemical stable and safe to handle at operating conditions? (Flammability, explosiveness, reactivity, etc.) Consult your chemical safety officer
- Has the chemical been shown to be adsorbed or neutralized effectively by the carbon media? Consult published data or Labconco
- Are the exposure limits known? Given the amount of chemical to be released within the enclosure, is it reasonably safe (with a safety factor) if the filter experiences breakthrough during a chemical operation? Review with your chemical safety officer

Minimizing risk

- Work with the smallest amounts of chemical possible and prevent unnecessary evaporation by keeping containers closed and sealed
- Always work with concentrations below the exposure limit for the chemical
- Know your filter condition. Monitor the exhaust with Paramount's Safety-First™ Vapor Sensor, detection tubes and your senses. If any of those three indicate potential breakthrough of the filter, replace the filter at that time

Do not assume there is a period of time where the filter is partially effective. Carbon filters are to be replaced at the first sign of breakthrough or saturation

- The air exchanges within the room must exceed the exhaust output of the enclosure. Failure to ensure this condition can lead to an accumulation of chemical vapors in the event of an unmonitored breakthrough. See the Paramount example below

Paramount Nominal Width	Sash Opening Height	Airflow (CFM) at 80 fpm
2'	9.4" (23.9 cm)	115
3'	9.4" (23.9 cm)	175
3'	12.0" (30.5 cm)	230
4'	9.4" (23.9 cm)	235
4'	12.0" (30.5 cm)	305
5'	9.4" (23.9 cm)	295
6'	12.0" (30.5 cm)	465

Chemical Guide for Carbon-Filtered Enclosures

Activated Carbon Filter Adsorption Capacities

A common misunderstanding regarding capacity of activated carbon is that it adsorbs a predictable fixed weight of chemicals. Chemical adsorption is a result of the chemical concentration in the airstream attempting to reach equilibrium with the carbon media. The ultimate capacity of the activated carbon will increase significantly as the concentration goes higher. See the example below.

Percent-by-weight theoretical adsorption for Chloroform (CHCl ₃)	Concentration
10.2	@ 10 ppm
20.1	@ 100 ppm
35.5	@ 1000 ppm

Based on physical and thermodynamic properties, mathematical equations have been developed to predict the adsorption of volatile organic

compounds, (VOCs). The “Filter Capacity” provided in this guide for organic vapor filters are formula-derived values for chemical concentrations in 10 ppm airstream. Use these capacity values as a relative measure of the filter effectiveness with the understanding that exact weight will vary with temperature, humidity, distribution across the media and chemical combinations.

Working with mixtures

When working with mixtures, the filter capacity is typically reduced an additional 25-40%. Typically, the lower capacity chemical is the first chemical to be released from the carbon filter as its bond to the activated carbon is the weakest. Keep in mind this 25-40 percent reduction in filter capacity when working with mixtures.

Abietic acid (CAS# 514-10-3)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Exposure Limit Not Established; Unknown Odor Threshold**Synonyms** Abietinic acid, sylvic acid, 13-isopropylpodocarpa-7,13-dien-15-oic acid**Notes** HEPA filters are 99.99% rated**Acenaphthene (CAS# 83-32-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** Ethylene Naphthalene**Acesulfame-K (CAS# 55589-62-3)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** 6-Methyl-1,2,3-oxathiazin-4(3H)-one 2,2-dioxide potassium salt; Acesulfame K; Sunett; Potassium acesulfame; Sweet One**Notes** The substance may be toxic to kidneys, liver. Repeated or prolonged exposure to the substance can produce target organs damage.**Acetaldehyde (CAS# 75-07-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Capacity Percentage** 0.3%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 200 ppm (360 mg/m3)**Odor Threshold Value in ppm** 0.186**Warnings** Not Recommended: Filter Capacity <1% - Short Filter Life. Carcinogen; Odor Threshold < 1ppm**Synonyms** Acetic aldehyde, Ethanal, Ethyl aldehyde**Notes** Closed containers exposed to heat may explode. Boiling point 69Â°F.**Acetanilide (CAS# 103-84-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**Warnings** Unknown Exposure Limit, Unknown Odor Threshold.**Synonyms** N-Phenylacetamide**Acetic acid (CAS# 64-19-7)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 3.7%**NIOSH Exposure Limit** 10 ppm (25 mg/m3) ST 15 ppm (37 mg/m3)**OSHA Exposure Limit** 10 ppm (25 mg/m3)**Odor Threshold Value in ppm** 0.016**Warnings** Odor Threshold < 0.1 ppm. Filter Capacity <5%**Synonyms** Acetic acid (aqueous), Ethanoic acid, Glacial acetic acid (pure compound), Methanecarboxylic acid [Note: Can be found in concentrations of 5-8% in vinegar.]**Acetic anhydride (CAS# 108-24-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 22.3%**NIOSH Exposure Limit** C 5 ppm (20 mg/m3)**OSHA Exposure Limit** 5 ppm (20 mg/m3)**Odor Threshold Value in ppm** 0.029**Warnings** Odor Threshold < 0.1 ppm**Synonyms** Acetic acid anhydride, Acetic oxide, Acetyl oxide, Ethanoic anhydride**Acetone (CAS# 67-64-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 2%**NIOSH Exposure Limit** 250 ppm (590 mg/m3)**OSHA Exposure Limit** 1000 ppm (2400 mg/m3)**Odor Threshold Value in ppm** 4.58**Warnings** Filter Capacity <3% - Low Filter Capacity**Synonyms** Dimethyl ketone, Ketone propane, 2-Propanone**Acetone cyanohydrin (CAS# 75-86-5)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.001%**NIOSH Exposure Limit** C 1 ppm (4 mg/m3)[15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 3**Warnings** Not Recommended: Filter Capacity <1% - Short Filter Life. Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Cyanohydrin-2-propanone, 2-Cyano-2-propanol, alpha-Hydroxyisobutyronitrile, 2-Hydroxy-2-methyl-propionitrile, 2-Methylactonitrile**Notes** Decomposes to acetone and hydrogen cyanide (HCN) at room temperatures. HCN has an extremely short filter life.**Acetonitrile (CAS# 75-05-8)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.7%**NIOSH Exposure Limit** 20 ppm (34 mg/m3)**OSHA Exposure Limit** 40 ppm (70 mg/m3)**Odor Threshold Value in ppm** 97.7**Warnings** Not Recommended: Filter Capacity <1% - Short Filter Life. Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Cyanomethane, Ethyl nitrile, Methyl cyanide [Note: Forms cyanide in the body.]**Acetophenone (CAS# 98-86-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.363**Warnings** Exposure Limit Not Established; Unknown Filter Effectiveness; Odor Threshold < 1ppm**Synonyms** Methyl phenyl ketone, Acetyl benzene, Benzoyl methide, Hyponone, 1-Phenylethanone, acetylbenzene,phenyl methyl ketone, MPK, PMK**Notes** Requires both filters. May exist in both vapor and particulate phases.**2-Acetylaminofluorene (CAS# 53-96-3)****Rating** Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Ca**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Exposure Limit Not Established; Unknown Odor Threshold**Synonyms** AAF, 2-AAF, 2-Acetaminofluorene, N-Acetyl-2-aminofluorene, FAA, 2-FAA, 2-Fluorenylacetamide

Acetylene (CAS# 74-86-2)**Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.035%**NIOSH Exposure Limit** C 2500 ppm (2662 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 565**Warnings** Not Recommended: Filter Capacity <1% - Short Filter Life**Synonyms** Ethine, Ethyne [Note: A compressed gas used in the welding & cutting of metals.]**Notes****Acetylene tetrabromide (CAS# 79-27-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 36%**NIOSH Exposure Limit** Not Established (NIOSH questioned TWA 1 ppm)**OSHA Exposure Limit** 1 ppm (4 mg/m3)**Odor Threshold Value in ppm** 1**Warnings** Odor Threshold = Exposure Limit - Poor Odor Warning, Exposure Limit < 1ppm (5 mg/m3)**Synonyms** Symmetrical tetrabromoethane; TBE; Tetrabromoacetylene; Tetrabromoethane; 1,1,2,2-Tetrabromoethane**Acetylsalicylic acid (CAS# 50-78-2)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** o-Acetoxybenzoic acid, 2-Acetoxybenzoic acid, Aspirin**Notes** Use Below TWA Perform Annual HEPA filter leak tests.**Acrolein (CAS# 107-02-8)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 1.5%**NIOSH Exposure Limit** 0.1 ppm (0.25 mg/m3) ST 0.3 ppm (0.8 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.25 mg/m3)**Odor Threshold Value in ppm** 0.174**Warnings** Not Recommended: Odor Threshold > Exposure Limit - Poor Odor Warning; Odor Threshold < 1ppm; OEL < 1ppm (5 mg/m3). Filter Capacity > 3% - Low Filter Capacity.**Synonyms** Acraldehyde, Acrylaldehyde, Acrylic aldehyde, Allyl aldehyde, Propenal, 2-Propenal**Notes** Highly toxic. Use under exposure limit.**Acrylamide (CAS# 79-06-1)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 37%**NIOSH Exposure Limit** Ca TWA 0.03 mg/m3 [skin]**OSHA Exposure Limit** 0.3 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5 mg/m3).**Synonyms** Acrylamide monomer, Acrylic amide, Propenamide, 2-Propenamide**Notes** Requires both filters. White odorless solid but may exist in both particulate and vapor phase.**Acrylic acid (CAS# 79-10-7)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 14.8%**NIOSH Exposure Limit** 2 ppm (6 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.4**Warnings** Odor Threshold < 1ppm (5mg/m3)**Synonyms** Acroleic acid, Aqueous acrylic acid (technical grade is 94%), Ethylenecarboxylic acid, Glacial acrylic acid (98% in aqueous solution), 2-Propenoic acid**Acrylonitrile (CAS# 107-13-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 3.5%**NIOSH Exposure Limit** Ca TWA 1 ppm C 10 ppm [15-minute] [skin]**OSHA Exposure Limit** 2 ppm C 10 ppm [15-minute] [skin]**Odor Threshold Value in ppm** 16.6**Warnings** Filter Capacity < 5%; Odor Threshold > Exposure Limit - Poor Odor Warning.**Synonyms** Acrylonitrile monomer, AN, Cyanoethylene, Propenenitrile, 2-Propenenitrile, VCN, Vinyl cyanide**Adipic acid (CAS# 124-04-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Hexanedioic acid; 1,4-Butane Dicarboxylic Acid**Adiponitrile (CAS# 111-69-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 53.7%**NIOSH Exposure Limit** 4 ppm (18 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** 1,4-Dicyanobutane; Hexanedinitrile; Tetramethylene cyanide**Aircraft fuel (CAS# 8008-20-6)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Possible carcinogen.**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.**Synonyms** Jet Fuel, Kerosene, Jet A (212110), Jet A-1 (212212), Jet A-1 (50) (212211), JP-8 (212130) Petroleum Distillate Fuel, Kerosene**Notes** Highly volatile and potentially explosive.**Aldrin (CAS# 309-00-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.25 mg/m3 [skin]**OSHA Exposure Limit** 0.25 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness.**Synonyms** 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-endo-1,4-exo-5,8-dimethanonaphthalene; HHDN; Octalene**Notes** Requires both filters. Solid with mild odor.**Aliphatic hydrocarbons (CAS#)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** 100ppm**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Notes** ACGIH TLV 400ppm, High Vapor ma cause respiratory tract irritation, headache, dizziness, anesthesia, drowsiness, unconsciousness or death.**This guide is not an approved list of chemicals**

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Allyl alcohol (CAS# 107-18-6)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 5.9%**NIOSH Exposure Limit** 2 ppm (5 mg/m3) ST 4 ppm (10 mg/m3) [skin]**OSHA Exposure Limit** 2 ppm (5 mg/m3) [skin]**Odor Threshold Value in ppm** 0.47**Warnings** Odor Threshold < 1ppm (5mg/m3)**Synonyms** 1,4-Dicyanobutane; Hexanedinitrile; Tetramethylene cyanide

Allyl chloride (CAS# 107-05-1)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 10.2%**NIOSH Exposure Limit** 1 ppm (3 mg/m3) ST 2 ppm (6 mg/m3)**OSHA Exposure Limit** 1 ppm (3 mg/m3)**Odor Threshold Value in ppm** 0.489**Synonyms** 3-Chloropropene, 1-Chloro-2-propene, 3-Chloropropylene

Allyl glycidyl ether (CAS# 106-92-3)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 18%**NIOSH Exposure Limit** 5 ppm (22 mg/m3) ST 10 ppm (44 mg/m3) [skin]**OSHA Exposure Limit** C 10 ppm (45 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** AGE; 1-Allyloxy-2,3-epoxypropane; Glycidyl allyl ether; [(2-Propenyloxy)methyl] oxirane**Notes** Liquid with pleasant odor.

Allyl propyl disulfide (CAS# 2179-59-1)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 2 ppm (12 mg/m3) ST 3 ppm (18 mg/m3)**OSHA Exposure Limit** 2 ppm (12 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 4,5-Dithia-1-octene; Onion oil; 2-Propenyl propyl disulfide**Notes** Liquid with onion-like odor. Use below exposure limit.

alpha-Alumina (CAS# 1344-28-1)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning.**Synonyms** Alumina, Aluminum oxide, Aluminum trioxide [Note: alpha-Alumina is the main component of technical grade alumina. Corundum is natural Al₂O₃. Emery is an impure crystalline variety of Al₂O₃.]**Notes** Odorless.

Aluminum (CAS# 7429-90-5)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning.**Synonyms** Aluminium, Aluminum metal, Aluminum, Elemental aluminum**Notes** Odorless metal.

Aluminum (pyro powders and welding fumes, as Al) (CAS#)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning.**Notes** Odorless.

Aluminum (soluble salts and alkyls, as Al) (CAS#)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Notes** Odorless.

Aluminum Ammonium Sulfate (CAS# 7784-26-1)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**OSHA Exposure Limit** 2 mg/m3**Warnings** Unknown Odor Threshold**Synonyms** Ammonium Aluminum Sulfate hydrate; Ammonia alum; Ammonium alum; Alum ammonium; Ammonium Aluminum Alum; Aluminum Ammonium Alum

4-Aminodiphenyl (CAS# 92-67-1)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** OSHA Regulated Carcinogens**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Exposure Limit Not Established; Unknown Odor Threshold.**Synonyms** 4-Aminobiphenyl, p-Aminobiphenyl, p-Aminodiphenyl, 4-Phenylaniline**Notes** Colorless crystal with a floral odor.

3-Aminophthalhydrazide (CAS# 20666-12-0)

Rating Chemical Assessment Required**Filter Type** HEPA**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit, Unknown Filter Effectiveness**Synonyms** Luminol Monosodium Salt; Sodium luminol

3-Aminopropyl triethoxysilane- (CAS# 919-30-2)

Rating Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit, Unknown Filter Effectiveness May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.**Synonyms** 3-Triethoxysilylpropylamine APTES Dow Corning product Z-6011**Notes** May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

2-Aminopyridine (CAS# 504-29-0)**Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 13%**NIOSH Exposure Limit** 0.5 ppm (2 mg/m3)**OSHA Exposure Limit** 0.5 ppm (2 mg/m3)**Odor Threshold Value in ppm** Toxic concentrations may be achieved in air without an odor warning**Warnings** OEL < 1ppm (5mg/m3); Odor Threshold > Exposure Limit - Poor Odor Warning.**Synonyms** Alpha-Aminopyridine, alpha-Pyridylamine**Notes** Requires both filters.**Amitrole (CAS# 61-82-5)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.2 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.37-1.24 mg/m3**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3).**Synonyms** Aminotriazole; 3-Aminotriazole; 2-Amino-1,3,4-triazole; 3-Amino-1,2,4-triazole**Notes** Requires both filters. Colorless white odorless crystalline.**Ammonia (CAS# 7664-41-7)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Ammonia-Amine**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** 25 ppm (18 mg/m3) ST 35 ppm (27 mg/m3)**OSHA Exposure Limit** 50 ppm (35 mg/m3)**Odor Threshold Value in ppm** 5.0 ppm**Synonyms** Anhydrous ammonia, Aqua ammonia, Aqueous ammonia [Note: Often used in an aqueous solution.]**Ammonium acetate (CAS# 631-61-8)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Warnings** Exposure Limit Not Established; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Acetic acid; ammonium salt**Notes** Slight vinegar odor, white crystals.**Ammonium bifluoride (CAS# 1341-49-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**OSHA Exposure Limit** 2.5 mg/m3**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Ammonium hydrogen fluoride; ammonium difluoride; acid ammonium fluoride**Notes** Use under TWA.**Ammonium carbonate (CAS# 506-87-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Ammonia-Amine | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 50ppm**Odor Threshold Value in ppm** < 5 ppm (as ammonia gas)**Warnings** Unknown Filter Effectiveness (for carbon filter)**Synonyms** Carbonic Acid, Diammonium Salt; Diammonium Carbonate; Crystal Ammonia**Notes** Unknown Filter Effectiveness (for carbon filter)**Ammonium chloride fume (CAS# 12125-02-9)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Ammonia-Amine | Particulate**NIOSH Exposure Limit** 10 mg/m3 ST 20 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Ammonium chloride, Ammonium muriate fume, Sal ammoniac fume**Notes** Warning: Unknown Odor Threshold; Unknown Filter Effectiveness**Ammonium heptamolybdate tetrahydrate (CAS# 12027-67-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** Hexaammonium molybdate**Ammonium hydroxide (CAS# 1336-21-6)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Ammonia-Amine**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** 25ppm**OSHA Exposure Limit** 50ppm**Odor Threshold Value in ppm** 1.48**Synonyms** Ammonium hydroxide solutions; ammonia aqueous; ammonia solutions**Ammonium metavanadate (CAS# 7803-55-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.05 (mg(V2O5)/m3)**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** AMV, Ammonium Vanadate, Vanadic Acid, Ammonium Salt**Notes** Use under TWA.**Ammonium peroxydisulfate (CAS# 7727-54-0)****Rating** Generally Compatible**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Exposure Limit Not Established; Odor Threshold < Exposure Limit - Poor Odor Warning**Synonyms** Ammonium persulfate, Ammonium persulfate [UN1444] [Oxidizer], Ammonium persulfate [UN1444] [Oxidizer], CCRIS 1430, Diammonium peroxodisulphate, Diammonium peroxydisulfate, Diammonium peroxydisulphate, Diammonium persulfate, diammonium sulfato sulfate, diammonium sulfonatoxy sulfate, diammonium [(sulfonatoperoxy)sulfonyl]oxidanide, diazanium sulfonatoxy sulfate, EINECS 231-786-5, H8N2O8S2, LS-2430, PEROXYDISULFURIC ACID, DIAMMONIUM SALT, Peroxydisulfuric acid (((HO)S(O)2)2O2), diammonium salt, Persulfate d'ammonium [French], UN1444**Notes** Odorless.**Ammonium sulfamate (CAS# 7773-06-0)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Ammonia-Amine | Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Ammate herbicide, Ammonium amidosulfonate, AMS, Monoammonium salt of sulfamate acid, Sulfamate**Notes** Warning: Unknown Odor Threshold; Unknown Filter Effectiveness**This guide is not an approved list of chemicals**

The Chemical Guide is only a reference and may contain inaccurate or outdated information. You must request a Chemical Assessment to receive Labconco's recommendations. You and your on-site safety officer are responsible for determining the appropriate chemicals, enclosure and filters to ensure your safety. (<https://www.labconco.com/services/request-chemical-assessment>)

Ammonium thiosulfate (CAS# 7783-18-8)

Rating Chemical Assessment Required**Filter Type** Carbon | HEPA**Filter Application** Ammonia-Amine | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** Thio-sul; Diammonium Thiosulfate; Ammonium Hyposulfite**Notes** Not recommended for ductless enclosures.

n-Amyl acetate (CAS# 628-63-7)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 28.5%**NIOSH Exposure Limit** 100 ppm (525 mg/m3)**OSHA Exposure Limit** 100 ppm (525 mg/m3)**Odor Threshold Value in ppm** 0.051**Warnings** Odor Threshold < 0.1ppm**Synonyms** Amyl acetic ester, Amyl acetic ether, 1-Pentanol acetate, Pentyl ester of acetic acid, Primary amyl acetate**Notes** Requires both filters. Possible particulate in high humidity.

sec-Amyl acetate (CAS# 626-38-0)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 31.3%**NIOSH Exposure Limit** 125 ppm (650 mg/m3)**OSHA Exposure Limit** 125 ppm (650 mg/m3)**Odor Threshold Value in ppm** 0.002-0.8**Warnings** Odor Threshold < 0.1ppm**Synonyms** 1-Methylbutyl acetate, 2-Pentanol acetate, 2-Pentyl ester of acetic acid**Notes** Requires both filters. Possible particulate in high humidity.

Aniline (and homologs) (CAS# 62-53-3)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 5 ppm (19 mg/m3) [skin]**Odor Threshold Value in ppm** 0.676**Warnings** Carcinogen; Odor Threshold < 1ppm**Synonyms** Aminobenzene, Aniline oil, Benzenamine, Phenylamine

Anisaldehyde (CAS# 123-11-5)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Anisic aldehyde; Aubepine; Crategine**Notes** Strong odor, Vapors may form explosive mixture with air.

o-Anisidine (CAS# 90-04-0)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.5 mg/m3 [skin]**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** p-Methoxybenzaldehyde * 4-Methoxybenzaldehyde, p-anisaldehyde**Notes** Requires both filters. Oily liquid.

p-Anisidine (CAS# 104-94-9)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** TWA 0.5 mg/m3 [skin]**OSHA Exposure Limit** TWA 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** p-Methoxybenzaldehyde * 4-Methoxybenzaldehyde, p-anisaldehyde**Notes** Requires both filters.

Antimony (CAS# 7440-36-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [*Note: The REL also applies to other antimony compounds (as Sb).]**OSHA Exposure Limit** 0.5 mg/m3 [*Note: The REL also applies to other antimony compounds (as Sb).]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** para-Aminoanisole, 4-Anisidine, p-Methoxyaniline**Notes** Crystals.

Antimony metal (CAS# 86-88-4)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.3 mg/m3**OSHA Exposure Limit** 0.3 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Antimony metal, Antimony powder, Stibium, ANTU**Notes** Requires both filters. Odorless. Rodenticide.

Arsenic, inorganic compounds (as As) (CAS# 7440-38-2)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** Ca C 0.002 mg/m3 [15-minute]**OSHA Exposure Limit** 0.010 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** alpha-Naphthyl thiocarbamide, 1-Naphthyl thiourea, alpha-Naphthyl thiourea**Notes** Requires both filters. Toxic.

Arsenic, organic compounds (as As) (CAS#)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 0.5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Arsenic metal: Arsenia**Notes** Toxic.

Arsine (CAS# 7784-42-1)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca C 0.002 mg/m3 [15-minute]**OSHA Exposure Limit** 0.05 ppm (0.2 mg/m3)**Odor Threshold Value in ppm** 0.5**Warnings** Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Synonyms vary depending upon the specific organic arsenic compound**Notes** Highly toxic gas.

Asbestos (CAS# 1332-21-4)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Ca**Warnings** Carcinogen; Exposure Limit Not Established; Odor Threshold < Exposure Limit - Poor Odor Warning**Synonyms** Arsenic hydride, Arsenic trihydride, Arseniuretted hydrogen, Arsenous hydride, Hydrogen arsenide**Notes** Odorless solid. Prolonged exposure leads to respiratory diseases.**Ascorbic acid (CAS# 50-81-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Odorless**Warnings** Exposure Limit Not Established; Odor Threshold < Exposure Limit - Poor Odor Warning**Synonyms** Actinolite, Actinolite asbestos, Amosite (cummingtonite-grunerite), Anthophyllite, Anthophyllite asbestos, Chrysotile, Crocidolite (Riebeckite), Tremolite, Tremolite asbestos**Aspartame (CAS# 22839-47-0)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 5 mg/m3 (respirable) 8-hour TWA**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** (5R)-[(1S)-1,2-dihydroxyethyl]-3,4-dihydroxyfuran-2(5H)-one, Vitamin C**Asphalt fumes (CAS# 8052-42-4)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca C 5 mg/m3 [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Tetramethoxy-9-oxobenzo[alpha]heptalen-7-yl)acetamide, Nutrasweet;**Notes** Requires both filters.**Atrazine (CAS# 1912-24-9)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Asphalt: Asphaltum, Bitumen (European term), Petroleum asphalt, Petroleum bitumen, Road asphalt, Roofing asphalt**Notes** Requires both filters. Odorless herbicide.**Azinphos-methyl (CAS# 86-50-0)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.2 mg/m3 [skin]**OSHA Exposure Limit** 0.2 mg/m3 [skin]**Odor Threshold Value in ppm** 0.0002 mg/kg water**Warnings** Odor Threshold < 0.1ppm; Exposure Limit < 1ppm(5mg/m3)**Synonyms** 2-Chloro-4-ethylamino-6-isopropylamino-s-triazine; 6-Chloro-N-ethyl-N' (1-methylethyl)-1,3,5-triazine-2,4-diamine**Notes** Requires both filters. Insecticide. Non combustible solid.**Barium chloride (as Ba) (CAS# 10361-37-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]**OSHA Exposure Limit** 0.5 mg/m3 [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** O,O-Dimethyl-S-4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl phosphorodithioate; Guthion;; Methyl azinphos**Notes** Odorless solid. Use under TWA.**Barium chloride dihydrate (CAS# 10326-27-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]**OSHA Exposure Limit** 0.5 mg/m3 [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Barium dichloride, Barium chloride**Notes** Odorless solid. Use under TWA.**Barium hydroxide (CAS# 12230-71-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 0.5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** OEL < 1ppm(5mg/m3); Unknown Odor Threshold**Synonyms** Barium dihydroxide; Caustic baryta**Barium nitrate (as Ba) (CAS# 10022-31-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]**OSHA Exposure Limit** 0.5 mg/m3 [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Barium dinitrate, Barium(II) nitrate (1:2), Barium salt of nitric acid**Notes** Odorless solid. Use under TWA.**Barium sulfate (CAS# 7727-43-7)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Artificial barite, Barite, Barium salt of sulfuric acid, Barytes (natural)**Notes** Odorless.**Benomyl (CAS# 17804-35-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate**Notes** Requires both filters. White solid with faint odor. Fungicide.

Benzalacetone (CAS# 122-57-6)**Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 4-Phenyl-3-buten-2-one; Benzylidene Acetone; Styryl methyl ketone**Benzaldehyde (CAS# 100-52-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.042**Warnings** Odor Threshold < 0.1ppm; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Benzoic aldehyde, Oil of bitter almond, Benzenecarbonal, Phenylmethanal, Benzenecarboxaldehyde, Benzoic aldehyde**Benzene (CAS# 71-43-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 11.9%**NIOSH Exposure Limit** Ca TWA 0.1 ppm ST 1 ppm**OSHA Exposure Limit** 1 ppm ST 5 ppm**Odor Threshold Value in ppm** 8.65**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Benzol, Phenyl hydride**Notes** Monitor filters frequently. Change filters frequently.**Benzenethiol (CAS# 108-98-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** C 0.1 ppm (0.5 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.062 mg/m3**Warnings** Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Mercaptobenzene, Phenyl mercaptan, Thiophenol**Notes** Offensive Odor. Use under exposure limit.**Benzidine (CAS# 92-87-5)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established, Unknown Filter Effectiveness**Synonyms** Benzidine-based dyes; 4,4'-Bianiline; 4,4'-Biphenyldiamine; 1,1'-Biphenyl-4,4'-diamine; 4,4'-Diaminobiphenyl; p-Diaminodiphenyl [Note: Benzidine has been used as a basis for many dyes.]**Notes** Requires both filters. Poor odor warning**Benzoic acid (CAS# 65-85-0)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** Benzene carbonic acid, Carboxybenzene, Dracrylic acid, Phenyl carboxylic acid, phenylformic acid, Retarder BA, Tenn-plas, Retardex, Solvo powder, Salvo liquid, Benzene methanoic acid, Benezeformic acid**Notes** Odor of benzoin or benzaldehyde, Dust may cause mild respiratory irritation with sore throat**Benzophenone (CAS# 119-61-9)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Benzoyl benzene, Diphenyl ketone, Diphenyl methanone, Phenyl ketone**Notes** Requires both filters. Can exist in both particulate and vapor phase.**Benzoyl chloride (CAS# 43019-90-5)****Rating** Evaluate Warning**Filter Type** Carbon**NIOSH Exposure Limit** 0.5 ppm**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.007 ppm**Warnings** OEL < 1ppm(5mg/m3) - Unknown Filter Effectiveness; Decomposition products: Hydrogen chloride, phosgene, carbon monoxide, carbon dioxide**Synonyms** a-Chlorobenzaldehyde, Benzene carbonyl chloride, Benzoic acid chloride**Notes** Decomposition products: Hydrogen chloride, phosgene, carbon monoxide, carbon dioxide**Benzoyl peroxide (CAS# 94-36-0)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Benzoperoxide, Dibenzoyl peroxide, diphenylglyoxal peroxide, Xerac BP 5, TCBA, diphenylglyoxal peroxide, nericur, peroxydex, acnegel, persadox, lucidol, benoxyl, benzoic acid peroxide, acetoxyl, acnegel, aztec BPO, benzac, incidol, fostex**Notes** Requires both filters as vapor phase coexists sometimes with particulate.**Benzyl alcohol (CAS# 100-51-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 1 ppm**Odor Threshold Value in ppm** 5.5 ppm**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** alpha-Hydroxytoluene; alpha-Toluenol; Benzal alcohol; Benzenecarbinol; Benzenemethanol; Benzoyl alcohol; Benzenecarbinol; Benzenemethanol; Benzoyl alcohol; Hydroxytoluene; Methanol, phenyl-; Phenolcarbinol; Phenylcarbinol; Phenylmethanol; Phenylmethyl alcohol**Benzyl chloride (CAS# 100-44-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**Filter Capacity Percentage** 8.5%**NIOSH Exposure Limit** C 1 ppm (5 mg/m3) [15-minute]**OSHA Exposure Limit** 1 ppm (5 mg/m3)**Odor Threshold Value in ppm** 0.03**Warnings** Odor Threshold < 0.1ppm**Synonyms** Chloromethylbenzene, alpha-Chlorotoluene**Notes** Requires both filters as vapor phase exists sometimes. Contact with water produces toxic fumes. Incompatible with most metals and acids.**Benzyl mercaptan (CAS# 100-53-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.00019**Warnings** Odor Threshold < 0.1ppm; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Benzylhydrosulfide, Benzylthiol, (Mercaptanomethyl) Benzene, alpha-mercatotoluene, phenylmethanethiol, phenylmethyl mercaptan, thiobenzyl alcohol, alpha-tolulthiol, alpha-tolyl mercaptan, USAF EK-1509**Notes** Synthetic coffee flavoring agent for beverages, ice cream, ices, candy, and baked goods.**This guide is not an approved list of chemicals**

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Beryllium & beryllium compounds (as Be) (CAS# 7440-41-7)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca C 0.0005 mg/m3**OSHA Exposure Limit** 0.002 mg/m3 C 0.005 mg/m3 0.025 mg/m3 [30-minute maximum peak]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3).**Synonyms** Beryllium metal; Beryllium**Notes** Use under TWA.**Bismuth telluride, doped with Selenium sulfide (as Bi2Te3) (CAS#)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Notes** Use under TWA.**Bismuth telluride, undoped (CAS# 1304-82-1)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Bismuth sesqu telluride, Bismuth telluride, Bismuth tritelluride, Tellurobismuthite**Notes** Use under TWA.**Bisphenol A (CAS# 80-05-7)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 2,2-Bis(4-hydroxyphenyl)propane, 4,4'-Isopropylidenediphenol**Borates, tetra, sodium salts (Anhydrous) (CAS# 1330-43-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Anhydrous borax, Borax dehydrated, Disodium salt of boric acid, Disodium tetraborate, Fused borax, Sodium borate (anhydrous), Sodium tetraborate**Notes** Use under TWA.**Borates, tetra, sodium salts (Decahydrate) (CAS# 1303-96-4)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Borax, Borax decahydrate, Sodium borate decahydrate, Sodium tetraborate decahydrate**Notes** Use under TWA.**Borates, tetra, sodium salts (Pentahydrate) (CAS# 12179-04-3)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Borax pentahydrate, Sodium borate pentahydrate, Sodium tetraborate pentahydrate**Notes** Use under TWA.**Boric Acid (CAS# 10043-35-3)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** May impair fertility**Synonyms** Boracic acid; Hydrogen borate; Orthoboric acid**Boron nitride (CAS# 10043-11-5)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** TECO20051158, Boron Nitride Powder**Boron oxide (CAS# 1303-86-2)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold < Exposure Limit - Poor Odor Warning**Synonyms** Boric anhydride, Boric oxide, Boron trioxide**Boron tribromide (CAS# 10294-33-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** C 1 ppm (10 mg/m3)**OSHA Exposure Limit** None**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Boron bromide, Tribromoborane**Notes** Colorless liquid. Use below exposure limit.**Boron trifluoride (CAS# 07-01-33)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 1 ppm (3 mg/m3)**OSHA Exposure Limit** C 1 ppm (3 mg/m3)**Odor Threshold Value in ppm** 1.5**Warnings** Odor Threshold > Exposure Limit; Unknown Filter Effectiveness**Synonyms** Boron fluoride, Trifluoroborane**Notes** Colorless gas with suffocating odor.

Bromacil (CAS# 314-40-9)**Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 ppm (10 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** 5-Bromo-3-sec-butyl-6-methyluracil, 5-Bromo-6-methyl-3-(1-methylpropyl)uracil**Notes** Odorless, colorless solid. Herbicide.**Bromine (CAS# 7726-95-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Acid-Sulfur**Filter Capacity Percentage** 6.6%**NIOSH Exposure Limit** 0.1 ppm (0.7 mg/m3) ST 0.3 ppm (2 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.7 mg/m3)**Odor Threshold Value in ppm** 0.066**Warnings** Odor Threshold < 0.1ppm; Exposure Limit < 1ppm(5mg/m3)**Synonyms** Molecular bromine**Notes** Fuming liquid with irritating fumes; use under exposure limit.**Bromine chloride (CAS# 13863-41-7)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Bromine monochloride, bromochloride**Bromine pentafluoride (CAS# 7789-30-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** 0.1 ppm (0.7 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Bromine fluoride**Notes** Fuming liquid. Use under exposure limit.**5-Bromo-2-Deoxyuridine (CAS# 59-14-3)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 15mg/m3**Odor Threshold Value in ppm** Not Established**Warnings** Unknown Odor Threshold**Synonyms** 5-Bromouracil-2-Deoxyriboside; Bromodeoxyuridine**Notes** Antineoplastic agent- should be used in a biological safety cabinet, antiviral drug**1-Bromo-3-chloropropane (CAS# 109-70-6)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness; The acute and chronic toxicity of this substance is not fully known**Synonyms** Trimethylene bromochloride, Trimethylene chlorobromide, I-BCP**Notes** The acute and chronic toxicity of this substance is not fully known.**Bromoform (CAS# 75-25-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 6.9%**NIOSH Exposure Limit** 0.5 ppm (5 mg/m3) [skin]**OSHA Exposure Limit** 0.5 ppm (5 mg/m3) [skin]**Odor Threshold Value in ppm** 0.447**Warnings** Odor Threshold < 1ppm; OEL < 1ppm (5mg/m3)**Synonyms** Methyl tribromide, Tribromomethane**Bromophenol blue (CAS# 115-39-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Exposure Limit Not Established**Synonyms** 4,4'-(1,1-dioxido-3H-2,1-benzoxathiole-3,3-diyl)bis(2,6-dibromophenol)**Notes** Indicator dye-can be in dissolved in aqueous or organic solvents as pH indicator.**1, 3-Butadiene (CAS# 106-99-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 2%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 1 ppm ST 5 ppm**Odor Threshold Value in ppm** 0.455**Warnings** Filter Capacity < 3% - Low Filter Capacity; Carcinogen; Odor Threshold < 1ppm**Synonyms** Biethylene, Biviny, Butadiene, Divinyl, Erythrene, Vinylethylene**Notes** Monitor Filter frequently. Colorless gas with a gasoline-like odor. Use small quantities only.**n-Butane (CAS# 106-97-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 2.3%**NIOSH Exposure Limit** 800 ppm (1900 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 204**Warnings** Filter Capacity < 3% - Low Filter Capacity**Synonyms** Normal-Butane, Butyl hydride, Diethyl, Methyleneilmethane [Note: Also see specific listing for Isobutane.]**Notes** Colorless gas. Use small quantities only. Monitor filters frequently.**1,4-Butanediol (CAS# 110-63-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Agrisynth B1D; Butanediol; Butane-1,4-diol; 1,4-Butylene glycol; 1,4-Dihydroxybutane;**DIOL 14B; SucoI B; Tetramethylene 1,4-diol; 1,4-Tetramethylene glycol****1,4-Butanediol dimethacrylate (CAS# 2082-81-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Butanediyl dimethylacrylate; tetramethylene dimeth-acrylate; butyleneglycol dimethacrylate

2, 3 Butanedione (CAS# 431-03-8)**Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold - The vapor is heavier than air and may travel along the ground; distant ignition possible; Heating may cause combustion or explosion; Not recommended for Ductless Enclosure**Synonyms** Biacetyl, Diacetyl**Notes** The vapor is heavier than air and may travel along the ground; distant ignition possible. Heating may cause combustion or explosion.**2-Butanone (CAS# 78-93-3)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 6.5%**NIOSH Exposure Limit** 200 ppm (590 mg/m3) ST 300 ppm (885 mg/m3)**OSHA Exposure Limit** 200 ppm (590 mg/m3)**Odor Threshold Value in ppm** 0.27**Warnings** Odor Threshold < 1ppm**Synonyms** Ethyl methyl ketone, MEK, Methyl acetone, Methyl ethyl ketone**2-Butoxyethanol (CAS# 111-76-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 35%**NIOSH Exposure Limit** 5 ppm (24 mg/m3) [skin]**OSHA Exposure Limit** 50 ppm (240 mg/m3) [skin]**Odor Threshold Value in ppm** 0.001**Warnings** Odor Threshold < 0.1ppm**Synonyms** Butyl Cellosolve; Butyl oxitol, Dowanol; EB, EGBE, Ektasolve EB; Ethylene glycol monobutyl ether, Jeffersol EB**Notes** Very Low Odor Threshold**2-Butoxyethanol acetate (CAS# 112-07-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 5 ppm (33 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** tert-Butyl ester of acetic acid**Notes** Colorless liquid with fruity odor. Use under exposure limit.**n-Butyl acetate (CAS# 123-86-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 24.5%**NIOSH Exposure Limit** 150 ppm (710 mg/m3) ST 200 ppm (950 mg/m3)**OSHA Exposure Limit** 150 ppm (710 mg/m3)**Odor Threshold Value in ppm** 0.007**Warnings** Odor Threshold < 0.1ppm**Synonyms** Butyl acetate, n-Butyl ester of acetic acid, Butyl ethanoate**Notes** Very Low Odor Threshold**sec-Butyl acetate (CAS# 105-46-4)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 22.1%**NIOSH Exposure Limit** 200 ppm (950 mg/m3)**OSHA Exposure Limit** 200 ppm (950 mg/m3)**Odor Threshold Value in ppm** 3-7**Synonyms** sec-Butyl ester of acetic acid, 1-Methylpropyl acetate**tert-Butyl acetate (CAS# 540-88-5)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 19.5%**NIOSH Exposure Limit** 200 ppm (950 mg/m3)**OSHA Exposure Limit** 200 ppm (950 mg/m3)**Odor Threshold Value in ppm** 4-47**Synonyms** tert-Butyl ester of acetic acid**tert-Butyl acetate (CAS# 540-88-5)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 19.5%**NIOSH Exposure Limit** 200 ppm (950 mg/m3)**OSHA Exposure Limit** 200 ppm (950 mg/m3)**Odor Threshold Value in ppm** 4-47**Synonyms** tert-Butyl ester of acetic acid**Butyl acrylate (CAS# 141-32-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 30.5%**NIOSH Exposure Limit** 10 ppm (55 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.003**Warnings** Odor Threshold < 0.1ppm**Synonyms** n-Butyl acrylate, Butyl ester of acrylic acid, Butyl-2-propenoate**Notes** Very Low Odor Threshold**n-Butyl alcohol (CAS# 71-36-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15.4%**NIOSH Exposure Limit** C 50 ppm (150 mg/m3) [skin]**OSHA Exposure Limit** 100 ppm (300 mg/m3)**Odor Threshold Value in ppm** 0.03**Warnings** Odor Threshold < 0.1ppm**Synonyms** 1-Butanol, n-Butanol, Butyl alcohol, 1-Hydroxybutane, n-Propyl carbinol**Notes** Very Low Odor Threshold**sec-Butyl alcohol (CAS# 78-92-2)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 10.7%**NIOSH Exposure Limit** 100 ppm (305 mg/m3) ST 150 ppm (455 mg/m3)**OSHA Exposure Limit** 150 ppm (450 mg/m3)**Odor Threshold Value in ppm** 1**Synonyms** 2-Butanol, Butylene hydrate, 2-Hydroxybutane, Methyl ethyl carbinol**tert-Butyl alcohol (CAS# 75-65-0)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 9.03%**NIOSH Exposure Limit** 100 ppm (300 mg/m3) ST 150 ppm (450 mg/m3)**OSHA Exposure Limit** 100 ppm (300 mg/m3)**Odor Threshold Value in ppm** 21.5**Synonyms** 2-Methyl-2-propanol, Trimethyl carbinol**This guide is not an approved list of chemicals**

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tert-Butyl chromate (CAS# 1189-85-1)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.001 mg Cr(VI)/m³**OSHA Exposure Limit** 0.005 mg CrO₃/m³ [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm(5mg/m³); Unknown Filter Effectiveness**Synonyms** di-tert-Butyl ester of chromic acid**Notes** Low Exposure Limit

n-Butyl glycidyl ether (CAS# 08-06-26)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15.4%**NIOSH Exposure Limit** C 5.6 ppm (30 mg/m³) [15-minute]**OSHA Exposure Limit** 50 ppm (270 mg/m³)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** BGE; 1,2-Epoxy-3-butoxypropane

n-Butyl lactate (CAS# 138-22-7)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 17.7%**NIOSH Exposure Limit** 5 ppm (25 mg/m³)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 7.06**Warnings** Odor Threshold > Exposure Limit**Synonyms** Butyl ester of 2-hydroxypropanoic acid, Butyl ester of lactic acid, Butyl lactate

n-Butyl mercaptan (CAS# 109-79-5)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 1.2%**NIOSH Exposure Limit** C 0.5 ppm (1.8 mg/m³) [15-minute]**OSHA Exposure Limit** 10 ppm (35 mg/m³)**Odor Threshold Value in ppm** 0.001**Warnings** Not Recommended: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm. OEL < 1ppm (5mg/m³).**Synonyms** Butanethiol, 1-Butanethiol, n-Butanethiol, 1-Mercaptobutane**Notes** Very Low Odor Threshold

n-Butylamine (CAS# 109-73-9)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 1.8%**NIOSH Exposure Limit** C 5 ppm (15 mg/m³) [skin]**OSHA Exposure Limit** C 5 ppm (15 mg/m³) [skin]**Odor Threshold Value in ppm** 0.053**Warnings** Not Recommended: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm**Synonyms** 1-Aminobutane, Butylamine**Notes** Not Recommended: Call: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm

o-sec-Butylphenol (CAS# 89-72-5)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15.9%**NIOSH Exposure Limit** 5 ppm (30 mg/m³) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** 2-sec-Butylphenol, 2-(1-Methylpropyl)phenol**Notes** Use under TWA

p-tert-Butyltoluene (CAS# 98-51-1)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 12.03%**NIOSH Exposure Limit** 10 ppm (60 mg/m³) ST 20 ppm (120 mg/m³)**OSHA Exposure Limit** 10 ppm (60 mg/m³)**Odor Threshold Value in ppm** 5.02**Synonyms** 4-tert-Butyltoluene, 1-Methyl-4-tert-butylbenzene

Butyric acid (CAS# 107-92-6)

Rating Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit, Unknown Filter Effectiveness; Combustible liquid and vapor, putrid odor**Synonyms** n-Butanoic Acid, Ethylacetic Acid**Notes** Combustible liquid and vapor, putrid odor

n-Butyronitrile (CAS# 109-74-0)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Capacity Percentage** 9.8%**NIOSH Exposure Limit** 8 ppm (22 mg/m³)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Butanenitrile, Butyronitrile, 1-Cyanopropane, Propyl cyanide, n-Propyl cyanide**Notes** Forms cyanide in the body. Highly Toxic, fatal if inhaled, swallowed, or absorbed through skin.

Cadmium chloride (CAS# 10108-64-2)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** 9 mg/m³ IDLH (dust and fume, as Cd)**OSHA Exposure Limit** 0.005 mg/m³**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL <1ppm (5mg/m³)**Synonyms** Cadmium dichloride**Notes** MAY BE FATAL IF SWALLOWED OR INHALED

Cadmium chloride (CAS# 7790-78-5)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.2 mg/m³**OSHA Exposure Limit** OEL < 1ppm(5mg/m³)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold

Cadmium dust (as Cd) (CAS# 7440-43-9)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca [*Note: The REL applies to all Cadmium compounds (as Cd).]**OSHA Exposure Limit** 0.005mg/m³ [*Note: The PEL applies to all Cadmium compounds (as Cd).]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m³).**Synonyms** Cadmium metal; Cadmium

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Cadmium fume (as Cd) (CAS# 1306-19-0)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca [*Note: The REL applies to all Cadmium compounds (as Cd).]**OSHA Exposure Limit** 0.005mg/m3 [*Note: The PEL applies to all Cadmium compounds (as Cd).]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3).**Synonyms** Cadmium monoxide, Cadmium oxide fume**Caffeine (CAS# 58-08-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 1,3,7-trimethylxanthine; 3,7-Dihydro-1,3,7- trimethyl-1H-purine-2,6-dione, Trimethyl-1,3,7-dioxo-2,6- purine**Notes** MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. The substance may be toxic to heart, gastrointestinal tract, central nervous system (CNS).**Calcium arsenate (as As) (CAS# 7778-44-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca C 0.002 mg/m3 [15-minute]**OSHA Exposure Limit** 0.010 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3).**Synonyms** Calcium salt (2:3) of arsenic acid, Cucumber dust, Tricalcium arsenate, Tricalcium ortho-arsenate**Calcium carbonate (CAS# 1317-65-3)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Calcium salt of carbonic acid**Calcium chloride (CAS# 10043-52-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** calcium dichloride; calcium chloride anhydrous; Caltac; Dowflake**Calcium chloride (CAS# 10043-52-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** Anhydrous calcium chloride; Anhydrouscalciumchloride; CaCl2; Calcium chloride (CaCl2); Calcium chloride pellets; calciumchloraide; calciumchloride (anhydrous)**Calcium cyanamide (CAS# 156-62-7)****Rating** Chemical Assessment Required**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Calcium carbimide, Cyanamide, Lime nitrogen, Nitrogen lime**Calcium hydroxide (CAS# 1305-62-0)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 15 mg/m3 (total) 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Calcium hydrate, Caustic lime, Hydrated lime, Slaked lime**Calcium oxide (CAS# 1305-78-8)****Rating** Evaluate Warning**Filter Type** HEPA**NIOSH Exposure Limit** 2 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Burned lime, Burnt lime, Lime, Pebble lime, Quick lime, Unslaked lime**Calcium silicate (CAS# 1344-95-2)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Calcium hydrosilicate, Calcium metasilicate, Calcium monosilicate, Calcium salt of silicic acid**Calcium sulfate (CAS# 7778-18-9)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Anhydrous calcium sulfate, Anhydrous gypsum, Anhydrous sulfate of lime, Calcium salt of sulfuric acid [Note: Gypsum is the dihydrate form & Plaster of Paris is the hemihydrate form.]**Camphor (synthetic) (CAS# 76-22-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 2 mg/m3**OSHA Exposure Limit** 2 mg/m3**Odor Threshold Value in ppm** 0.051**Warnings** Odor Threshold < 1ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 2-Camphonone, Gum camphor, Laurel camphor, Synthetic camphor**Notes** Requires both filters. Very Low Odor Threshold**This guide is not an approved list of chemicals**

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Caprolactam (CAS# 105-60-2)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Dust: TWA 1 mg/m3 ST 3 mg/m3 Vapor: TWA 0.22 ppm (1 mg/m3) ST 0.66 ppm (3 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.064**Warnings** Odor Threshold < 1ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Aminocaproic lactam, epsilon-Caprolactam, Hexahydro-2H-azepin-2-one, 2-Oxohexamethyleneimine**Notes** Requires both filters. Very Low Odor Threshold**Captafol (CAS# 2425-06-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** Ca TWA 0.1 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Captafol; Difolatan; N-((1,1,2,2-Tetrachloroethyl)thio)-4-cyclohexene-1,2-dicarboximide**Notes** Requires both filters. White crystalline solid with slight pungent odor. Fungicide.**Captan (CAS# 133-06-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** Ca TWA 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Captane; N-Trichloromethylmercapto-4-cyclohexene-1,2-dicarboximide**Notes** Requires both filters. Odorless white crystalline. NIOSH lists as a combustible solid. Fungicide.**Carbaryl (CAS# 63-25-2)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** alpha-Naphthyl N-methyl-carbamate; 1-Naphthyl N-Methyl-carbamate; Sevin;**Carbofuran (CAS# 1563-66-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** TWA 0.1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate; Furacarb; Furadan;**Notes** Requires both filters. Odorless white or grayish crystalline solid. Insecticide.**Carbon black (CAS# 1333-86-4)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** TWA 3.5 mg/m3 Ca TWA 0.1 mg PAHs/m3 [Carbon black in presence of polycyclic aromatic hydro-carbons (PAHs)]**OSHA Exposure Limit** 3.5mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Acetylene black, Channel black, Furnace black, Lamp black, Thermal black**Carbon black (CAS# 1333-86-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 3.5 mg/m3**OSHA Exposure Limit** 3.5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Channel black, Lamp black, Furnace black, Thermal black**Carbon dioxide (CAS# 124-38-9)****Rating** Generally compatible**Filter Type** Carbon**NIOSH Exposure Limit** 5000 ppm (9000 mg/m3) ST 30,000 ppm (54,000 mg/m3)**OSHA Exposure Limit** 5000 ppm (9000 mg/m3)**Odor Threshold Value in ppm** 74000**Warnings** Not Recommended: Odor Threshold > Exposure Limit**Synonyms** Carbonic acid gas, Dry ice [Note: Normal constituent of air (about 300 ppm)].**Notes** Carbon Filtration is not an effective sorbent. CO2 is an atmospheric gas and should be handled in well ventilated spaces and under its Exposure Limit. Exposure limit is very high.**Carbon disulfide (CAS# 75-15-0)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 1.9%**NIOSH Exposure Limit** 1 ppm (3 mg/m3) ST 10 ppm (30 mg/m3) [skin]**OSHA Exposure Limit** 20 ppm C 30 ppm 100 ppm (30-minute maximum peak)**Odor Threshold Value in ppm** 0.096**Warnings** Not Recommended: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm**Synonyms** Carbon bisulfide**Carbon monoxide (CAS# 630-08-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 35 ppm (40 mg/m3) C 200 ppm (229 mg/m3)**OSHA Exposure Limit** 50 ppm (55 mg/m3)**Odor Threshold Value in ppm** 100000**Warnings** Not Recommended: Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Carbon oxide, Flue gas, Monoxide**Notes** Carbon Filtration is not an effective sorbent. Carbon Monoxide should be used in well ventilated spaces and always under its Exposure Limit set by NIOSH/OSHA.**Carbon tetrabromide (CAS# 558-13-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 20.8%**NIOSH Exposure Limit** 0.1 ppm (1.4 mg/m3) ST 0.3 ppm (4 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Carbon bromide, Methane tetrabromide, Tetrabromomethane**Carbon tetrachloride (CAS# 56-23-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 21.6%**NIOSH Exposure Limit** Ca ST 2 ppm (12.6 mg/m3) [60-minute]**OSHA Exposure Limit** 10 ppm C 25 ppm 200 ppm (5-minute maximum peak in any 4 hours)**Odor Threshold Value in ppm** 40.7**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Carbon chloride; Carbon tet; Freon; 10; Halon; 104; Tetrachloromethane**This guide is not an approved list of chemicals**

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Carbonyl fluoride (CAS# 353-50-4)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 2 ppm (5 mg/m3) ST 5 ppm (15 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Carbon difluoride oxide, Carbon fluoride oxide, Carbon oxyfluoride, Carbonyl difluoride, Fluoroformyl fluoride, Fluorophosgene**Notes** Highly Toxic. Often Fatal, Water Reactive.**Castor oil (CAS# 8001-79-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Catechol (CAS# 120-80-9)****Rating** Chemical Assessment Required**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 ppm (20 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 1,2-Benzenediol; o-Benzenediol; 1,2-Dihydroxybenzene; o-Dihydroxybenzene; 2-Hydroxyphenol; Pyrocatechol**Notes** Requires both filters.**Cellulose (CAS# 9004-34-6)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Hydroxycellulose, Pyrocellulose**Cellulose Ether (CAS# 9004-58-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Cellulose,ethyl-2-hydroxyethylether; cellulose; ethyl2-hydroxyethylether; celluloseethyl2-hydroxyethylether; celluloseethylhydroxyethyl; ethyl hydroxyethyl cellulose; cellulose ether; cellulose ethyl hydroxyethyl ether; hydroxyethyl ethylcellulose**Cellulose ethyl ether (CAS# 9004-57-3)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Methyl cellulose**Cesium chloride (CAS# 7647-17-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Cesium Monochloride, Dicesium Dichloride**Cesium fluoride (CAS# 13400-13-0)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2.5 mg/m3, 10 hr TWA**OSHA Exposure Limit** 2.5 mg/m3, PEL**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** CsF**Cesium hydroxide (CAS# 21351-79-1)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** None**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Cesium hydrate, Cesium hydroxide dimer**Cetylpyridinium chloride monohydrate (CAS# 6004-24-6)****Rating** Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 1-Hexadecylpyridinium chloride, Pyridinium, 1-hexadecyl-, chloridem, Cepacol**Notes** Characteristic odor, eye and skin irritant.**Chlordane (CAS# 57-74-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca TWA 0.5 mg/m3 [skin]**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** imidazolidinylidenbenzenamine hydrochloride**Notes** Viscous liquid with a chlorine-like odor.**Chlorinated camphene (CAS# 8001-35-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** 2.36 mg/m3**Warnings** Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Chlorocamphene, Octachlorocamphene, Polychlorocamphene, Toxaphene**Notes** Amber waxy solid with a mild piney chlorine and camphor-like odor. Insecticide.**This guide is not an approved list of chemicals**

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Chlorinated diphenyl oxide (CAS#)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.5 mg/m3**OSHA Exposure Limit** 0.5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Synonyms depend on the degree of chlorination of diphenyl oxide [(C6H5)2O], ranging from monochlorodiphenyl oxide [(C6H4Cl)O(C6H5)] to decachlorodiphenyl oxide [(C6Cl5)O(C6Cl5)].**Notes** Requires both filters.

Chlorine (CAS# 7782-50-5)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Acid-Sulfur**Filter Capacity Percentage** 6.6%**NIOSH Exposure Limit** C 0.5 ppm (1.45 mg/m3) [15-minute]**OSHA Exposure Limit** C 1 ppm (3 mg/m3)**Odor Threshold Value in ppm** 0.05**Warnings** Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3)**Synonyms** Molecular chlorine**Notes** Very Low Odor Threshold. Use under NIOSH/OSHA TWA.

Chlorine dioxide (CAS# 10049-04-4)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 ppm (0.3 mg/m3) ST 0.3 ppm (0.9 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.3 mg/m3)**Odor Threshold Value in ppm** 9.24**Warnings** Not Recommended: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Chlorine oxide, Chlorine peroxide**Notes** High vapor pressure. May explode near boiling point temperature.

Chlorine trifluoride (CAS# 7790-91-2)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 0.1 ppm (0.4 mg/m3)**OSHA Exposure Limit** C 0.1 ppm (0.4 mg/m3)**Odor Threshold Value in ppm** <3.0**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Chlorine fluoride, Chlorotrifluoride**Notes** Requires both filters. High vapor pressure.

1-Chloro-1-nitropropane (CAS# 600-25-9)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 17.4%**NIOSH Exposure Limit** 2 ppm (10 mg/m3)**OSHA Exposure Limit** 20 ppm (100 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Korax;; Lanstan;

2-Chloro-6-trichloromethyl pyridine (CAS# 1929-82-4)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 10 mg/m3 (total) ST 20 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2-Chloro-6-(trichloro-methyl)pyridine; Nitrapyrin; N-serve; 2,2,2,6-Tetrachloro-2-picoline**Notes** Known skin, eye and GI irritant. Unknown filter sorbency.

Chloro-pentafluoroethane (CAS# 76-15-3)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1000 ppm (6320 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Fluorocarbon-115; Freon; 115; Genetron; 115; Halocarbon 115; Monochloro-pentafluoroethane**Notes** CFC - production/consumption has been banned since January 1, 1996

Chloro-trifluoroethylene (CAS# 79-38-9)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** CTFE, 2-Chloro-1,1,2-trifluoroethylene; Trithene; Trifluorochloroethylene; Fluoroplast 3; Genetron 1113; Daiflon; Trifluorovinyl Chloride**Notes** Known CFC. Discontinued use as a refrigerant, used to produce plastics (ECTFE).

Chloroacetaldehyde (CAS# 107-20-0)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** C 1 ppm (3 mg/m3)**OSHA Exposure Limit** C 1 ppm (3 mg/m3)**Odor Threshold Value in ppm** 0.917**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** Chloroacetaldehyde (40% aqueous solution), 2-Chloroacetaldehyde, 2-Chloroethanal**Notes** Used for stripping bark from trees. Use under TWA

Chloroacetic acid (CAS# 79-11-8)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 ppm**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.045**Warnings** Odor Threshold < 0.1 ppm; Unknown Filter Effectiveness**Synonyms** Chloroethanoic acid Monochloroacetic acid MCA, MCAA**Notes** Very Low Odor Threshold. Use under NIOSH/OSHA TWA.

alpha-Chloroacetophenone (CAS# 532-27-4)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.3 mg/m3 (0.05 ppm)**OSHA Exposure Limit** 0.3 mg/m3 (0.05 ppm)**Odor Threshold Value in ppm** 0.026**Warnings** Odor Threshold < 0.1 ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 2-Chloroacetophenone; Chloromethyl phenyl ketone; Mace;; Phenacyl chloride; Phenyl chloromethyl ketone; Tear gas**Notes** Chemical is used as "tear gas" with low exposure limit. Requires both filters. Very Low Odor Threshold, Low TWA.

Chloroacetyl chloride (CAS# 79-04-9)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.05 ppm (0.2 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.011**Warnings** Odor Threshold < 0.1 ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Chloroacetic acid chloride, Chloroacetic chloride, Monochloroacetyl chloride**Notes** Requires both filters. Very Low Odor Threshold, Low TWA.

Chlorobenzene (CAS# 108-90-7)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 19.9%**NIOSH Exposure Limit** No established REL**OSHA Exposure Limit** 75 ppm (350 mg/m3)**Odor Threshold Value in ppm** 0.741**Warnings** Odor Threshold < 1ppm**Synonyms** Benzene chloride, Chlorobenzol, MCB, Monochlorobenzene, Phenyl chloride

Chlorobromomethane (CAS# 74-97-5)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 10.1%**NIOSH Exposure Limit** 200 ppm (1050 mg/m3)**OSHA Exposure Limit** 200 ppm (1050 mg/m3)**Odor Threshold Value in ppm** 399**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Bromochloromethane; CB; CBM; Fluorocarbon 1011; Halon; 1011; Methyl chlorobromide

Chlorodifluoro-methane (CAS# 75-45-6)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1000 ppm (3500 mg/m3) ST 1250 ppm (4375 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Nearly Odorless**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Difluorochloromethane; Fluorocarbon-22; Freon; 22; Genetron; 22;

Monochlorodifluoromethane; Refrigerant 22

Notes Listed as a known HCFC (Hydro-chlorofluorocarbon).Main Hazards: Dangerous for the environment & Central Nervous System (CNS) depressant

Chlorodiphenyl (42% chlorine) (CAS# 53469-21-9)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.001 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Aroclor; 1242, PCB, Polychlorinated biphenyl**Notes** Requires both filters.

Chlorodiphenyl (54% chlorine) (CAS# 11097-69-1)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.001 mg/m3**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Aroclor; 1254, PCB, Polychlorinated biphenyl**Notes** Requires both filters.

Chloroform (CAS# 67-66-3)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 10.2%**NIOSH Exposure Limit** Ca ST 2 ppm (9.78 mg/m3) [60-minute]**OSHA Exposure Limit** C 50 ppm (240 mg/m3)**Odor Threshold Value in ppm** 11.7**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Methane trichloride, Trichloromethane**Notes** Will not smell vapors until concentration is above Exposure Limit, use with odorous tracer gas and below TWA!

bis-Chloromethyl ether (CAS# 542-88-1)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 18.3%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** OSHA regulated carcinogen**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** BCME, bis-CME, Chloromethyl ether, Dichlorodimethyl ether, Dichloromethyl ether, Oxybis(chloromethane)**Notes** Prolonged exposure can lead to lung cancer. Toxic

Chloromethyl methyl ether (CAS# 107-30-2)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** OSHA regulated carcinogen**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Chlorodimethyl ether, Chloromethoxymethane, CMME, Dimethylchloroether, Methylchloromethyl ether**Notes** Reacts with water to form HCl and formaldehyde. Prolonged exposure known to cause lung cancer

Chloropicrin (CAS# 76-06-2)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 29%**NIOSH Exposure Limit** 0.1 ppm (0.7 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.7 mg/m3)**Odor Threshold Value in ppm** 1.08**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1 ppm (5mg/m3)**Synonyms** Nitrochloroform, Nitrotrichloromethane, Trichloronitromethane**Notes** High toxicity.

beta-Chloroprene (CAS# 126-99-8)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca C 1 ppm (3.6 mg/m3) [15-minute]**OSHA Exposure Limit** 25 ppm (90 mg/m3) [skin]**Odor Threshold Value in ppm** 14.9**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** 2-Chloro-1,3-butadiene; Chlorobutadiene; Chloroprene

o-Chlorostyrene (CAS# 2039-87-4)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 50 ppm (285 mg/m3) ST 75 ppm (428 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2-Chlorostyrene, ortho-Chlorostyrene, 1-Chloro-2-ethenylbenzene

o-Chlorotoluene (CAS# 95-49-8)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 19.6%**NIOSH Exposure Limit** 50 ppm (250 mg/m3) ST 75 ppm (375 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.219**Warnings** Odor Threshold < 1ppm.**Synonyms** 1-Chloro-2-methylbenzene, 2-Chloro-1-methylbenzene, 2-Chlorotoluene, o-Tolyl chloride

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Chlorotrimethylsilane (CAS# 75-77-4)**Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.262 ppm (detection), 10.06 ppm (recognition)**Warnings** Not Recommend: Unknown Exposure Limit; Odor Threshold < 1 ppm; Unknown Filter Effectiveness**Synonyms** Silicone, chlorosilicones, chlorosilane, chlorotrimethylsilane, "silane, chlorotrimethyl", "silane, trimethylchloro-", "TL 1163"**Chlorpyrifos (CAS# 2921-88-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.2 mg/m3 ST 0.6 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Chlorpyrifos-ethyl; O,O-Diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate; Dursban;**Notes** Insecticide. Moderately toxic, chronic exposure linked to neurological effects, developmental disorders and autoimmune disorders.**Chromic acid and chromates (CAS# 1333-82-0)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** Ca TWA 0.001 mg/m3**OSHA Exposure Limit** 0.005 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3), Unknown Filter Effectiveness**Synonyms** Chromic acid (CrO3): Chromic anhydride, Chromic oxide, Chromium(VI) oxide (1:3), Chromium**Notes** Requires both filters.**Chromium metal (CAS# 7440-47-3)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3).**Synonyms** Chrome, Chromium**Chromium oxide (CAS# 1308-38-9)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** Chromium Oxide greens; Chromium Oxide**Chromium(II) compounds (as Cr) (CAS#)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3**OSHA Exposure Limit** 0.5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3).**Synonyms** Synonyms vary depending upon the specific Chromium(II)**Chromium(III) compounds (as Cr) (CAS#)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3**OSHA Exposure Limit** 0.5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3).**Synonyms** Synonyms vary depending upon the specific Chromium(III) compound**Chromyl chloride (CAS# 14977-61-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca 0.001 mg Cr(VI)/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Green Powder; Chromium Sesquioxide; Green Chromium**Notes** Reacts with water to form HCl and hexavalent chromium (Cr-VI) - Carcinogen, can cause ulceration, and is a eye, skin and GI irritant. Very Low Exposure Limit.**Citric Acid (CAS# 77-92-9)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 15 mg/m3 TWA (Total dust); 5 mg/m3 TWA (Respirable Fraction)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** (III) Oxide powder; C.I. Pigment Gren 17; C.I. Number**Clonidine HCl (CAS# 4205-91-8)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** 2,6-Dichloro-N-2,2,6-Dichloro-N-2-imidazolidinylidenebenzen-amine hydrochloride**Clopidol (CAS# 2971-90-6)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) ST 20 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** 77288; Dichromium trioxide**Coal dust (CAS#)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3 [measured according to MSHA method (CPSU)] /TWA 0.9 mg/m3 [measured according to ISO/CEN/ACGIH criteria]**OSHA Exposure Limit** 2.4 mg/m3 [respirable, < 5% SiO2] TWA (10 mg/m3)/(%SiO2 + 2) [respirable, > 5% SiO2]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Anthracite coal dust, Bituminous coal dust, Lignite coal dust

Coal tar pitch volatiles (CAS# 65996-93-2)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** 0.2 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Pyrene, phenanthrene, acridine, chrysene, anthracene & benzo(a)pyrene). [Note: NIOSH considers coal tar, coal tar pitch, and creosote to be coal tar products]**Notes** Requires both filters. Can contain multiple variations of (hydro)carbon chains released as vapor or aerosol.

Cobalt (II) chloride hexahydrate (CAS# 7791-13-1)

Rating Small Volumes May Be Acceptable**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** None reported**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Cobaltous Chloride; Cobalt Muriate**Notes** Toxic. Deep purple crystal (anhydrous form is sky blue). If used out of solution can be used with HEPA filtration.

Cobalt carbonate (CAS# 513-79-1)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Cobaltous carbonate

Cobalt carbonyl (as Co) (CAS# 10210-68-1)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Di-mu-Carbonylhexacarbonyl-dicobalt, Cobalt octacarbonyl, Cobalt tetracarbonyl dimer, Dicobalt carbonyl, Dicobalt Octacarbonyl, Octacarbonyldicobalt**Notes** Toxic. Orange-colored, pyrophoric solid that is thermally unstable. Isomeric in solution. When decomposing, releases Carbon monoxide. No effective sorbent.

Cobalt hydrocarbonyl (as Co) (CAS# 16842-03-8)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Hydrocobalt tetracarbonyl, Tetracarbonylhydridocobalt, Tetracarbonylhydrocobalt**Notes** Toxic, slightly acidic. Highly Repugnant Odor, bright yellow liquid.

Cobalt metal dust and fume (as Co) (CAS# 7440-48-4)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.05 mg/m3**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Cobalt metal dust, Cobalt metal fume

Coke oven emissions (CAS#)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.2 mg/m3 (benzene-soluble fraction)**OSHA Exposure Limit** 0.150 mg/m3 (benzene-soluble fraction)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Synonyms vary depending upon the specific constituent**Notes** Requires both filters.

Colchicine (CAS# 4205-91-8)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** N"-[(7S)-"1,"2,"3,"10-"tetramethoxy-"9-"oxo-"5,"6,"7,"9-"tetrahydrobenzo"[a]"heptalen-"7,"yl]"acetamide**Notes** May be fatal if inhaled or swallowed.

Copper (dusts and mists, as Cu) (CAS# 7440-50-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Copper metal dusts, Copper metal fumes

Copper (II) chloride (CAS# 7447-39-4)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3 TWA**OSHA Exposure Limit** None**Warnings** OEL < 1ppm(5mg/m3)**Synonyms** Cupric Chloride

Copper fume (as Cu) (CAS# 1317-38-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1mg/m3**OSHA Exposure Limit** 0.1mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** CuO: Black copper oxide fume, Copper monoxide fume, Copper(II) oxide fume, Cupric oxide fume**Notes** Very Low Exposure Limit

Copper II Sulfate (CAS# 7758-99-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 0.1 (mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm(5mg/m3)**Synonyms** Blue vitriol; Copper (II) Sulfate Pentahydrate**Notes** The substance may be toxic to kidneys, liver. Repeated or prolonged exposure to the substance can produce target organs damage.

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Cotton dust (raw) (CAS#)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** <0.200 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Raw cotton dust**Notes** Very Low Exposure Limit**Crag herbicide (CAS# 136-78-7)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Crag; herbicide No. 1; 2-(2,4-Dichlorophenoxy)ethyl sodium sulfate; Sesone**m-Cresol (CAS# 108-39-4)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 46.7%**NIOSH Exposure Limit** 2.3 ppm (10mg/m3)**OSHA Exposure Limit** 5 ppm (22mg/m3) skin**Odor Threshold Value in ppm** 0.68**Warnings** Odor Threshold < 1ppm**Synonyms** meta-Cresol, 3-Cresol, m-Cresylic acid, 1-Hydroxy-3-methylbenzene, 3-Hydroxytoluene, 3-Methyl phenol**Notes** Requires both filters.**o-Cresol (CAS# 95-48-7)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 12%**NIOSH Exposure Limit** 2.3 ppm (10mg/m3)**OSHA Exposure Limit** 5 ppm (22mg/m3) skin**Odor Threshold Value in ppm** 0.26**Warnings** Odor Threshold < 1ppm**Synonyms** ortho-Cresol, 2-Cresol, o-Cresylic acid, 1-Hydroxy-2-methylbenzene, 2-Hydroxytoluene, 2-Methyl phenol**Notes** Requires both filters.**p-Cresol (CAS# 106-44-5)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 12%**NIOSH Exposure Limit** 2.3 ppm (10mg/m3)**OSHA Exposure Limit** 5 ppm (22mg/m3) skin**Odor Threshold Value in ppm** 0.2**Warnings** Odor Threshold < 1ppm**Synonyms** para-Cresol, 4-Cresol, p-Cresylic acid, 1-Hydroxy-4-methylbenzene, 4-Hydroxytoluene, 4-Methyl phenol**Notes** Requires both filters.**Crotonaldehyde (CAS# 4170-30-3)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 10.4%**NIOSH Exposure Limit** 2 ppm (6mg/m3)**OSHA Exposure Limit** 2 ppm (6mg/m3)**Odor Threshold Value in ppm** 0.135**Warnings** Odor Threshold < 1ppm**Synonyms** 2-Butenal, beta-Methyl acrolein, Propylene aldehyde**Notes** Strong odor.**Crude oil (CAS# 8002-05-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Carcinogen - Contains ingredients that are carcinogens; Contains H2S which has an odor threshold < 1ppm**Synonyms** Sour Crude Oil, Sweet Crude Oil, Light Crude Oil, Heavy Crude Oil, Generic Crude Oil**Crufomate (CAS# 299-86-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** TWA 5 mg/m3 ST 20mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 4-t-Butyl-2-chlorophenylmethyl methylphosphoramidate; Dowco; 132; Ruelene;**Notes** Low Exposure limit.**Crystal violet (CAS# 548-62-9)****Rating** Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** Aizen Crystal Violet, Aniline Violet, Basic Violet 3, Bismuth Violet, Gentian Violet; Ammonium, (4-(bis(p-(dimethylamino)phenyl)methylene)-2,5-cyclohexadien-1-ylidene)dimethyl-chloride; Methylrosaniline chloride; Hexamethyl pararosaniline chloride; Hexamethyl-p-roosaniline chloride**Cumene (CAS# 98-82-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 28.9%**NIOSH Exposure Limit** TWA 50 ppm (245 mg/m3) [skin]**OSHA Exposure Limit** TWA 50 ppm (245 mg/m3) [skin]**Odor Threshold Value in ppm** 0.024**Warnings** Odor Threshold < 0.1ppm**Synonyms** Cumol, Isopropyl benzene, 2-Phenyl propane**Notes** Very Low Odor Threshold. Use under NIOSH/OSHA TWA, and 1/5 LEL. Flammable.**Cyanamide (CAS# 420-04-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Amidocyanogen, Carbimide, Carbodiimide, Cyanogen nitride, Hydrogen cyanamide [Note: Cyanamide is also a synonym for Calcium cyanamide.]**Notes** Modest toxin in humans. Chemical common as Aerosol spray. Chronic exposure can lead to respiratory irritation, contact dermatitis, headaches and GI symptoms (e.g. nausea, vomiting or diarrhea)**Cyanogen (CAS# 460-19-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 10 ppm (20 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 231**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Carbon nitride, Dicyan, Dicyanogen, Ethanedinitrile, Oxalonitrile**Notes** Flammable Gas. Very Toxic. Dangerous for the environment. Reduces to Cyanide in the body. Inhalation can result in headaches, dizziness, rapid pulse, nausea, vomiting, loss of consciousness, convulsions and death.**This guide is not an approved list of chemicals**

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Cyanogen bromide (CAS# 506-68-3)**Rating** Small Volumes May Be Acceptable**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 5 mg/m3 (TWA)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Bromocyanide**Notes** May be fatal if inhaled.**Cyanogen chloride (CAS# 506-77-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 0.3 ppm (0.6 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.976**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Chlorcyan, Chlorine cyanide, Chlorocyanide, Chlorocyanogen**Notes** Highly Toxic. Immediate injury results from contact with the eyes or respiratory organs. Penetrates Respirator Filters. Highly controlled substance - See Chemical Weapons Convention.**Cyclohexane (CAS# 110-82-7)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 9.2%**NIOSH Exposure Limit** TWA 300 ppm (1050 mg/m3)**OSHA Exposure Limit** TWA 300 ppm (1050 mg/m3)**Odor Threshold Value in ppm** 83.8**Synonyms** Benzene hexahydride, Hexahydrobenzene, Hexamethylene, Hexanaphthene**Cyclohexanethiol (CAS# 1569-69-3)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.5 ppm (2.4 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Cyclohexylmercaptan, Cyclohexylthiol**Notes** Requires both filters. Inlet concentration should be kept below 0.5 ppm.**Cyclohexanol (CAS# 108-93-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 35.3%**NIOSH Exposure Limit** 50 ppm (200 mg/m3) [skin]**OSHA Exposure Limit** 50 ppm (200 mg/m3)**Odor Threshold Value in ppm** 0.068**Warnings** Odor Threshold < 0.1ppm**Synonyms** Anol, Cyclohexyl alcohol, Hexahydrophenol, Hexalin, Hydralin, Hydroxycyclohexane**Notes** Very Low odor Threshold. Flammable, skin irritant, reacts violently with oxidizing agents.**Cyclohexanone (CAS# 108-94-1)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 22%**NIOSH Exposure Limit** 25 ppm (100 mg/m3) [skin]**OSHA Exposure Limit** 50 ppm (200 mg/m3)**Odor Threshold Value in ppm** 0.019**Warnings** Odor Threshold < 0.1ppm**Synonyms** Anone, Cyclohexyl ketone, Pimelic ketone**Notes** Mild toxin**Cyclohexene (CAS# 110-83-8)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 12.2%**NIOSH Exposure Limit** 300 ppm (1015 mg/m3)**OSHA Exposure Limit** 300 ppm (1015 mg/m3)**Odor Threshold Value in ppm** 0.363**Warnings** Odor Threshold < 1ppm**Synonyms** Benzene tetrahydride, Tetrahydrobenzene**Notes** A colorless liquid with sharp odor. Can become unstable in storage**Cycloheximide (CAS# 66-81-9)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit, Unknown Filter Effectiveness - Cycloheximide liquid or powder can also be absorbed through your skin; Has shown to cause reproductive effects in animals**Synonyms** 4-[2-(3,5-Dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-2,6-piperidinedione**Notes** Not recommended for ductless enclosures.**Cyclohexylamine (CAS# 108-91-8)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 24%**NIOSH Exposure Limit** 10 ppm (40 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 2.66**Synonyms** Aminocyclohexane, Aminoexahydrobenzene, Hexahydroaniline, Hexahydrobenzenamine**Notes** A clear liquid with a "fishy" odor. Flammable. Keep below 25 C. Corrosive and Toxic by ingestion and inhalation.**Cyclonite (CAS# 121-82-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1.5 mg/m3 ST 3 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Cyclotrimethylenetrinitramine; Hexahydro-1,3,5-trinitro-s-triazine; RDX; Trimethylenetrinitramine; 1,3,5-Trinitro-1,3,5-triazacyclohexane**Notes** Highly explosive. A white crystalline solid, stable in storage. Military Grade High Explosive.**Cyclopentadiene (CAS# 542-92-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 4%**NIOSH Exposure Limit** 75 ppm (200 mg/m3)**OSHA Exposure Limit** 75 ppm (200 mg/m3)**Odor Threshold Value in ppm** 3.8**Warnings** Filter Capacity < 5%.**Synonyms** 1,3-Cyclopentadiene**Notes** Has a strong, unpleasant odor.**Cyclopentane (CAS# 287-92-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 5.7%**NIOSH Exposure Limit** 600 ppm (1720 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Pentamethylene**Notes** Use below NIOSH Exposure Limit. Highly Flammable.

Cyclopentanone (CAS# 120-92-3)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** adipic ketone, ketocyclopentane**Notes** Flammable. Vapor is 2.3 times denser than air. Known harmful irritant to skin, eyes and respiratory system.**Cyhexatin (CAS# 13121-70-5)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 0.32 mg/m3 [0.1 mg/m3 (as Sn)]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** TCHH, Tricyclohexylhydroxystannane, Tricyclohexylhydroxytin, Tricyclohexylstannium hydroxide, Tricyclohexyltin hydroxide**Notes** Requires both filters. Inlet concentration should be kept below 3 mg/m3.**Cysteamine (CAS# 60-23-1)****Rating** Chemical Assessment Required**Filter Type** HEPA**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** 2-Aminoethanethiol, ?-Mercaptoethylamine, Decarboxycysteine, Thioethanolamine, 2-Mercaptoethylamine**Notes** Air and moisture sensitive**DDT (CAS# 50-29-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** 1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** p,p'-DDT; Dichlorod-iphenyltrichloroethane; 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane**Notes** Toxic. Dangerous for the Environment.**Decaborane (CAS# 17702-41-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.3 mg/m3 (0.05 ppm) ST 0.9 mg/m3 (0.15 ppm) [skin]**OSHA Exposure Limit** 0.3 mg/m3 (0.05 ppm) [skin]**Odor Threshold Value in ppm** 0.06**Warnings** Odor Threshold < 0.1 ppm.; OEL < 1ppm (5mg/m3); Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Decaboron tetradecahydride**Notes** CNS Toxin. White Crystalline compound. Can become explosive in mixtures.**1-Decanethiol (CAS# 143-10-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 41.8%**NIOSH Exposure Limit** 0.5 ppm (3.6 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Decylmercaptan, n-Decylmercaptan, 1-Mercaptodecane**Notes** Extremely low exposure limits.**1-Decanethiol (CAS# 143-10-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 41.8%**NIOSH Exposure Limit** 0.5 ppm (3.6 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Decylmercaptan, n-Decylmercaptan, 1-Mercaptodecane**Notes** Extremely low exposure limits.**Demeton (CAS# 8065-48-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** O-O-Diethyl-O(and S)-2-(ethylthio)ethyl phosphorothioate mixture; Systox;**Deuterium (CAS# 7782-39-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** D2, normal deuterium**Notes** Contact Labconco.**Di(propylene glycol) methyl ether acetate (CAS# 88917-22-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 34.6**Warnings** Unknown Exposure Limit; Unknown Filter Efficiency**Synonyms** DPMA;PD-125944;dowanol dpma; Arcosolv DPMA;DOWANOL DPMA;ARCOSOLV DPMA;DOWANOL DPMA;PPG-2 METHYL ETHER ACETATE**Diacetone alcohol (CAS# 123-42-2)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 33.1%**NIOSH Exposure Limit** 50 ppm (240 mg/m3)**OSHA Exposure Limit** 50 ppm (240 mg/m3)**Odor Threshold Value in ppm** 0.891**Warnings** Odor Threshold < 1ppm**Synonyms** Diacetone, 4-Hydroxy-4-methyl-2-pentanone, 2-Methyl-2-pentanol-4-one**Notes** Flammable.**2, 4-Diaminoanisole (and its salts) (CAS# 615-05-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca Minimize occupational exposure (especially skin exposures)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 1,3-Diamino-4-methoxybenzene; 4-Methoxy-1,3-benzene-diamine; 4-Methoxy-m-phenylene-diamine

3,3- diaminobenzidine (CAS# 91-95-2)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 3,3';4,4'-Biphenyltetramine (1,1';-Biphenyl)-3,3';4,4';-tetraamine 3,3';4,4';-Diphenyltetramine 3,3';4,4';-Tetraaminobiphenyl Biphenyl-3,3';4,4';-tetrayltetraamine**o-Dianisidine (CAS# 119-90-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Ca**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Dianisidine; 3,3'-Dianisidine; 3,3'-Dimethoxybenzidine**DiazinonÂ® (CAS# 333-41-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Basudin;; Diazide;; O,O-Diethyl-O-2-isopropyl-4-methyl-6-pyrimidinyl-phosphorothioate; Spectracide;**Diazomethane (CAS# 334-88-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.2 ppm (0.4 mg/m3)**OSHA Exposure Limit** 0.2 ppm (0.4 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Azimethylene, Azomethylene, Diazirine**Diborane (CAS# 19287-45-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 ppm (0.1 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.1 mg/m3)**Odor Threshold Value in ppm** 1.8-3.5**Warnings** OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Boroethane, Boron hydride, Diboron hexahydride**Notes** Colorless Gas at room temperature with a repulsively sweet odor. In atmospheric mixtures, can be explosive, and spontaneously ignite in moist air.**1, 2-Dibromo-3-chloropropane (CAS# 96-12-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 0.001 ppm**Odor Threshold Value in ppm** 0.3 mg/m3**Warnings** Odor Threshold < 0.1 ppm. Carcinogen; EOL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1-Chloro-2,3-dibromopropane; DBCP; Dibromochloropropane**Notes** Very Low Odor Threshold.**Dibutyl amine (CAS# 111-92-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 2.5%**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Filter Capacity < 3%,**Dibutyl phosphate (CAS# 107-66-4)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 ppm (5 mg/m3) ST 2 ppm (10 mg/m3)**OSHA Exposure Limit** 1 ppm (5 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Dibutyl acid o-phosphate, Di-n-butyl hydrogen phosphate, Dibutyl phosphoric acid**Notes** Requires both filters. Only use with inlet concentrations below the TWA.**Dibutyl phthalate (CAS# 84-74-2)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** DBP; Dibutyl-1,2-benzene-dicarboxylate; Di-n-butyl phthalate**Notes** Requires both filters.**2-N-Dibutyl-aminoethanol (CAS# 102-81-8)****Rating** Evaluate Warning**Filter Type** Carbon**NIOSH Exposure Limit** 2 ppm (14 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Dibutylaminoethanol; 2-Dibutylaminoethanol; 2-Di-N-butylaminoethanol; 2-Di-N-butylaminoethyl alcohol; N,N-Dibutylethanolamine**1, 1-Dichloro-1-nitroethane (CAS# 594-72-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 2 ppm (10 mg/m3)**OSHA Exposure Limit** 10 ppm (60 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Dichloronitroethane**Notes** Only use below TWA concentrations.**1, 3-Dichloro-5, 5-dimethylhydantoin (CAS# 118-52-5)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.2 mg/m3 ST 0.4 mg/m3**OSHA Exposure Limit** 0.2 mg/m3**Odor Threshold Value in ppm** 0.01**Warnings** Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Dactin, DDH, Halane**Notes** Requires both filters. Very Low Odor Threshold.

Dichloro-monofluoromethane (CAS# 75-43-4)**Rating** Evaluate Warning**Filter Type** Carbon**NIOSH Exposure Limit** 10 ppm (40 mg/m3)**OSHA Exposure Limit** 1000 ppm (4200 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Dichlorofluoromethane; Fluorodichloromethane; Freon; 21; Genetron; 21; Halon; 112; Refrigerant**Notes** Poor filter effectiveness. A listed HCFC, colorless and odorless gas. To be phased out in 2015 per Montreal Protocol.**Dichloro-tetrafluoroethane (CAS# 76-14-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1000 ppm (7000 mg/m3)**OSHA Exposure Limit** 1000 ppm (7000 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 1,2-Dichlorotetrafluoroethane; Freon; 114; Genetron; 114; Halon; 242; Refrigerant 114**Notes** Poor filter effectiveness. A listed CFC and refrigerant. Ozone depleting gas.**Dichloroacetylene (CAS# 7572-29-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca C 0.1 ppm (0.4 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** DCA, Dichloroethyne [Note: DCA is a possible decomposition product of trichloroethylene or trichloroethane.]**Notes** No established adsorption characteristics.**o-Dichlorobenzene (CAS# 95-50-1)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 44.4%**NIOSH Exposure Limit** C 50 ppm (300 mg/m3)**OSHA Exposure Limit** C 50 ppm (300 mg/m3)**Odor Threshold Value in ppm** 0.072**Warnings** Odor Threshold < 0.1 ppm**Synonyms** o-DCB; 1,2-Dichlorobenzene; ortho-Dichlorobenzene; o-Dichlorobenzol**Notes** Very Low Odor Threshold,**p-Dichlorobenzene (CAS# 106-46-7)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 75 ppm (450 mg/m3)**Odor Threshold Value in ppm** 0.048**Warnings** Carcinogen; Odor Threshold < 0.1 ppm; Unknown Filter Effectiveness**Synonyms** p-DCB; 1,4-Dichlorobenzene; para-Dichlorobenzene; Dichlorocide**Notes** Colorless Solid. Strong Odor - Very Low Odor Threshold. Harmful substance. Dangerous to the Environment.**3, 3'-Dichlorobenzidine (and its salts) (CAS# 91-94-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Ca**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 4,4';-Diamino-3,3';-dichlorobiphenyl; Dichlorobenzidine base; o,o';-Dichlorobenzidine; 3,3';-Dichlorobiphenyl-4,4';-diamine; 3,3';-Dichloro-4,4';-biphenyldiamine; 3,3';-Dichloro-4,4';-diaminobiphenyl**Dichlorodifluoromethane (CAS# 75-71-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Capacity Percentage** 2.1%**NIOSH Exposure Limit** 1000 ppm (4950 mg/m3)**OSHA Exposure Limit** 1000 ppm (4950 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Filter Capacity < 3% - Low Filter Capacity; Unknown Odor Threshold**Synonyms** Difluorodichloromethane; Fluorocarbon 12; Freon; 12; Genetron; 12; Halon; 122; Propellant 12; Refrigerant 12**Notes** Call: Filter Capacity < 3% - Low Filter Capacity. Warning: Unknown Odor Threshold**1, 1-Dichloroethane (CAS# 75-34-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 7.7%**NIOSH Exposure Limit** 100 ppm (400 mg/m3)**OSHA Exposure Limit** 100 ppm (400 mg/m3)**Odor Threshold Value in ppm** 255**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Asymmetrical dichloroethane; Ethylidene chloride; 1,1-Ethylidene dichloride**Notes** Odor threshold exceeds PEL (TWA.)**Dichloroethyl ether (CAS# 111-44-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 18.3%**NIOSH Exposure Limit** Ca TWA 5 ppm (30 mg/m3) ST 10 ppm (60 mg/m3) [skin]**OSHA Exposure Limit** 15 ppm (90 mg/m3) [skin]**Odor Threshold Value in ppm** 0.049**Warnings** Odor Threshold < 0.1ppm**Synonyms** bis(2-Chloroethyl)ether; 2,2'-Dichlorodiethyl ether; 2,2'-Dichloroethyl ether**Notes** Very Low Odor Threshold**1, 2-Dichloroethylene (CAS# 540-59-0)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 8%**NIOSH Exposure Limit** 200 ppm (790 mg/m3)**OSHA Exposure Limit** 200 ppm (790 mg/m3)**Odor Threshold Value in ppm** 11.2**Synonyms** Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene**Notes** Highly Flammable, with sharp, harsh odor. Used as an anesthetic. Causes a host of symptoms under varying degrees of exposure.**2,4-Dichlorophenoxyacetic acid (CAS# 94-75-7)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 10 mg/m3**OSHA Exposure Limit** 10 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Dichlorophenoxyacetic acid; 2,4-D**Notes** Requires both filters.**1, 3-Dichloropropene (CAS# 542-75-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 12%**NIOSH Exposure Limit** Ca TWA 1 ppm (5 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 1**Warnings** Carcinogen**Synonyms** 3-Chloroallyl chloride; DCP; 1,3-Dichloro-1-propene; 1,3-Dichloropropylene; Telone;**Notes** Check filters frequently. Use only below TWA concentrations. Toxic. Dangerous to the Environment.

2, 2-Dichloropropionic acid (CAS# 75-99-0)**Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 ppm (6 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Dalapon; 2,2-Dichloropropanoic acid; alpha,alpha-Dichloropropionic acid**Notes** Requires both filters. Toxic. Use under NIOSH Exposure Limit**Dichlorvos (CAS# 62-73-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1 mg/m3 [skin]**OSHA Exposure Limit** 1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** DDVP; 2,2-Dichlorovinyl dimethyl phosphate**Notes** Poor filter effectiveness. Can be toxic during prolonged exposure.**Dicrotophos (CAS# 141-66-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.25 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Bidrin;; Carbicron;; 2-Dimethyl-cis-2-dimethylcarbamoyl-1-methylvinylphosphate**Notes** Toxic. Commonly used as an insecticide.**Dicyclopentadiene (CAS# 77-73-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 12%**NIOSH Exposure Limit** 5 ppm (30 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.03**Warnings** Odor Threshold < 0.1ppm**Synonyms** Bicyclopentadiene; DCPD; 1,3-Dicyclopentadiene dimer; 3a,4,7,7a-Tetrahydro-4,7-methanoindene**Notes** Very Low Odor Threshold. Whit crystalline solid with a camphor-like odor.**Dicyclopentadienyl iron (CAS# 102-54-5)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** bis(Cyclopentadienyl)iron, Ferrocene, Iron dicyclopentadienyl**Notes** Brown-Orangish Crystals.**Didecyl dimethyl Ammonium Chloride (CAS# 7173-51-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Ammonia-Amine**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Quaternary Ammonium Disinfectant, 1-Decanaminium, N-decyl-N,N-dimethyl-, chloride , Ammonium, didecyl dimethyl-, chloride , Ammonium, didecyl dimethyl-, chloride) , Arquad 10 , Bardac 22 Quaternium 12**Notes** Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Dieldrin (CAS# 60-57-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.25 mg/m3 [skin]**OSHA Exposure Limit** 0.25 mg/m3 [skin]**Odor Threshold Value in ppm** 0.041**Warnings** Odor Threshold < 0.1ppm; Carcinogen; OEL < 1ppm (5mg/m3); Unknown Odor Threshold**Synonyms** HEOD; 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,exo-5,8-dimethanonaphthalene**Notes** Toxic. Banned in most of the world. Linked to Parkinson's, cancer, immune, reproductive, and nervous system damage. Very Low Odor Threshold**Diesel exhaust (CAS#)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Mixed Bed**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Varies depending on the components**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Synonyms vary depending upon the specific diesel exhaust component.**Notes** Call: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Diesel fuel (CAS# 68476-30-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None. Possible carcinogen.**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Astral oil, Gas oil, Coal oil, Fuel oil, Home Heating oil, Marine diesel fuel**Notes** Contains Various hydrocarbon chains. Flammable.**Diethanolamine (CAS# 111-42-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 6.5%**NIOSH Exposure Limit** 3 ppm (15 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.025**Warnings** Odor Threshold < 0.1ppm**Synonyms** DEA; Di(2-hydroxyethyl)amine; 2,2'-Dihydroxydiethylamine; Diolamine; bis(2-Hydroxyethyl)amine; 2,2'-Iminodiethanol**Notes** Colorless Liquid. Known skin irritant. Acute Toxicity in high exposure. Very Low Odor Threshold.**Diethyl carbonate (CAS# 105-58-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** DEC; Ethyl Carbonate; Ethoxyformic**Diethyl ketone (CAS# 96-22-0)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13.3%**NIOSH Exposure Limit** 200 ppm (705 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.316**Warnings** Odor Threshold < 1ppm**Synonyms** anhydride**Notes** Hazardous at contact with eyes and skin. Nervous and organ damage due to ingestion. Highly Flammable. Use in well ventilated spaces away from spark potential devices.

Diethyl phthalate (CAS# 84-66-2)**Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** DEP, Diethyl ester of phthalic acid, Ethyl phthalate**Notes** Mildly toxic. Faint, disagreeable odor. Toxic gases formed when burnt. Colorless liquid at room temperature.**Diethyl pyrocarbonate (CAS# 1609-47-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** Diethyl dicarbonate**Diethylamine (CAS# 109-89-7)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 6.8%**NIOSH Exposure Limit** 10 ppm (30 mg/m3) ST 25 ppm (75 mg/m3)**OSHA Exposure Limit** 25 ppm (75 mg/m3)**Odor Threshold Value in ppm** 0.186**Warnings** Odor Threshold < 1ppm**Synonyms** Diethamine; N,N-Diethylamine; N-Ethylethanamine**Notes** OV filter is more effective than AM filter. A corrosive chemical. Contact with skin may cause irritation or burns. Strong and unpleasant odor.**2-Diethylaminoethanol (CAS# 100-37-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 9.4%**NIOSH Exposure Limit** 10 ppm (50 mg/m3) [skin]**OSHA Exposure Limit** 10 ppm (50 mg/m3) [skin]**Odor Threshold Value in ppm** 0.034**Warnings** Odor Threshold < 0.1 ppm**Synonyms** Diethylaminoethanol; 2-Diethylaminoethyl alcohol; N,N-Diethylethanamine; Diethyl-(2-hydroxyethyl)amine; 2-Hydroxytriethylamine**Notes** Very Low odor Threshold.**Diethylene glycol butyl ether (CAS# 112-34-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** 20PPM**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2-(2-Butoxyethoxy)ethanol, Diglycol monobutyl ether, Butoxydiglycol, DEGBE**Diethylene glycol diethyl ether (CAS# 112-36-7)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Unknown Filter Effectiveness - Not recommended for ductless enclosures - Laboratory tests have shown reproductive and teratogenic effects in mice**Synonyms** Diethyldiglycol, Bis(2-ethoxyethyl) ether, 2-Ethoxyethyl ether, 1-Ethoxy-2-(beta-ethoxyethoxy)ethane; bis(2,2-diethoxyethyl)ether; 2-Ethoxyethyl ether; Diethyldiglycol**Diethylene glycol dimethyl ether (CAS# 111-96-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Exposure Limit; Unknown Odor Threshold**Notes** Not recommended for ductless enclosures**Diethylenetriamine (CAS# 111-40-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 4.4%**NIOSH Exposure Limit** 1 ppm (4 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 9.3**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Filter Capacity < 5%**Synonyms** N-(2-Aminoethyl)-1,2-ethanediamine; bis(2-Aminoethyl)amine; DETA; 2,2'-Diaminodiethylamine**Notes** Use only below TWA concentrations.**Difluoro-dibromomethane (CAS# 75-61-6)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13%**NIOSH Exposure Limit** 100 ppm (860 mg/m3)**OSHA Exposure Limit** 100 ppm (860 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Dibromodifluoromethane; Freon; 12B2; Halon; 1202**Notes** Use only below TWA concentrations. Environmental Hazard.**Diglycidyl ether (CAS# 2238-07-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.1 ppm (0.5 mg/m3)**OSHA Exposure Limit** C 0.4 ppm (2.8mg/m3)**Odor Threshold Value in ppm** 4.61**Warnings** Odor Threshold < Exposure Limit - Poor Odor Warning; Carcinogen; OEL < 1ppm (5mg/m3)**Synonyms** Diallyl ether dioxide; DGE; di (2,3-epoxypropyl) ether; 2-Epoxypropyl ether; bis(2,3)-Ethoxypropyl) ether**Diisobutyl ketone (CAS# 108-83-8)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 33.2%**NIOSH Exposure Limit** 25 ppm (150 mg/m3)**OSHA Exposure Limit** 50 ppm (290 mg/m3)**Odor Threshold Value in ppm** 0.339**Warnings** Odor Threshold < 1ppm**Synonyms** DIBK, Sym-Diisopropyl acetone; 2-6-Diethyl-4-heptanone; Isovalerone; Valerone**Notes** Requires both filters.**Diisopropylamine (CAS# 108-18-9)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 16.4%**NIOSH Exposure Limit** 5 ppm (20 mg/m3) [skin]**OSHA Exposure Limit** 5 ppm (20 mg/m3) [skin]**Odor Threshold Value in ppm** 0.398**Warnings** Odor Threshold < 1ppm**Synonyms** DIPA, N-(1-Methylethyl)-2-propanamine**Notes** Mildly Toxic.**This guide is not an approved list of chemicals**

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N,N-Diisopropylethylamine (CAS# 7087-68-5)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** N-Ethyl-diisopropylamine; Hunig's Base**2, 2-Dimethoxy-phenylacetophenone (CAS# 24650-42-8)****Rating** Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness; Not recommended for ductless enclosure**Synonyms** Benzil ?, ?-dimethyl acetal ?, ?-Dimethoxy-?-phenylacetophenone**2,2-Dimethoxy-phenylacetophenone (CAS# 24650-42-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Unknown**OSHA Exposure Limit** Unknown**Odor Threshold Value in ppm** Unknown**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** Benzil ?, ?-dimethyl acetal ?, ?-Dimethoxy-?-phenylacetophenone**Notes** Not recommended for ductless enclosures.**Dimethyl acetamide (CAS# 127-19-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 26.2%**NIOSH Exposure Limit** 10 ppm (35 mg/m3) [skin]**OSHA Exposure Limit** 10 ppm (35 mg/m3) [skin]**Odor Threshold Value in ppm** 47.9**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** N,N-Dimethyl acetamide; DMAC**Notes** Toxic. Use only under TWA concentrations.**Dimethyl carbamoyl chloride (CAS# 79-44-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Chloroformic acid dimethylamide; Dimethylcarbamic chloride; N,N-Dimethylcarbamoyl chloride; DMCC**Dimethyl carbonate (CAS# 616-38-6)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** TWA: 200 STEL: 400 (ppm)**OSHA Exposure Limit** TWA: 200 STEL: 400 (ppm)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Carbonic acid, dimethyl ester, Methyl carbonate**Notes** Vapor/air mixtures are explosive.**Dimethyl ether (CAS# 115-10-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.3-9.0**Warnings** Exposure Limit Not Established; Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** oxybismethane, wood ether, dimethyl oxide, methyl ether, DME,**Notes** Very short filter life. High flammability.**Dimethyl phosphate (CAS# 813-78-5)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness, Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** O,O-dimethyl hydrogen phosphate; O,O-Dimethylphosphate; Dimethyl hydrogen phosphate; Dimethyl phosphate; Dimethyl phosphoric acid; Hidrogenofosfato de dimetilo; Hydrog  nophosphate de dim  thyle**Dimethyl phthalate (CAS# 131-11-3)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Dimethyl ester of 1,2-benzenedicarboxylic acid; DMP**Notes** Requires both filters.**Dimethyl sulfate (CAS# 77-78-1)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 34.5%**NIOSH Exposure Limit** Ca TWA 0.1 ppm (0.5 mg/m3) [skin]**OSHA Exposure Limit** 1 ppm (5 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Dimethyl ester of sulfuric acid, Dimethylsulfate, Methyl sulfate**Notes** Poison. Contact Hazard. Inhalation Hazard. Corrosive. Environmental Hazard. Carcinogenic/Mutagenic.**Dimethyl sulfide (CAS# 75-18-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor | Acid-Sulfur**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.0025**Warnings** Unknown Filter Effectiveness; Unknown Exposure Limit**Synonyms** Methane, thiois-; Methyl sulfide; Dimethyl monosulfide; Dimethyl thioether; DMS**Notes** AG recommended as H2S may also be present**Dimethyl sulfoxide (CAS# 67-68-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Dimethyl sulphoxide, DMSO, methylsulfinylmethane, A 10846, deltan, demeso, demasorb, demavet, demsodrox, dermasorb, dimexide, DMS-70, DMS-90, hyadur, infiltrina, somipront, SQ 9453, syntexan, topsym, methyl sulfoxide, numerous other trade names**Notes** Practically an odorless chemical. Has shown minor toxic effect in exposed humans.

Dimethyl terephthalate (CAS# 120-61-6)

Rating Evaluate Warning
Filter Type HEPA
Filter Application Particulate
NIOSH Exposure Limit Not established
OSHA Exposure Limit 5 mg/m3
Odor Threshold Value in ppm Not established
Warnings Unknown Odor Threshold
Synonyms Dimethyl 1,4-benzenedicarboxylate

Dimethyl-1, 2-dibromo-2, 2-dichlorethyl phosphate (CAS# 300-76-5)

Rating Generally compatible
Filter Type HEPA
Filter Application Particulate
NIOSH Exposure Limit 3 mg/m3 [skin]
OSHA Exposure Limit 3 mg/m3 [skin]
Odor Threshold Value in ppm Not established
Warnings Unknown Odor Threshold; OEL < 1ppm (5mg/m3)
Synonyms Dibrom;; 1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate; Naled
Notes Use below Exposure limit.

4-Dimethyl-aminoazobenzene (CAS# 60-11-7)

Rating Small Volumes May Be Acceptable
Filter Type Carbon | HEPA
Filter Application Organic Vapor | Particulate
NIOSH Exposure Limit Ca
OSHA Exposure Limit Ca
Odor Threshold Value in ppm .005-.06
Warnings Odor Threshold < 0.1ppm; Carcinogen; Exposure Limit Not Established; Unknown Filter Effectiveness
Synonyms Butter yellow; DAB; p-Dimethylaminoazobenzene; N,N-Dimethyl-4-aminoazobenzene; Methyl yellow
Notes Requires both filters. Toxic. Very Low Odor Threshold.

Dimethyl-aminopropionitrile (CAS# 1738-25-6)

Rating Small Volumes May Be Acceptable
Filter Type Carbon
NIOSH Exposure Limit Exposure should be limited. See Appendix C of NIOSH Guide.
OSHA Exposure Limit Exposure should be limited. See Appendix C of NIOSH Guide.
Odor Threshold Value in ppm Not established
Warnings Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness
Synonyms DMAPN;Cyanogum41catalyst;Dimethylaminopropion;2-Dimethylaminoethyl cyanide;3-dimethylaminopropionitril;2-DIMETHYLAMINOETHYL CYANIDE;3-Dimethylaminopropanonitrile;3-(DIMETHYLAMINO)PROPIONITRILE;3-(dimethylamino)-propionitril;î2-(Dimethylamino)propionitrile

Dimethylamine (CAS# 124-40-3)

Rating Chemical Assessment Required
Filter Type Carbon
Filter Capacity Percentage 0.2%
NIOSH Exposure Limit 10 ppm (18 mg/m3)
OSHA Exposure Limit 10 ppm (18 mg/m3)
Odor Threshold Value in ppm 0.081
Warnings Not Recommended: Filter Capacity < 1% - Short Filter Life; Odor Threshold < 0.1ppm
Synonyms Dimethylamine (anhydrous), N-Methylmethanamine
Notes Not Recommended: Filter Capacity < 1% - Short Filter Life. Call: Odor Threshold < 0.1ppm

N, N-Dimethylaniline (CAS# 121-69-7)

Rating Generally Compatible
Filter Type Carbon
Filter Application Organic Vapor
Filter Capacity Percentage 40.2%
NIOSH Exposure Limit 5 ppm (25 mg/m3) ST 10 ppm (50 mg/m3) [skin]
OSHA Exposure Limit 5 ppm (25 mg/m3) [skin]
Odor Threshold Value in ppm 0.219
Warnings Odor Threshold < 1ppm
Synonyms N,N-Dimethylbenzeneamine; N,N-Dimethylphenylamine [Note: Also known as Dimethylaniline which is a correct synonym for Xylidine.]

N,N-Dimethyldecylamine (CAS# 1120-24-7)

Rating Evaluate Warning
Filter Type Carbon
Filter Application Organic Vapor
NIOSH Exposure Limit None
OSHA Exposure Limit None
Odor Threshold Value in ppm Not established
Warnings Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness
Synonyms 1-(Dimethylamino)decane

Dimethylformamide (CAS# 68-12-2)

Rating Evaluate Warning
Filter Type Carbon
Filter Application Organic Vapor
Filter Capacity Percentage 17.2%
NIOSH Exposure Limit 10 ppm (30 mg/m3) [skin]
OSHA Exposure Limit 10 ppm (30 mg/m3) [skin]
Odor Threshold Value in ppm 100
Warnings Odor Threshold > Exposure Limit - Poor Odor Warning
Synonyms Dimethyl formamide; N,N-Dimethylformamide; DMF
Notes Flammable. May be carcinogenic.

1, 1-Dimethylhydrazine (CAS# 57-14-7)

Rating Small Volumes May Be Acceptable
Filter Type Carbon
NIOSH Exposure Limit Ca C 0.06 ppm (0.15 mg/m3) [2-hr]
OSHA Exposure Limit 0.5 ppm (1 mg/m3) [skin]
Odor Threshold Value in ppm 8.79
Warnings Carcinogen; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness
Synonyms Dimazine, DMH, UDMH, Unsymmetrical dimethylhydrazine
Notes Toxic. Flammable. Environmental Hazard. Explosive in presence of oxidisers.

Dinitolmide (CAS# 148-01-6)

Rating Generally Compatible
Filter Type HEPA
Filter Application Particulate
NIOSH Exposure Limit 5 mg/m3
OSHA Exposure Limit None
Odor Threshold Value in ppm Not established
Warnings Unknown Odor Threshold
Synonyms 3,5-Dinitro-o-toluamide; 2-Methyl-3,5-dinitrobenzamide; Zoalene
Notes Used as an antibiotic (anticoccide), broad-spectrum.

Dinitro-o-cresol (CAS# 534-52-1)

Rating Evaluate Warning
Filter Application Particulate
NIOSH Exposure Limit 0.2 mg/m3 [skin]
OSHA Exposure Limit 0.2 mg/m3 [skin]
Odor Threshold Value in ppm Not established
Warnings Unknown Odor Threshold; OEL < 1ppm (5mg/m3)
Synonyms 4,6-Dinitro-o-cresol; 3,5-Dinitro-2-hydroxytoluene; 4,6-Dinitro-2-methyl phenol; DNC; DNOC
Notes Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m3).

m-Dinitrobenzene (CAS# 99-65-0)

Rating Evaluate Warning
Filter Type Carbon | HEPA
Filter Application Organic Vapor | Particulate
NIOSH Exposure Limit 1 mg/m3 [skin]
OSHA Exposure Limit 1 mg/m3 [skin]
Odor Threshold Value in ppm Not established
Warnings Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness
Synonyms meta-Dinitrobenzene; 1,3-Dinitrobenzene
Notes Requires both filters.

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o-Dinitrobenzene (CAS# 528-29-0)**Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 mg/m3 [skin]**OSHA Exposure Limit** 1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** ortho-Dinitrobenzene; 1,2-Dinitrobenzene**Notes** Requires both filters.**p-Dinitrobenzene (CAS# 100-25-4)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 mg/m3 [skin]**OSHA Exposure Limit** 1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** para-Dinitrobenzene; 1,4-Dinitrobenzene**Notes** Requires both filters.**3,5-dinitrobenzoic acid (CAS# 99-34-3)****Rating** Evaluate Warning**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 3-Carboxy-1,5-dinitrobenzene, Benzoic acid, 3,5-dinitro-, BENZOIC ACID,3,5-DINITRO, Dinitrobenzoic acid, DNBA**Dinitrotoluene (CAS# 25321-14-6)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 1.5 mg/m3 [skin]**OSHA Exposure Limit** 1.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Dinitrotoluol, DNT, Methylidinitrobenzene [Note: Various isomers of DNT exist]**Notes** Requires both filters. Pale yellow crystals. Highly Toxic.**Dioxane (CAS# 123-91-1)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** Ca C 1 ppm (3.6 mg/m3) [30-minute]**OSHA Exposure Limit** 100 ppm (360 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Diethylene dioxide; Diethylene ether; Dioxan; p-Dioxane; 1,4-Dioxane**Notes** Flammable. Carcinogenic. Eye & Respiratory Irritant.**Dioxathion (CAS# 78-34-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.2 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 7.78**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Delnav;; p-Dioxane-2,3-diyl ethyl phosphorodithioate; Dioxane phosphate; 2,3-p-Dioxanethiol-S,S-bis(O,O-diethyl phosphoro-dithioate); Navadel;**Notes** Extremely Hazardous substance with multiple long term exposure symptoms. Banned in the U.S. Reddish-brown liquid or powder with a garlic-like odor.**1-3 Dioxolane (CAS# 646-06-7)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 1,3-Dioxacyclopentane; 1,3-dioxolane stab.; Ethylene glycol methylene ether-Formaldehyde ethylene acetal; 1,3-Dioxalane**Diphenyl (CAS# 92-52-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 mg/m3 (0.2 ppm)**OSHA Exposure Limit** 1 mg/m3 (0.2 ppm)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 0.1ppm. OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Biphenyl, Phenyl benzene**Notes** Requires both filters. Irritant. Environmental Hazard. Used as a preservative and antibiotic. Mildly Toxic.**1,5-Diphenyl-carbohydrazide (CAS# 140-22-7)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established.**Odor Threshold Value in ppm** 0.009**Warnings** Exposure Limit Not Established; Odor Threshold < Exposure Limit - Poor Odor Warning**Synonyms** 1,5-Diphenylcarbohydrazide; 1,5-Diphenylcarbazine; Carbonic dihydrazide, 2,2'1;-diphenyl-; N,N'1;-Diphenylcarbazine**Notes** Can be an eye irritant, but is a stable chemical.**Diphenylamine (CAS# 122-39-4)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 10 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold < 0.1ppm; Unknown Filter Effectiveness**Synonyms** Anilinobenzene, DPA, Phenylaniline, N-Phenylaniline, N-Phenylbenzenamine [Note: The carcinogen 4-Aminodiphenyl may be present as an impurity in the commercial product.]**Notes** Requires both filters. Colorless Solid. Toxic. Possible Mutagen. Possible teratogen. Harmful in contact with skin and if swallowed or inhaled. Known Irritant.**Dipotassium phosphate (CAS# 7758-11-4)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.022**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Dipotassium phosphate (K2HPO4), Potassium monohydrogen phosphate, Phosphoric acid dipotassium salt, Potassium phosphate dibasic**Notes** Warning: Unknown Odor Threshold; Exposure Limit Not Established.**dipropyheptyl phthalate (CAS# 53306-54-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 34.6**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** DPHP**Notes** Strong penetrating odor**This guide is not an approved list of chemicals**

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Dipropyl ketone (CAS# 123-19-3)**Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 23.7%**NIOSH Exposure Limit** 50 ppm (235 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Butyrene, DPK, 4-Heptanone, Heptan-4-one, Propyl ketone**Notes** Use under established exposure limit. Test filters regularly.**Dipropylene glycol methyl ether (CAS# 34590-94-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Warnings** Unknown Exposure Limit; Unknown Filter Efficiency**Synonyms** Dipropylene glycol monomethyl ether; Dowanol; 50B**Diquat (Diquat dibromide) (CAS# 85-00-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Diquat dibromide; 1,1'-Ethylene-2,2'-bipyridylium dibromide [Note: Diquat is a cation (C12H12N2++; 1,1'-Ethylene-2,2-bipyridylium ion). Various diquat salts are commercially available.]**Notes** Moderately Toxic - fatal if swallowed, inhaled or absorbed through the skin in sufficient quantities.**disodium phophate (CAS# 7558-79-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 15 mg/m3 (total dust) 8-hr TWA, 5 mg/m3 (respirable) 8-hr TWA**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Disodium phosphate; DSP; Disodium hydrogen phosphate, Di sodium phosphate; Sodium phosphate dibasic.**Disulfiram (CAS# 97-77-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 2 mg/m3 [Pre-cautions should be taken to avoid concurrent exposure to ethylene dibromide.]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Antabuse;; bis(Diethylthiocarbamoyl) disulfide; Ro-Sulfiram;; TETD; Tetraethylthiuram disulfide**Notes** Used as a drug to treat chronic alcohol and drug (cocaine) abuse.**Disulfoton (CAS# 298-04-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** O,O-Diethyl S-2-(ethylthio)-ethyl phosphorodithioate; Di-Syston;; Thiodemeton**Notes** Highly regulated by the U.S. Government.**Dithiothreitol (CAS# 27565-41-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** DL-Dithiothreitol, Electrophoresis Grade; Cleland's Reagent; DL-DTT; 2,3-butanediol, 1,4- dimercapto-, DL-threo-, DL-threo-1,4-Dimercapto-2,3- butanediol; rac-Dithiothreitol**Notes** Amine-like odor, heat decomposition emits toxic fumes of NO2- no detection**Diuron (CAS# 330-54-1)****Rating** Evaluate Warning**Filter Type** Carbon**NIOSH Exposure Limit** 10 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 3-(3,4-Dichlorophenyl)-1,1-dimethylurea; Direx;; Karmex;**Notes** Harmful. Environmental Hazard. No known sorbent.**Divinyl benzene (CAS# 1321-74-0)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 40.8%**NIOSH Exposure Limit** 10 ppm (50 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold = Exposure Limit - Poor Odor Warning**Synonyms** Diethyl benzene, DVB, Vinylstyrene [Note: Commercial product contains all 3 isomers, but m-isomer predominates. Usually contains an inhibitor to prevent polymerization.]**1-Dodecanethiol (CAS# 112-55-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 43.1%**NIOSH Exposure Limit** C 0.5 ppm (4.1 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 10**Warnings** OEL < 1ppm (5mg/m3); Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Dodecyl mercaptan, 1-Dodecyl mercaptan, n-Dodecyl mercaptan, Lauryl mercaptan, n-Lauryl mercaptan, 1-Mercaptododecane**Edetate disodium (CAS# 6381-92-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 4 mg/m3**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Disodium ethylenediaminetetraacetate dihydrate, EDTA disodium salt, EDTA-Na2, Edathamil, Edetate disodium salt dihydrate, Ethylenediaminetetraacetic acid disodium salt dihydrate, Sequestrene Na2**EDTA (CAS# 60-00-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** EthylMethylCarbonate(Emc)CARBONIC ACID ETHYL METHYL ESTER ETHYL METHYL CARBONATE, carbonicacidethylestermethylester Ethoxyacetic acid, methyl ester Methyl ethylcarbonate Carbonic acid ethyl methyl**This guide is not an approved list of chemicals**

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Emery (CAS# 1302-74-5)**Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established REL™s after limited evaluation of the literature, concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Aluminum oxide, Aluminum trioxide, Corundum, Impure corundum, Natural aluminum oxide [Note: Emery is an impure variety of Al2O3 which may contain small impurities of iron, magnesium & silica Corundum is natural Al2O3]**Notes** A mixture of minerals, typically granular.**Endosulfan (CAS# 115-29-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Benzoepin; Endosulphan; 6,7,8,9,10-Hexachloro-1,5,5a,6,9,9a-hexachloro-6,9-methano- 2,4,3-benzo-dioxathiepin-3-oxide; Thiodan**Notes** Toxic - Acute Neurotoxin. Known Irritant. Environmental Hazard. An insecticide being phased out globally.**Endrin (CAS# 72-20-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro- 1,4-endo,endo-5,8-dimethanonaphthalene; Hexadrin;**Notes** Requires both filters. Neurotoxin, used as an insecticide and Rodenticide. Environmental toxin/poison, tightly regulated for (sea)water contamination.**Enflurane (CAS# 13838-16-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** C 2 ppm (15.1 mg/m3) [60-minute] [*Note: REL for exposure to waste anesthetic gas.]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.118**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2-Chloro-1-(difluoromethoxy)-1,1,2-trifluoroethane; 2-Chloro-1,1,2-trifluoroethyl difluoromethyl ether; Ethrane;**Notes** Used as an inhalational anesthetic, similar to its isomer isoflurane. Can have acute toxicity. Use below Exposure Limit.**Epichlorohydrin (CAS# 106-89-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15.2%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 5 ppm (19 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Odor Threshold < 1ppm**Synonyms** 1-Chloro-2,3-epoxypropane; 2-Chloropropylene oxide; gamma-Chloropropylene oxide**Notes** A colorless liquid with pungent, garlic-like odor. Toxic. Irritant.**EPN (CAS# 2104-64-5)****Rating** Generally Compatible**Filter Type** Carbon**NIOSH Exposure Limit** 0.5 mg/m3 [skin]**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** 0.934**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Ethyl p-nitrophenyl benzenethionophosphonate, O-Ethyl O-(4-nitrophenyl) phenylphosphonothioate**1,2-Ethanedithiol (CAS# 540-63-6)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 11.2**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Capacity**Synonyms** 1,2-dimercaptoethane, dithioethyleneglycol, dithioglycol, ethylene dimercaptan, alpha-ethylene dimercaptan, ethylene dithioglycol, ethyl hydropersulfide**Notes** Very toxic by inhalation.**1,2-Ethanedithiol (CAS# 540-63-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 2.59**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 1,2-dimercaptoethane, dithioethyleneglycol, dithioglycol, ethylene dimercaptan, alpha-ethylene dimercaptan, ethylene dithioglycol, ethyl hydropersulfide**Notes** Very toxic by inhalation. Smells like rotten cabbage. Flammable.**Ethanolamine (CAS# 141-43-5)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 27.3%**NIOSH Exposure Limit** 3 ppm (8 mg/m3) ST 6 ppm (15 mg/m3)**OSHA Exposure Limit** 3 ppm (6 mg/m3)**Odor Threshold Value in ppm** Not established**Synonyms** 2-Aminoethanol, beta-Aminoethyl alcohol, Ethylolamine, 2-Hydroxyethylamine, Monoethanolamine**Notes** A colorless, viscous liquid with an ammonia-like odor. Toxic. Flammable. Corrosive.**bis(2-(Dimethylamino) ethyl) Ether (CAS# 3033-62-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Exposure should be limited. See Appendix C of NIOSH Guide.**OSHA Exposure Limit** Exposure should be limited. See Appendix C of NIOSH Guide.**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** NIAx; A99; Catalyst A1; 2,2'-Oxybis(N,N-dimethyl ethylamine) [Note: A component (5%) of NIAx; Catalyst ESN, along with dimethylaminopropionitrile (95%).]**Ethidium bromide (CAS# 1239-45-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Homidium bromide, 2,7-Diamino-10-ethyl-9-phenylphenanthridinium bromide, 3,8-Diamino-5-ethyl-6-phenylphenanthridinium bromide, 2,7-Diamino-9-phenyl-10-ethylphenanthridinium bromide, 2,7-Diamino-9-phenylphenanthridine ethobromide, Dromilac, RD 1572**Notes** Carcinogen. May be fatal if inhaled. Toxic if Swallowed. Known skin, eye, respiratory irritant. Reproductive mutagen.**Ethion (CAS# 563-12-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.4 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** O,O,O',O'-Tetraethyl S,S'-methylene di(phosphorodithioate)**This guide is not an approved list of chemicals**

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2-Ethoxyethanol (CAS# 110-80-5)**Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 21.1%**NIOSH Exposure Limit** 0.5 ppm (1.8 mg/m3) [skin]**OSHA Exposure Limit** 200 ppm (740 mg/m3) [skin]**Odor Threshold Value in ppm** Odorless**Synonyms** Cellosolve; EGEE; Ethylene glycol monoethyl ether**Notes** Flammable. Harmful if swallowed, in contact with skin or inhaled. Reproductive toxin.**2-Ethoxyethyl acetate (CAS# 111-15-9)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 34.4%**NIOSH Exposure Limit** 0.5 ppm (2.7 mg/m3) [skin]**OSHA Exposure Limit** 100 ppm (540 mg/m3) [skin]**Odor Threshold Value in ppm** 1.22**Warnings** Odor Threshold < 1ppm**Synonyms** Cellosolve; acetate; EGEEA; Ethylene glycol monoethyl ether acetate; Glycol monoethyl ether acetate**Ethoxyquin (CAS# 91-53-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor | Ammonia-Amine**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.182**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 6-ethoxy-2,2,4-trimethyl-1,2-dihydroquinoline, Ethoxyquin, Santoquin, Aries Antox; 1,2-Dihydro-2,2,4-trimethyl-6-ethoxyquinoline**Notes** This compound is used as a food additive. It is also used as an anti-degradation agent for rubber, insecticide, antioxidant, flex-cracking inhibitor, post-harvest dip to prevent scald on apples and pears, fungicide and plant growth regulator.**Ethyl 2-cyanoacrylate (CAS# 7085-85-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 2 ppm (6mg/m3)**Odor Threshold Value in ppm** 4.07**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2-Cyano-2-propenoic acid, ethyl ester 2-Cyanoacrylic acid, ethyl ester Ethyl alpha-cyanoacrylate, Krazy Glue, Super Glue;**Notes** Warning: Unknown Odor Threshold; Unknown Filter Effectiveness**Ethyl 3-ethoxypropionate (CAS# 763-69-9)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Ethyl beta-Ethylpropionate; Propionic Acid, 3-Ethoxy, Ethyl Ester, EEP**Notes** Paint component**Ethyl acetate (CAS# 141-78-6)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 9%**NIOSH Exposure Limit** 400 ppm (1400 mg/m3)**OSHA Exposure Limit** 400 ppm (1400 mg/m3)**Warnings** Odor Threshold < 1ppm**Synonyms** Acetic ester, Acetic ether, Ethyl ester of acetic acid, Ethyl ethanoate**Notes** Highly flammable. Irritant.**Ethyl acrylate (CAS# 140-88-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 6.6%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 25 ppm (100 mg/m3) [skin]**Odor Threshold Value in ppm** 0.61**Warnings** Odor Threshold < 0.1ppm; Carcinogen**Synonyms** Ethyl acrylate (inhibited), Ethyl ester of acrylic acid, Ethyl propenoate**Notes** Highly flammable. Highly reactive. Harmful if swallowed, in contact with skin or inhaled. Known eye, skin, respiratory irritant.**Ethyl alcohol (CAS# 64-17-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 1.3%**NIOSH Exposure Limit** 1000 ppm (1900 mg/m3)**OSHA Exposure Limit** 1000 ppm (1900 mg/m3)**Odor Threshold Value in ppm** 0.001**Warnings** Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 1ppm**Synonyms** Alcohol, Cologne spirit, Ethanol, EtOH, Grain alcohol**Notes** Highly flammable. High exposure limit. Volatile. Can be used as a "bench" chemical, commonly used as fuel for low profile flames. Can be substituted for Isopropyl Alcohol (IPA).**Ethyl benzene (CAS# 100-41-4)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 27.2%**NIOSH Exposure Limit** 100 ppm (435 mg/m3) ST 125 ppm (545 mg/m3)**OSHA Exposure Limit** 100 ppm (435 mg/m3)**Odor Threshold Value in ppm** 0.324**Synonyms** Ethylbenzol, Phenylethane**Notes** Requires both filters. Highly Flammable. Harmful if inhaled.**Ethyl bromide (CAS# 74-96-4)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 5.3%**NIOSH Exposure Limit** 200 ppm; STEL 250 ppm**OSHA Exposure Limit** 200 ppm (890 mg/m3)**Odor Threshold Value in ppm** 2.3**Warnings** Carcinogen**Synonyms** Bromoethane, Monobromoethane**Notes** Harmful if swallowed or inhaled. Highly Flammable. Possible carcinogen and reproductive toxin (California).**Ethyl butyl ketone (CAS# 106-35-4)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 28%**NIOSH Exposure Limit** 50 ppm (230 mg/m3)**OSHA Exposure Limit** 50 ppm (230 mg/m3)**Odor Threshold Value in ppm** 3.09**Synonyms** Butyl ethyl ketone, 3-Heptanone**Notes** Requires both filters.**Ethyl chloride (CAS# 75-00-3)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.9%**NIOSH Exposure Limit** Potential occupational carcinogen**OSHA Exposure Limit** 1000 ppm (2600 mg/m3)**Odor Threshold Value in ppm** 0.1-10.0**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life**Synonyms** Chloroethane, Hydrochloric ether, Monochloroethane, Muriatic ether**Notes** Extremely Flammable. Limited evidence of a carcinogenic effect. Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.**This guide is not an approved list of chemicals**

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Ethyl ether (CAS# 60-29-7)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 3.7%**NIOSH Exposure Limit** [TWA 400 ppm; STEL 500 ppm]**OSHA Exposure Limit** 400 ppm (1200 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Filter Capacity < 3% - Low Filter Capacity**Synonyms** Diethyl ether, Diethyl oxide, Ethyl oxide, Ether, Solvent ether**Notes** Extremely flammable. May form explosive peroxides. Harmful by inhalation or if swallowed. Prolonged exposure can cause dry skin, cracking of skin, dizziness or drowsiness.**Ethyl formate (CAS# 109-94-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 3.4%**NIOSH Exposure Limit** 100 ppm (300 mg/m3)**OSHA Exposure Limit** 100 ppm (300 mg/m3)**Odor Threshold Value in ppm** 2.29**Warnings** Filter Capacity < 3% - Low Filter Capacity**Synonyms** Ethyl ester of formic acid, Ethyl methanoate**Notes** Cause eye, skin, respiratory irritations.**Ethyl lactate (CAS# 97-64-3)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 400 ppm**OSHA Exposure Limit** 400 ppm**Warnings** Unknown Filter Effectiveness**Synonyms** Lactic Acid Ethyl Ester; Propanoic Acid, 2-Hydroxy-, Ethyl Ester**Notes** Flammable. Respiratory irritant. Risk of serious damage to eyes.**Ethyl mercaptan (CAS# 75-08-1)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 2.5%**NIOSH Exposure Limit** C 0.5 ppm (1.3 mg/m3) [15-minute]**OSHA Exposure Limit** C 10 ppm (25 mg/m3)**Odor Threshold Value in ppm** 0.074**Warnings** Not Recommended: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3)**Synonyms** Ethanethiol, Ethyl sulfhydrylate, Mercaptoethane**Notes** Strong odor. Toxic. A minor component of petroleum. Used as an odor warning chemical to odorless gas for leak detection.**Ethyl Methyl Carbonate (CAS# 623-53-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.001**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** EthylMethylCarbonate(Emc) CARBONIC ACID ETHYL METHYL ESTER ETHYL METHYL CARBONATE carbonicacidethylester-methylester Ethoxyacetic acid, methyl ester Methyl ethyl carbonate Carbonic acid ethyl methyl Carbonic acid methyl ethyl**Ethyl silicate (CAS# 78-10-4)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 10 ppm (85 mg/m3)**OSHA Exposure Limit** 100 ppm (850 mg/m3)**Odor Threshold Value in ppm** 0.275**Warnings** Unknown Filter Effectiveness**Synonyms** Ethyl orthosilicate, Ethyl silicate (condensed), Tetraethoxysilane, Tetraethyl orthosilicate, Tetraethyl silicate, TEOS**Ethyl violet (CAS# 2390-59-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Basic violet 4, Ethyl purple 6B**Ethylamine (CAS# 75-04-7)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.2%**NIOSH Exposure Limit** 10 ppm (18 mg/m3)**OSHA Exposure Limit** 10 ppm (18 mg/m3)**Odor Threshold Value in ppm** 0.136**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life; Odor Threshold < 1ppm**Synonyms** Aminoethane, Ethylamine (anhydrous), Monoethylamine**Notes** Strong Base. Extremely flammable. Harmful if swallowed. Causes burns. Known eye, skin, respiratory irritant. Keep away from ignition sources.**Ethylene carbonate (CAS# 96-49-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 9**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 1,3-Dioxolan-2-one**Notes** American Industrial Hygiene Association (AIHA) Workplace Environmental Exposure Level (WEEL):**Ethylene chlorohydrin (CAS# 107-07-3)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 14.4%**NIOSH Exposure Limit** C 1 ppm (3 mg/m3) [skin]**OSHA Exposure Limit** 5 ppm (16 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm**Synonyms** 2-Chloroethanol, 2-Chloroethyl alcohol, Ethylene chlorhydrin**Notes** Toxic.**Ethylene dibromide (CAS# 106-93-4)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 46.8%**NIOSH Exposure Limit** Ca 0.045 ppm C 0.13 ppm [15-minute]**OSHA Exposure Limit** 20 ppm C 30 ppm 50 ppm [5-minute maximum peak]**Odor Threshold Value in ppm** 4.27**Warnings** Carcinogen**Synonyms** 1,2-Dibromoethane; Ethylene bromide; Glycol dibromide**Notes** Toxic by inhalation, in contact with skin and if swallowed. Known eye, skin, respiratory irritant. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.**Ethylene dichloride (CAS# 107-06-2)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 8%**NIOSH Exposure Limit** Ca TWA 1 ppm (4 mg/m3) ST 2 ppm (8 mg/m3)**OSHA Exposure Limit** 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]**Odor Threshold Value in ppm** 9.84**Warnings** Carcinogen**Synonyms** 1,2-Dichloroethane; Ethylene chloride; Glycol dichloride**Notes** Highly flammable. Known eye, skin, respiratory irritant. Toxic. Corrosive.

Ethylene glycol (CAS# 107-21-1)**Rating** Generally compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 36.8%**NIOSH Exposure Limit** Ceiling 50 ppm**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Synonyms** 1,2-Dihydroxyethane; 1,2-Ethanediol; Glycol; Glycol alcohol; Monoethylene glycol**Notes** Requires both filters. Harmful if swallowed. Eye irritant.**Ethylene glycol dimethacrylate (CAS# 97-90-5)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** 1, 2-Bis(methacryloyloxy)ethane; 2-Propenoic acid, 2-Methyl-, 1, 2-Ethanediyl ester; Diglycol dimethacrylate; Ethanediol dimethacrylate; Ethyldiol metacrylate; Ethylene glycol bis (methacrylate); Ethylene methacrylate; Glycol dimethacrylate; Sartomer SR 206**Ethylene glycol dinitrate (CAS# 628-96-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** 0.2 ppm (1 mg/m3) [skin]**Odor Threshold Value in ppm** 0.011**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Capacity**Synonyms** EGDN; 1,2-Ethanediol dinitrate; Ethylene dinitrate; Ethylene nitrate; Glycol dinitrate; Nitroglycol**Notes** Risk of explosion by shock, friction, fire or other ignition sources. Very Toxic by inhalation, contact with skin and if swallowed. Long-term cumulative effects.**Ethylene glycol monomethyl ether (CAS# 110-71-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 100ppm**OSHA Exposure Limit** 200ppm (TWA) skin**Odor Threshold Value in ppm** 60.3 mg/m3**Warnings** Odor Threshold < 0.1ppm. Unknown Filter Effectiveness**Synonyms** Dimethyl Cellosolve; 1,2-dimethoxyethane, dimethoxyethane, alpha,beta-dimethoxyethane, 2,5-dioxahexane, glyme, monoglyme, egome, ethylene dimethyl ether, glycol dimethyl ether**Notes** Toxic. Reproductive and Skeletal toxin. Used in deicing fluid, varnishes, dyes and resins.**Ethylene oxide (CAS# 75-21-8)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.03%**NIOSH Exposure Limit** Ca TWA <0.1 ppm (0.18 mg/m3) C 5 ppm (9 mg/m3) [10-min/day]**OSHA Exposure Limit** TWA 1 ppm 5 ppm [15-minute Excursion]**Odor Threshold Value in ppm** 1.5**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life. Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Dimethylene oxide; 1,2-Epoxy ethane; Oxirane**Notes** WEEL 8-hour TWA: 50 ppm**Ethylene thiourea (CAS# 96-45-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca Use encapsulated form**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 851**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 1,3-Ethylene-2-thiourea; N,N-Ethylenethiourea; ETU; 2-Imidazolidine-2-thione**Notes** WEEL 8-hour TWA: 265 mg/m3**Ethylenediamine (CAS# 107-15-3)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 9.6%**NIOSH Exposure Limit** 10 ppm (25 mg/m3)**OSHA Exposure Limit** 10 ppm (25 mg/m3)**Odor Threshold Value in ppm** 0.402**Synonyms** 1,2-Diaminoethane; 1,2-Ethanediamine; Ethylenediamine (anhydrous)**Notes** Flammable. Corrosive. Harmful in contact with skin or if swallowed. Causes burns.**Ethyleneimine (CAS# 151-56-4)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.5%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Potential occupational Carci-nogens**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life; Carcinogen; Exposure Limit Not Established**Synonyms** Aminoethylene, Azirane, Aziridine, Dimethyleneimine, Dimethylenimine, Ethylenimine, Ethylimine**Notes** Known eye, skin, respiratory irritant. Sensitizer. Possible Mutagen.**Ethylidene norbornene (CAS# 16219-75-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 28.9%**NIOSH Exposure Limit** C 5 ppm (25 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 18.6**Warnings** Odor Threshold < 0.1ppm**Synonyms** ENB, 5-Ethylidenebicyclo(2.2.1)hept-2-ene, 5-Ethylidene-2-norbornene [Note: Due to its reactivity, ENB may be stabilized with tert-butyl catechol.]**Notes** CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. CANCER HAZARD. CAN CAUSE CANCER. Nickel Sulfate may cause infertility in males; this effect is usually reversible with removal from exposure.**N-ethylmaleimide (CAS# 128-53-0)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** NEM 1-Ethyl-1H-pyrrole-2,5-dione**N-Ethylmorpholine (CAS# 100-74-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 5 ppm (23 mg/m3) [skin]**OSHA Exposure Limit** 20 ppm (94 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** 4-Ethylmorpholine**Fenamiphos (CAS# 22224-92-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 3.6**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Ethyl 3-methyl-4-(methylthio)phenyl-(1-methylethyl)phosphoramidate; Nemacur;; Phenamiphos**This guide is not an approved list of chemicals**

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Fensulfothion (CAS# 115-90-2)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Dasanit;; O,O-Diethyl O-(p-methylsulfinyl)phenylphosphorothioate; Terracur P;**Fenthion (CAS# 55-38-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 0.2 mg/m3 (skin)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Baytex; Entex; O,O-Dimethyl O-3-methyl-4-methylthiophenyl phosphorothioate**Notes** Harmful if swallowed or inhaled. Known skin, respiratory irritant. Acute poisoning can occur.**Ferbam (CAS# 14484-64-1)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3**OSHA Exposure Limit** 15 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** tris(Dimethyldithiocarbamate)iron, Ferric dimethyl dithiocarbamate**Ferric chloride (CAS# 7705-08-0)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Iron chloride, Iron III Chloride, Iron Tri Chloride**Ferric Sulfate (CAS# 10028-22-5)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** 2 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Sulfuric acid, iron(3+) salt (3:2), Iron (III) Sulfate**Notes** In a solution can be very irritating to lungs and eyes.**Ferrous sulfate (CAS# 7720-78-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** < 1ppm (5mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm(5mg/m3)**Ferrovandium dust (CAS# 12604-58-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3 ST 3 mg/m3**OSHA Exposure Limit** 1 mg/m3**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Ferrovandium**Fibrous glass dust (CAS#)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 3 fibers/cm3 (fibers with diameter < or = 3.5 Åµm & length > or = 10 Åµm.) TWA 5 mg/m3 (total)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Fiberglass;; Fiberglass; Glass fibers; Glass wool**Fluocinonide (CAS# 356-12-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Flucinar, Lidex E, Metosyn, Topsym; 21-(Acetoxy)-6alpha,9-difluoro-11beta-hydroxy-

16alpha,17-[(1-methylethylidene)bis(oxy)]pregna-1,4-diene-3,20-dione; Fluocinolide acetate;

Fluocinolone acetonide 21-acetate; Fluocinolone acetonide acetate

Fluorine (CAS# 7782-41-4)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 ppm (0.2 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.2 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3);

Unknown Filter Effectiveness

Synonyms Fluorine-19**Notes** Carbon is not a suitable sorbent. Highly toxic. Highly Corrosive oxidant. Extremely reactive to organic material. Attacks eyes, respiratory tract, lungs, liver and kidneys.**Fluorosilicic acid (CAS# 16961-83-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Dihydrogen hexafluorosilicate;hexafluorosilicic acid; fluorosilicic acid; hexafluosilicic acid; hydrofluorosilicic acid; hydrogen hexafluorosilicate; hydrosilicofluoric acid; silicofluoric acid; silicon hexafluoride dihydride**Notes** Causes burns - Corrosive.**Fluorotrichloromethane (CAS# 75-69-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 1000 ppm (5600 mg/m3)**OSHA Exposure Limit** 1000 ppm (5600 mg/m3)**Odor Threshold Value in ppm** 0.126**Warnings** Unknown Filter Effectiveness**Synonyms** Freon; 11; Monofluorotrichloromethane; Refrigerant 11; Trichlorofluoromethane; Trichloromonofluoromethane**Notes** High ozone depletion rating as a CFC. Banned chemical.

Fluoroxene (CAS# 406-90-6)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 2 ppm (10.3 mg/m3) [60-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 16.3**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2,2,2-Trifluoroethoxyethene; 2,2,2-Trifluoroethyl vinyl ether**Fonofos (CAS# 944-22-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Dyfonate;; Dyphonate; O-Ethyl-S-phenyl ethylphosphorothioate; Fonophos**Notes** Very Toxic.**Formaldehyde (CAS# 50-00-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Formaldehyde-Formalin**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** Ca TWA 0.016 ppm C 0.1 ppm [15-minute]**OSHA Exposure Limit** 0.75 ppm ST 2 ppm**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Methanal, Methyl aldehyde, Methylene oxide**Notes** Warning: Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Formalin (as formaldehyde) (CAS# 50-00-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Formaldehyde-Formalin**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** Ca TWA 0.016 ppm C 0.1 ppm [15-minute]**OSHA Exposure Limit** 0.75 ppm ST 2 ppm**Odor Threshold Value in ppm** 0.871**Warnings** Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Formaldehyde solution**Notes** Warning: Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Formamide (CAS# 75-12-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 36.5%**NIOSH Exposure Limit** 10 ppm (15 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.8**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Carbamaldehyde, Methanamide**Notes** Highly Corrosive on contact with skin or eyes. Toxic if ingested.**Formic acid (CAS# 64-18-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 8%**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Hydrogen carboxylic acid; Methanoic acid**Furfural (CAS# 98-01-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 32.6%**NIOSH Exposure Limit** 2 ppm (skin)**OSHA Exposure Limit** 5 ppm (20 mg/m3) [skin]**Odor Threshold Value in ppm** 28.2**Warnings** Odor Threshold < 0.1 ppm. OEL < 1ppm (5mg/m3)**Synonyms** Fural, 2-Furancarboxaldehyde, Furfuraldehyde, 2-Furfuraldehyde**Notes** Very Low Odor Threshold. Mildly toxic. Skin irritant. Chronic exposure can lead to skin allergy and increases susceptibility to UV rays.**Furfuryl alcohol (CAS# 98-00-0)****Rating** Generally compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 38.9%**NIOSH Exposure Limit** 10 ppm (40 mg/m3) ST 15 ppm (60 mg/m3) [skin]**OSHA Exposure Limit** 50 ppm (200 mg/m3)**Odor Threshold Value in ppm** 0.058**Synonyms** 2-Furylmethanol, 2-Hydroxymethylfuran**Notes** Requires both filters. Used in treating wood for greater durability, hardness and preservation.**Gasoline (CAS# 8006-61-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 20%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 7.83**Warnings** Carcinogen; Odor Threshold < 1ppm; Exposure Limit Not Established**Synonyms** Motor fuel, Motor spirits, Natural gasoline, Petrol [Note: A complex mixture of volatile hydrocarbons (paraffins, cycloparaffins & aromatics).]**Notes** Composed of varying types of hydrocarbon chemicals. Highly flammable.**Germanium tetrahydride (CAS# 7782-65-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.2 ppm (0.6 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.3**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Germane, Germanium hydride, Germanomethane, Monogermane [Note: Used chiefly for the production of high purity germanium for use in semiconductors.]**Notes** Highly toxic. Highly flammable.**Glucono-d-lactone (CAS# 90-80-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 1,2,3,4,5-Pentahydroxycaproic Acid Delta-Lactone;Delta-Gluconolactone;Delta-Gluconolactone;D(+)-Dextronic Acid Delta-Lactone;D-Gluconic Acid Lactone;D-(+)-Glucono-1,5-Lactone;D-Glucono-1,5-Lactone;D-(+)-Gluconic Acid Delta-Lactone**Glutaraldehyde (CAS# 111-30-8)****Rating** Chemical Assessment Required**Filter Type** Carbon | HEPA**Filter Capacity Percentage** 3%**NIOSH Exposure Limit** C 0.2 ppm (0.8 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Filter Capacity < 3% - Low Filter Capacity. Odor Threshold < 1ppm; OEL < 1ppm (5mg/m3)**Synonyms** Glutaric dialdehyde; 1,5-Pentanedial**Notes** Requires both filters. Use both filters as both vapor and particulate phase exist sometimes. Toxic. Known eye, nose, skin, respiratory irritant (Severe). Main source of occupational asthma in health care.**This guide is not an approved list of chemicals**

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Glycerin (mist) (CAS# 56-81-5)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established RELâ€™s -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** 0.038**Warnings** Unknown Odor Threshold**Synonyms** Glycerin (anhydrous); Glycerol; Glycyl alcohol; 1,2,3-Propanetriol; Trihydroxypropane

Glycerol polyglycidyl ether (CAS# 25038-04-4)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter eEffectiveness**Synonyms** Eponate 12 Resin

Glycidol (CAS# 556-52-5)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 16.9%**NIOSH Exposure Limit** 25 ppm (75 mg/m3)**OSHA Exposure Limit** 50 ppm (150 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** 2,3-Epoxy-1-propanol; Epoxypropyl alcohol; Glycide; Hydroxymethyl ethylene oxide; 2-Hydroxymethyl oxiran; 3-Hydroxypropylene oxide**Notes** Known eye, skin, respiratory irritant. CNS depressant followed by stimulation. Possible Carcinogen.

Glycolonitrile (CAS# 107-16-4)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 2 ppm (5 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Cyanomethanol, Formaldehyde cyanohydrin, Glycolic nitrile, Glyconitrile, Hydroxyacetoneitrile**Notes** Extremely hazardous substance - decomposes readily into formaldehyde and hydrogen cyanide.

Grain dust (oat, wheat, barley) (CAS#)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 4 mg/m3**OSHA Exposure Limit** 10 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Grain dust consists of 60-75% organic materials (cereal grains) & 25-40% inorganic materials (soil), and includes fertilizers, pesticides & microorganisms.]

Graphite (natural) (CAS# 7782-42-5)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2.5 mg/m3 (resp)**OSHA Exposure Limit** 15 mppcf**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Black lead, Mineral carbon, Plumbago, Silver graphite, Stove black [Note: Also see specific listing for Graphite (synthetic)]

Graphite (synthetic) (CAS# 7440-44-0)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established RELâ€™s -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Acheson graphite, Artificial graphite [Note: Also see specific listing for Graphite (natural).]

Guaiacol (CAS# 90-05-1)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2-Methoxyphenol; Guaicol; Methylcatechol; o-Hydroxyanisole; o-Methoxyphenol; Pyroguaiac acid

Guanidine hydrochloride (CAS# 50-01-1)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Aminomethanamide; guanidine monohydrochloride; guanidine chloride; iminourea hydrochloride; carbamidine hydrochloride**Notes** Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Used as a drug.

Guanidine thiocyanate (CAS# 593-84-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Vitamin K2, menaquinone, menaquinon-4, menatetrenone, menatetren, menatetrenona, menatetrenonum, MK-4, E3100; 2-methyl-3-[(2'E,6'E,10'E)-3',7',11',15' - tetramethylhexadeca-2',6',10',14'- tetraen-1'-yl]-1,4-naphthalenedione**Notes** Harmful if swallowed or inhaled. Known eye, skin, respiratory irritant. Environmental hazard.

Gypsum (CAS# 13397-24-5)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Warnings** Unknown Odor Threshold**Synonyms** Calcium(II) sulfate dihydrate, Gypsum stone, Hydrated calcium sulfate, Mineral white [Note: Gypsum is the dihydrate form of calcium sulfate; Plaster of Paris is the hemihydrate form.]

Hafnium (CAS# 7440-58-6)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3**OSHA Exposure Limit** 0.5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Celtium, Elemental hafnium, Hafnium metal

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Halothane (CAS# 151-67-7)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 16.5%**NIOSH Exposure Limit** C 2 ppm (16.2 mg/m3) [60-minute] [*Note: REL for exposure to waste anesthetic gas.]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** 1-Bromo-1-chloro-2,2,2-trifluoroethane; 2-Bromo-2-chloro-1,1,1-trifluoroethane; 1,1,1-Trifluoro-2-bromo-2-chloroethane; 2,2,2-Trifluoro-1-bromo-1-chloroethane**Notes** An inhalational general anesthetic. Profetic use as a 'core medicine' per WHO "Essential Drugs List".**Helium (CAS# 7440-59-7)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 33**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Helium Gas, Helium compressed, Helium-4, atomic Helium, UN 1046, He, Mat 10640, Rtecs MH6520000**Notes** Carbon filtration not effective on gas**Heptachlor (CAS# 76-44-8)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.5 mg/m3 [skin]**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Odor Threshold < 1ppm; OEL < 1ppm (5mg/m3), Unknown Filter Effectiveness**Synonyms** 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene**Notes** Requires both filters.**n-Heptane (CAS# 142-82-5)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 17.4%**NIOSH Exposure Limit** 85 ppm (350 mg/m3) C 440 ppm (1800 mg/m3) [15-minute]**OSHA Exposure Limit** 500 ppm (2000 mg/m3)**Odor Threshold Value in ppm** 0.3mg/m3**Synonyms** Heptane, normal-Heptane**Notes** Highly flammable. Irritant - skin. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Harmful - may cause lung damage if swallowed. Vapors may cause drowsiness or dizziness.**1-Heptanethiol (CAS# 1639-09-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 34.7%**NIOSH Exposure Limit** C 0.5 ppm (2.7 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 9.77**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Heptyl mercaptan, n-Heptyl mercaptan**Hexachloro-cyclopentadiene (CAS# 77-47-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 83.1%**NIOSH Exposure Limit** 0.01 ppm (0.1 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 1**Warnings** Odor Threshold < 0.1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** HCCPD; Hexachloro-1,3-cyclopentadiene; 1,2,3,4,5,5-Hexachloro-1,3-cyclopentadiene; Perchlorocyclopentadiene**Notes** Highly toxic with unpleasant odor. Highly regulated substance - Stockholm Convention on Persistent Organic Pollutants. Formerly used as a pesticide.**Hexachlorobutadiene (CAS# 87-68-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca TWA 0.02 ppm (0.24 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** HCBD; Hexachloro-1,3-butadiene; 1,3-Hexachlorobutadiene; Perchlorobutadiene**Notes** Toxic - absorbed through oral, inhalation and skin.**Hexachloroethane (CAS# 67-72-1)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 1 ppm (10 mg/m3) [skin]**OSHA Exposure Limit** 1 ppm (10 mg/m3) [skin]**Odor Threshold Value in ppm** 0.03**Warnings** Carcinogen; Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** Carbon hexachloride, Ethane hexachloride, Perchloroethane**Notes** Requires both filters. Colorless Solid. Commonly used in smoke based munitions (smoke grenades)**Hexachloronaphthalene (CAS# 1335-87-1)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.2 mg/m3 [skin]**OSHA Exposure Limit** 0.2 mg/m3 [skin]**Odor Threshold Value in ppm** 0.15**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3), Unknown Filter Effectiveness.**Synonyms** Halowax; 1014**Notes** Requires both filters.**1-Hexadecanethiol (CAS# 2917-26-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** C 0.5 ppm (5.3 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3), Unknown Filter Effectiveness**Synonyms** Cetyl mercaptan, Hexadecanethiol-1, n-Hexadecanethiol, Hexadecyl mercaptan**Hexafluoroacetone (CAS# 684-16-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 ppm (0.7 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3), Unknown Filter Effectiveness**Synonyms** Hexafluoro-2-propanone; 1,1,1,3,3,3-Hexafluoro-2-propanone; HFA; Perfluoroacetone**Notes** Compressed gas. Reacts violently with water (H2O). Toxic - inhalation, contact with skin or if swallowed. Corrosive - causes burns. Reproductive Toxin.**Hexafluoroisopropanol (CAS# 920-66-1)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** HFIP; 1,1,1,3,3,3-Hexafluoro-2-propanol**This guide is not an approved list of chemicals**

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Hexamethyl phosphoramidate (CAS# 680-31-9)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.01**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Hexamethylphosphoric triamide, Hexamethyl-phosphorotriamide, HMPA, Tris(dimethylamino)phosphine oxide**Notes** Mildly toxic. Causes respiratory carcinomas.

Hexamethylene diisocyanate (CAS# 822-06-0)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.005 ppm (0.035 mg/m3) C 0.020 ppm (0.140 mg/m3) [10-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 0.1ppm. OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1,6-Diisocyanatohexane; HDI; Hexamethylene-1,6-diisocyanate; 1,6-Hexamethylene diisocyanate; HMDI**Notes** Requires both filters. Work below exposure limits. Very Low Odor Threshold.

Hexamethylene tetramine (CAS# 100-97-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** methenamine (INN), Hexamine; Methenamine; Urotropine; Hexamethylenetetramine, 1,3,5,7-Tetraazatricyclo [3.3.1.1^{13,7}]decane**Notes** Highly flammable. Harmful - inhalation, or if swallowed. Methenamine hippurate is mainly used for urinary tract infections. It is activated by acidic urine, so only suitable for lower UTIs.

n-Hexane (CAS# 110-54-3)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 11.2%**NIOSH Exposure Limit** 50 ppm (180 mg/m3)**OSHA Exposure Limit** 500 ppm (1800 mg/m3)**Synonyms** Hexane, Hexyl hydride, normal-Hexane**Notes** Highly flammable. Irritant - skin. Harmful - inhalation (Severe), lung damage if swallowed. Reproductive Toxin. Vapors may cause dizziness/drowsiness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Hexane isomers (excluding n-Hexane) (CAS#)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 9.6%**NIOSH Exposure Limit** 100 ppm (350 mg/m3) C 510 ppm (1800 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 21.9**Synonyms** Diethylmethylmethane; Diisopropyl; 2,2-Dimethylbutane; 2,3-Dimethylbutane; Isohexane; 2-Methylpentane; 3-Methylpentane [Note: Also see specific listing for n-Hexane.]**Notes** Highly flammable. Irritant - skin. Harmful - inhalation (Severe), lung damage if swallowed. Reproductive Toxin. Vapors may cause dizziness/drowsiness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

n-Hexanethiol (CAS# 111-31-9)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** C 0.5 ppm (2.7 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 65-248**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3), Unknown Filter Effectiveness**Synonyms** 1-Hexanethiol, Hexyl mercaptan, n-Hexyl mercaptan, n-Hexylthiol

2-Hexanone (CAS# 591-78-6)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 21.6%**NIOSH Exposure Limit** 1 ppm (4 mg/m3)**OSHA Exposure Limit** 100 ppm (410 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm**Synonyms** Butyl methyl ketone, MBK, Methyl butyl ketone, Methyl n-butyl ketone**Notes** Irritant - skin, eyes, respiratory. Harmful - inhalation, contact by skin, ingestion.

Hexone (CAS# 108-10-1)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 19.4%**NIOSH Exposure Limit** 50 ppm (205 mg/m3) ST 75 ppm (300 mg/m3)**OSHA Exposure Limit** 100 ppm (410 mg/m3)**Odor Threshold Value in ppm** 0.166**Warnings** Odor Threshold < 1ppm**Synonyms** Isobutyl methyl ketone, Methyl isobutyl ketone, 4-Methyl 2-pentanone, MIBK**Notes** Highly flammable. Harmful - inhalation. Irritant - eyes, respiratory. Prolonged exposure may cause dryness/cracking of skin.

sec-Hexyl acetate (CAS# 108-84-9)

Rating Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 14.6%**NIOSH Exposure Limit** 50 ppm (300 mg/m3)**OSHA Exposure Limit** 50 ppm (300 mg/m3)**Odor Threshold Value in ppm** 0.121**Warnings** Odor Threshold < 1ppm**Synonyms** 1,3-Dimethylbutyl acetate; Methylisoamyl acetate**Notes** Requires both filters.

Hexylene glycol (CAS# 107-41-5)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 46.3%**NIOSH Exposure Limit** C 25 ppm (125 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.219**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** 2,4-Dihydroxy-2-methylpentane; 2-Methyl-2,4-pentanediol; 4-Methyl-2,4-pentanediol; 2-Methylpentane-2,4-diol**Notes** Found in fire retardant foams.

Hyaluronic acid (CAS# 9004-61-9)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m³**OSHA Exposure Limit** 5 mg/m³**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Hyaluronan, Na Salt

Hydrazine (CAS# 302-01-2)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca C 0.03 ppm (0.04 mg/m3) [2-hour]**OSHA Exposure Limit** 1 ppm (1.3 mg/m3) [skin]**Odor Threshold Value in ppm** 49.9**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Diamine, Hydrazine (anhydrous), Hydrazine base**Notes** Flammable. Toxic - inhalation, contact with skin, swallowed. Corrosive - causes burns. Sensitization - skin. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Hydrocortisone (CAS# 50-23-7)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** Hydrocortisone; 4-Pregnene-11-beta, 17-alpha, 21-triol 3, 20-dione

Hydrogen (CAS# 1333-74-0)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 3.6**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Hydrogen, Normal Hydrogen**Notes** Carbon filtration not effective on gas, Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

Hydrogen bromide (CAS# 10035-10-6)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Acid-Sulfur**Filter Capacity Percentage** 5%**NIOSH Exposure Limit** 3 ppm (10 mg/m3)**OSHA Exposure Limit** 3 ppm (10 mg/m3)**Odor Threshold Value in ppm** Not established**Synonyms** Anhydrous hydrogen bromide; Aqueous hydrogen bromide (i.e., Hydrobromic acid)**Notes** Corrosive - causes burns. Irritant - respiratory.

Hydrogen chloride (CAS# 7647-01-0)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Acid-Sulfur**Filter Capacity Percentage** 17%**NIOSH Exposure Limit** C 5 ppm (7 mg/m3)**OSHA Exposure Limit** C 5 ppm (7 mg/m3)**Odor Threshold Value in ppm** 2**Warnings** Odor Threshold < 1ppm**Synonyms** Anhydrous hydrogen chloride; Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid)**Notes** Toxic - inhalation. Corrosive - causes burns.

Hydrogen cyanide (CAS# 74-90-8)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** ST 4.7 ppm (5 mg/m3) [skin]**OSHA Exposure Limit** 10 ppm (11 mg/m3) [skin]**Odor Threshold Value in ppm** 0.77**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** Formonitrile, Hydrocyanic acid, Prussic acid**Notes** Extremely flammable. Very Toxic - inhalation. Environmental Hazard - very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Hydrogen fluoride (CAS# 7664-39-3)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 3%**NIOSH Exposure Limit** 3 ppm (2.5 mg/m3) C 6 ppm (5 mg/m3) [15-minute]**OSHA Exposure Limit** 3 ppm**Odor Threshold Value in ppm** 0.603**Warnings** Not Recommended: Odor Threshold < 0.1ppm**Synonyms** Anhydrous hydrogen fluoride; Aqueous hydrogen fluoride (i.e., Hydrofluoric acid); HF-A**Notes** Attacks glass and is not recommended. Very Low Odor Threshold.

Hydrogen iodide (CAS# 10034-85-2)

Rating Chemical Assessment Required**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Hydriodic acid; Anhydrous Hydriodic acid; Hydroiodic acid; HI; UN 2197**Notes** Carbon filtration not effective on gas, pungent odor

Hydrogen peroxide (CAS# 7722-84-1)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1 ppm (1.4 mg/m3)**OSHA Exposure Limit** 1 ppm (1.4 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** High-strength hydrogen peroxide, Hydrogen dioxide, Hydrogen peroxide (aqueous), Hydroperoxide, Peroxide**Notes** Contact with combustible material may cause spontaneous combustion. Harmful - inhalation, ingestion. Corrosive - causes burns (severe).

Hydrogen selenide (CAS# 07-04-79)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.05 ppm (0.2 mg/m3)**OSHA Exposure Limit** 0.05 ppm (0.2 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Selenium dihydride, Selenium hydride**Notes** Highly toxic. Highly flammable. Environmental Toxin - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Hydrogen sulfide (CAS# 06-03-79)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Acid-Sulfur**Filter Capacity Percentage** 6.5%**NIOSH Exposure Limit** C 10 ppm (15 mg/m3) [10-minute]**OSHA Exposure Limit** C 20 ppm 50 ppm [10-minute maximum peak]**Odor Threshold Value in ppm** 0.3**Warnings** Odor Threshold < 0.1ppm**Synonyms** Hydrosulfuric acid, Sewer gas, Sulfuretted hydrogen**Notes** Very Low Odor Threshold. Very flammable. Very Toxic - inhalation. Environmental Hazard - very toxic to aquatic animals.

Hydrogenated terphenyls (CAS# 61788-32-7)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.5 ppm (5 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.042**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Hydrogenated diphenylbenzenes, Hydrogenated phenylbiphenyls, Hydrogenated triphenyls [Note: Complex mixture of terphenyl isomers that are partially hydrogenated]

Hydroquinone (CAS# 123-31-9)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** C 2 mg/m3 [15-minute]**OSHA Exposure Limit** 2 mg/m3**Odor Threshold Value in ppm** 0.0005**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness.**Synonyms** p-Benzenediol; 1,4-Benzenediol; Dihydroxybenzene; 1,4-Dihydroxybenzene; Quinol**Notes** Requires both filters. White granular solid. Harmful - ingestion, eyes (severe). Sensitization - skin. Environmental Toxin. Irreversible effects.

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4-Hydroxybutyl acrylate (CAS# 1633-78-8)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit, Unknown Filter Effectiveness**Synonyms** Butanediol Monoacrylate; 4-HYDROXYBUTYL ACRYLATE; 1, 4-Butanediol 1-acrylate; 1, 4-Butanediolmonoacrylate; 4-Hydroxybutyl; 2-propenoate; Acrylic acid 4-hydroxybutyl; 4-Hydroxybutyl acrylate, 98%; Acrylic Acid 4-Hydroxybutyl Ester; Tetramethylene glycol monoacrylate; 2-Propenoicacid, 4-hydroxybutyleste**Notes** Not recommended for ductless enclosures.**Hydroxylamine (CAS# 7803-49-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Ammonia-Amine**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Exposure Limit; Unknown Odor Threshold**Hydroxylamine Hydrochloride (CAS# 5470-11-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Hydroxylamine hydrochloride; Hydroxammonium chloride; Hydroxylamine chloride; Hydroxylammonium chloride; Oxammonium chloride**2-Hydroxypropyl acrylate (CAS# 999-61-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 0.5 ppm (3 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** HPA, beta-Hydroxypropyl acrylate, Propylene glycol monoacrylate**Hypophosphorous Acid (CAS# 6303-21-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Phosphinic acid**Imidazole (CAS# 288-32-4)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Ammonia-Amine | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.**Synonyms** 1,3-diaza-2,4-cyclopentadiene, glyoxaline**Notes** Harmful - inhalation, ingestion, eyes (severe). Corrosive - burns. Common biochemical building block (amino acids). A component of the toxin causing urticaria - allergic hives.**Indene (CAS# 95-13-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 39.9%**NIOSH Exposure Limit** 10 ppm (45 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 0.1ppm**Synonyms** Indonaphthene**Notes** Flammable. Colorless liquid. Used for making resins. Very Low Odor Threshold.**Indium (CAS# 7440-74-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.009**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Indium metal**Notes** An elemental, soft, malleable metal.**Iodine (CAS# 7553-56-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Radioisotope | Particulate**NIOSH Exposure Limit** C 0.1 ppm (1 mg/m3)**OSHA Exposure Limit** C 0.1 ppm (1 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness.**Synonyms** Iodine crystals, Molecular iodine**Notes** Requires both filters. RAD Filter removes 25% organic vapor.**Iodoform (CAS# 75-47-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Radioisotope | Particulate**NIOSH Exposure Limit** 0.6 ppm (10 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.9**Warnings** Odor Threshold < 0.1ppm. OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Triiodomethane**Notes** Requires both filters. RAD Filter removes 25% organic vapor. Harmful - inhalation, skin, ingestion. Irritant - skin, eyes, respiratory. Very Low Odor Threshold.**2-Iodopropane (CAS# 75-30-9)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Filter Capacity <1% - Short Filter Life; Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** EINECS 200-859-3, Propane, 2-iodo-, 1-Methylethyl iodide, FCD00001071, 2-Iodopropane, 1-iodo-1-methylethane, Isopropyl Iodide, 2-Iodo-propane, sec-Propyl iodide, Propane,2-iodo, 2-Propyl iodide, isopropyl-iodide**Notes** Properties similar to propane**Iron oxide dust and fume (as Fe) (CAS# 1309-37-1)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 10 mg/m3**Odor Threshold Value in ppm** 0.000-1.1**Warnings** Unknown Odor Threshold**Synonyms** Ferric oxide, Iron(III) oxide**This guide is not an approved list of chemicals**

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Iron pentacarbonyl (as Fe) (CAS# 13463-40-6)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 ppm (0.23 mg/m3) ST 0.2 ppm (0.45 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Iron carbonyl, Pentacarbonyl iron**Notes** Straw-colored liquid with a pungent odor. Highly flammable. Highly Toxic - inhalation.**Iron salts (soluble, as Fe) (CAS#)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** FeSO4: Ferrous sulfate, Iron(II) sulfate**Iron(II) sulfate heptahydrate (CAS# 7782-63-0)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3 TWA (as Fe)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; OEL < 1ppm(5mg/m3)**Synonyms** ferrous sulphate, ferrous sulfate, green vitriol, iron vitriol, mol-iron, iron sulfate, iron sulphate, iron protosulfate, haemofort, ironate, irosul, mol-iron, presfersul**Isoamyl acetate (CAS# 123-92-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 29.7%**NIOSH Exposure Limit** 100 ppm (525 mg/m3)**OSHA Exposure Limit** 100 ppm (525 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 0.1ppm**Synonyms** Banana oil, Isopentyl acetate, 3-Methyl-1-butanol acetate, 3-Methylbutyl ester of acetic acid, 3-Methylbutyl ethanoate**Notes** Very Low Odor Threshold. A colorless liquid. Strong fruit-like (banana) odor.**Isoamyl alcohol (primary) (CAS# 123-51-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 23.2%**NIOSH Exposure Limit** 100 ppm (360 mg/m3) ST 125 ppm (450 mg/m3)**OSHA Exposure Limit** 100 ppm (360 mg/m3)**Odor Threshold Value in ppm** 0.004**Warnings** Odor Threshold < 0.1ppm**Synonyms** Fermentation amyl alcohol, Fusel oil, Isobutyl carbinol, Isopentyl alcohol, 3-Methyl-1-butanol, Primary isoamyl alcohol**Notes** Very Low Odor Threshold. A colorless liquid. Strong fruit-like (banana) odor. Found in banana oil and flavoring.**Isoamyl alcohol (secondary) (CAS# 6032-29-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 19.4%**NIOSH Exposure Limit** 100 ppm (360 mg/m3) ST 125 ppm (450 mg/m3)**OSHA Exposure Limit** 100 ppm (360 mg/m3)**Odor Threshold Value in ppm** 0.045**Warnings** Odor Threshold < 0.1ppm**Synonyms** 3-Methyl-2-butanol, Secondary isoamyl alcohol**Notes** Very Low Odor Threshold. A colorless liquid. Strong fruit-like (banana) odor. Found in banana oil and flavoring.**Isobutane (CAS# 75-28-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 800 ppm (1900 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.045**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2-Methylpropane [Note: Also see specific listing for n-Butane.]**Notes** Highly flammable. (See n-butane). A colorless gas known as R-600a.**Isobutyl acetate (CAS# 110-19-0)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 22.8%**NIOSH Exposure Limit** 150 ppm (700 mg/m3)**OSHA Exposure Limit** 150 ppm (700 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm**Synonyms** Isobutyl ester of acetic acid, 2-Methylpropyl acetate, 2-Methylpropyl ester of acetic acid, beta-Methylpropyl ethanoate**Isobutyl alcohol (CAS# 78-83-1)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13.9%**NIOSH Exposure Limit** 50 ppm (150 mg/m3)**OSHA Exposure Limit** 100 ppm (300 mg/m3)**Odor Threshold Value in ppm** 0.479**Warnings** Odor Threshold < 1ppm**Synonyms** IBA, Isobutanol, Isopropylcarbinol, 2-Methyl-1-propanol**Notes** A colorless liquid/important industrial chemical. Flammable. Irritant - skin, respiratory. Vapors cause dizziness/drowsiness. Severe potential for eye damage.**isobutyl methacrylate (CAS# 97-86-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.832**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Methacrylic acid, isobutyl ester; Isobutyl «alpha»-methacrylate; Isobutyl methacrylate; Isobutyl 2-methyl-2-propenoate; 2-Methylpropyl methacrylate; Isobutyl «alpha»-methacrylate; Isobutylester kyseliny methakrylove; Isobutyl methacrylate, inhibited; UN 2283; Isobutyl 2-methylacrylate**Notes** Causes burns by all exposure routes. Harmful if swallowed, inhaled, or absorbed through the skin**Isobutyronitrile (CAS# 78-82-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 8.3%**NIOSH Exposure Limit** 8 ppm (22 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Non established**Warnings** Unknown Odor Threshold**Synonyms** Isopropyl cyanide, 2-Methylpropanenitrile, 2-Methylpropionitrile**Notes** Requires both filters.**Isoflurane (CAS# 26675-46-7)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15%**NIOSH Exposure Limit** C 2 ppm (16.2 mg/m³) [60-minute] [*Note: REL for exposure to waste anesthetic gas.]**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Ether, 1-chloro-2,2,2-trifluoroethyl difluoromethyl, 2-Chloro-2-(difluoromethoxy)-1,1,1-trifluoroethane**Notes** Mild ether-like odor. Common general inhalational anesthetic (veterinary). Declining use in humans. Mildly toxic - risks and effects increase in combination with nitrous oxide and benzodiazepines such as midazolam.**This guide is not an approved list of chemicals**

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Isohexane (CAS# 107-83-5)

Rating Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Not recommended for ductless enclosures; Unknown Filter Effectiveness; Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Hexane Isomers; methyl pentane; 1, 1-dimethylbutane, 2-methylpentane

Isooctane (CAS# 540-84-1)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** (Alkanes) 350 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 33**Warnings** Unknown Odor Threshold**Synonyms** 2,2,4-Trimethylpentane, Octane, TMP, isobutyltrimethylmethane, Isobutyltrimethylpentane**Notes** The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Isooctyl alcohol (CAS# 26952-21-6)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 50 ppm (270 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** Isooctanol, Oxooctyl alcohol [Note: A mixture of closely related isomeric, primary alcohols with branched chains such as 2-Ethylhexanol]**Notes** Use below Exposure limit.

Isophorone (CAS# 78-59-1)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 40.5%**NIOSH Exposure Limit** 4 ppm (23 mg/m3)**OSHA Exposure Limit** 25 ppm (140 mg/m3)**Odor Threshold Value in ppm** 0.138**Warnings** Odor Threshold < 1ppm**Synonyms** Isoacetophorone; 3,5,5-Trimethyl-2-cyclohexenone; 3,5,5-Trimethyl-2-cyclo-hexen-1-one**Notes** Colorless to yellowish liquid. Naturally found in cranberries. Used as a solvent in industrial solutions (paints, lacquers, inks, etc").

Isophorone diisocyanate (CAS# 4098-71-9)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.005 ppm (0.045 mg/m3) ST 0.02 ppm (0.180 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.631**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl-isocyanate; Isophorone diamine diisocyanate**Notes** Requires both filters. Very low Exposure Limit.

2-Isopropoxyethanol (CAS# 109-59-1)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established RELâ€™sâ€™after limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 1ppm; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Ethylene glycol isopropyl ether; beta-Hydroxyethyl isopropyl ether; Isopropyl Cellosolve; Isopropyl glycol

Isopropyl acetate (CAS# 108-21-4)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 11.6%**NIOSH Exposure Limit** Not established RELâ€™sâ€™after limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.738**Warnings** Odor Threshold < 0.1ppm; Exposure Limit Not Established**Synonyms** Isopropyl ester of acetic acid, 1-Methylethyl ester of acetic acid, 2-Propyl acetate**Notes** Very Low Odor Threshold. Attacks many plastics. Flammable. Harmful - ingestion, inhalation. Fruity odor.

Isopropyl alcohol (CAS# 67-63-0)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 5%**NIOSH Exposure Limit** 400 ppm (980 mg/m3) ST 500 ppm (1225 mg/m3)**OSHA Exposure Limit** 400 ppm (980 mg/m3)**Odor Threshold Value in ppm** 0.05-4.1**Synonyms** Dimethyl carbinol, IPA, Isopropanol, 2-Propanol, sec-Propyl alcohol, Rubbing alcohol**Notes** Flammable. Irritant - eyes. Vapors may cause dizziness/drowsiness. Good replacement for Methyl and ethyl alcohols.

Isopropyl ether (CAS# 108-20-3)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13.7%**NIOSH Exposure Limit** 500 ppm (2100 mg/m3)**OSHA Exposure Limit** 500 ppm (2100 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold < 0.1ppm**Synonyms** Diisopropyl ether, Diisopropyl oxide, 2-Isopropoxy propane**Notes** Very Low Odor Threshold. Forms explosive peroxides in storage, test regularly. Highly flammable. Prolonged exposure may cause dryness/cracking of skin. Vapors may cause drowsiness/dizziness.

Isopropyl glycidyl ether (CAS# 4016-14-2)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13.8%**NIOSH Exposure Limit** C 50 ppm (240 mg/m3) [15-minute]**OSHA Exposure Limit** 50 ppm (240 mg/m3)**Odor Threshold Value in ppm** 0.055**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** 1,2-Epoxy-3-isopropoxypropane; IGE; Isopropoxymethyl oxirane**Notes** Use below exposure limit.

Isopropylamine (CAS# 75-31-0)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 2.7%**NIOSH Exposure Limit** Not established RELâ€™sâ€™after limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** 5 ppm (12 mg/m3)**Odor Threshold Value in ppm** 22**Warnings** Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 1ppm**Synonyms** 2-Aminopropane, Monoisopropylamine, 2-Propylamine, sec-Propylamine**Notes** Extremely Flammable. Irritant - eyes, skin, respiratory.The Chemical Guide is only a reference and may contain inaccurate or outdated information. You must request a Chemical Assessment to receive Labconco's recommendations. You and your on-site safety officer are responsible for determining the appropriate chemicals, enclosure and filters to ensure your safety. (<https://www.labconco.com/services/request-chemical-assessment>)

N-Isopropylaniline (CAS# 768-52-5)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 2 ppm (10 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.6**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** N-IPA, Isopropylaniline, N-(1-Methylethyl)-benzenamine, N-Phenylisopropylamine

Kaolin (CAS# 1332-58-7)**Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 5 mg/m3 (resp)**Odor Threshold Value in ppm** 297**Warnings** Unknown Odor Threshold**Synonyms** China clay, Clay, Hydrated aluminum silicate, Hydrate, Porcelain clay**Notes** A clay mineral. Industrial uses include ceramics, medicine, coated paper, toothpaste additive, incandescent light bulbs and cosmetics.**Kepone (CAS# 143-50-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca TWA 0.001 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Chlordecone; Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta(cd)-pentalen-2-one; Decachlorooctahydro-kepone-2-one; Decachlorotetrahydro-4,7-methanoindeneone**Notes** Requires both filters. Used as insecticide in ant/roach baits and a fungicide. Dry powder easily absorbed through skin, respiratory. Harmful.**Kerosene (CAS# 8008-20-6)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 100 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness**Synonyms** Fuel Oil No. 1, Range oil**Notes** Requires both filters as an aerosol. Flammable - used as fuel.**Ketene (CAS# 463-51-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.5 ppm (0.9 mg/m3) ST 1.5 ppm (3 mg/m3)**OSHA Exposure Limit** 0.5 ppm (0.9 mg/m3)**Odor Threshold Value in ppm** 1**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Carbomethene, Ethenone, Keto-ethylene**Notes** Colorless gas. Use under exposure limit. Irritant - eyes, respiratory. Toxic.**L.P.G. (CAS# 68476-85-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1000 ppm (1800 mg/m3)**OSHA Exposure Limit** 1000 ppm (1800 mg/m3)**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Bottled gas, Compressed petroleum gas, Liquefied hydrocarbon gas, Liquefied petroleum gas, LPG [Note: A fuel mixture of propane, propylene, butanes & butylenes.]**Notes** A mixture of hydrocarbon gases for use as fuel - Primarily propane and/or butane. Flammable. See Butane, Propane.**Lactic acid (CAS# 50-21-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 1-Hydroxyethanecarboxylic acid; 2-hydroxypropanoic acid, Ethylidenelactic acid**Notes** Common acid, vital to various biochemical processes. No known hazards. Used as a "green" detergent and anti-bacterial agent.**Lauric Acid (CAS# 143-07-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Fknown Filter Effectiveness**Synonyms** dodecanoic acid, dodecoic acid, hydrofol acid 1295, hydrofol acid 1255**Notes** Fruity odor.**Lead (CAS# 7439-92-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** TWA (8-hour) 0.050 mg/m3**OSHA Exposure Limit** TWA 0.050 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Lead metal, Plumbum**Notes** A soft, malleable metal. Poison - ingestion/inhalation.**Lead chloride (CAS# 7758-95-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.050 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Lead (2+) Chloride; Lead (II) Chloride; Lead Dichloride**Notes** Probable carcinogen**Lead chromate (CAS# 7758-97-6)****Rating** Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.05 (mg/m3)**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Unknown**Warnings** Unknown Odor Threshold; OEL < 1ppm(5mg/m3)**Synonyms** Chromic acid, lead(2+) salt; Chrome green; Chrome yellow**Lead dioxide (CAS# 1309-60-0)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 (TWA)**OSHA Exposure Limit** 0.05 mg/m3 (TWA)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** PbO2, Lead peroxide; lead superoxide; lead oxide brown; lead (IV) oxide; lead brown**Notes** Dark brown crystalline powder. Reproductive/fetal toxin. Harmful - inhalation, ingestion. Environmental Toxin.**Lead nitrate (CAS# 10099-74-8)****Rating** Small Volumes May Be Acceptable**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 (TWA)**OSHA Exposure Limit** 0.05 mg/m3 (TWA)**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Lead (II) nitrate (1:1); lead dinitrate; nitric acid, lead (2+)**Notes** Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**This guide is not an approved list of chemicals**

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Lead(II) acetate (CAS# 301-04-2)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 (TWA)**OSHA Exposure Limit** 0.05 mg/m3 (TWA)**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Lead diacetate, Lead Acetate, Trihydrate; lead (II) acetate, trihydrate; acetic acid lead (II) salt, trihydrate; lead diacetate, trihydrate; Salt of Saturn**Notes** Possible Carcinogen. Can be lung irritant. White crystalline compound. Toxic.**Lead(II) oxide (CAS# 1317-36-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 (TWA)**OSHA Exposure Limit** 0.05 mg/m3 (TNOA)**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** PbO, Lead monoxide, Litharge, Massicot, Plumbous oxide**Notes** Possible Carcinogen. Red or yellow crystals. Reproductive/fetal toxin. Toxic - inhalation, ingestion. Environmental Toxin (Severe).**Lead(II,II,IV) oxide, Pb3O4 (CAS# 1314-41-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 (TWA)**OSHA Exposure Limit** 0.05 mg/m3 (TWA)**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Pb3O4, Lead oxide; lead tetraoxide; minimum red lead; mineral red; Saturn red**Notes** Possible Carcinogen. Red or yellow crystals. Reproductive/fetal toxin. Toxic - inhalation, ingestion. Environmental Toxin (Severe).**Lead(IV) acetate (CAS# 546-67-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 (TWA)**OSHA Exposure Limit** 0.05 mg/m3 (TWA)**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Lead tetraacetate, Lead (IV) acetate; acetic acid, lead (4+) salt**Notes** Possible Carcinogen. Toxic -fatal if inhaled, ingested or absorbed through the skin. Irritant - eyes, skin, respiratory. Reproductive toxin.**Limestone (CAS# 1317-65-3)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Calcium carbonate, Natural calcium carbonate**D-limonene (CAS# 5989-27-5)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** 1-methyl-4(1-methylethenyl), (AIHAWHEEL) cyclohexene; 4-isopropyl-1-methylcyclohexene; p-mentha-1,8-diene; Cinene; Cajepetene**Lindane (CAS# 58-89-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [skin]**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3);

Unknown Filter Effectiveness

Synonyms BHC; HCH; gamma-Hexachlorocyclohexane; gamma isomer of 1,2,3,4,5,6-Hexachloro-cyclohexane**Notes** Use below Exposure Limit. Possible human carcinogen. Used in pharmaceutical - has side effects,**Lithium (CAS# 7439-93-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** Lithium metal, lithium element**Lithium hexafluorophosphate (CAS# 21324-40-3)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 12**Warnings** Not Recommended: Unknown Exposure Limit, Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Lithium PF5**Notes** Mixture with water may form HF (hydrogen fluoride) gas.**Lithium hydride (CAS# 7580-67-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.025 mg/m3**OSHA Exposure Limit** 0.025 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Lithium monohydride**Notes** A colorless or gray solid. LiH reacts explosively with water to give hydrogen gas and LiOH (LiOH is corrosive).**L-Lysine monohydrochloride (CAS# 657-27-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 5000-20000**Warnings** Unknown Exposure Limit**Synonyms** 2,6-Diaminohexanoic acid hydrochloride; L-Lysine Hydrochloride; Lyamine; Lysine hydrochloride; Lysine monohydrochloride; Darvyl**Notes** Warning: Unknown exposure limit, unknown odor threshold**Magnesite (CAS# 546-93-0)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Carbonate magnesium, Hydromagnesite, Magnesium carbonate, Magnesium(II) carbonate [Note: Magnesite is a naturally-occurring form of magnesium carbonate.]**Notes** Colorless or faintly hued crystal/mineral. Industrial uses include slag (steelmaking furnaces), synthetic rubber catalyst and flooring.**This guide is not an approved list of chemicals**

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Magnesium oxide fume (CAS# 1309-48-4)**Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established RELâ€™s after limited evaluation of the literature, concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha lumina, benomyl, emery, glycerine(mist, graphite (synth).**OSHA Exposure Limit** 15 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Magnesia fume**Magnesium sulfate (CAS# 7487-88-9)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Magnesium sulfate (1:1); sulfuric acid magnesium salt (1:1); Epsom Salts; Magnesium sulfate, anhydrous**Notes** White cyrstalline powder. Used in cement, as a desiccant, medical (to treat various diseases/illnesses).**Malathion (CAS# 121-75-5)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 10 mg/m3 [skin]**OSHA Exposure Limit** 15 mg/m3 [skin]**Odor Threshold Value in ppm** 13.5 mg/m3**Warnings** Unknown Filter Effectiveness**Synonyms** S-[1,2-bis(ethoxycarbonyl) ethyl]O,O-dimethyl-phosphorodithioate; Diethyl (dimethoxy-phosphinothioylthio) succinate**Notes** Requires both filters. Low risk potential.**Maleic anhydride (CAS# 108-31-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 mg/m3 (0.25 ppm)**OSHA Exposure Limit** 1 mg/m3 (0.25 ppm)**Odor Threshold Value in ppm** 0.318**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** cis-Butenedioic anhydride; 2,5-Furanedione; Maleic acid anhydride; Toxilic anhydride**Notes** Requires both filters. White crystalline powder. Corrosive - causes burns. Harmful. Sensitization - inhalation, skin contact.**Malonaldehyde (CAS# 542-78-9)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Malonic aldehyde; Malonodialdehyde; Propanedial; 1,3-Propanedial [Note: Pure Malonaldehyde is unstable and may be used as its sodium salt.]**Notes** Requires both filters. Reactive. Possible Mutagen.**Malononitrile (CAS# 109-77-3)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 3 ppm (8 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Cyanoacetnitrile, Dicyanomethane, Malonic dinitrile**Notes** Requires both filters. Toxic. Environmental Hazard.**Manganese compounds and fume (as Mn) (CAS# 7439-96-5)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3 ST 3 mg/m3 [*Note: Also see specific listings for Manganese cyclopentadienyl tricarbonyl, Methyl cyclopentadienyl manganese tricarbonyl, and Manganese tetroxide.]**OSHA Exposure Limit** C 5 mg/m3 [*Note: Also see specific listings for Manganese cyclopentadienyl tricarbonyl and Methyl cyclopentadienyl manganese tricarbonyl.]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Manganese metal: Colloidal manganese, Manganese-55**Notes** Toxic - inhalation, ingestion (effects CNS).**Manganese cyclopentadienyl tricarbonyl (as Mn) (CAS# 12079-65-1)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** C 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Cyclopentadienylmanganese tricarbonyl, Cyclopentadienyl tricarbonyl manganese, MCT**Notes** Requires both filters. Toxic - inhalation, ingestion (effects CNS).**Manganese tetroxide (as Mn) (CAS# 1317-35-7)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established RELâ€™s -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** C 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Manganese oxide, Manganomanganic oxide, Trimanganese tetraoxide, Trimanganese tetroxide**Marble (CAS# 1317-65-3)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Calcium carbonate, Natural calcium carbonate [Note: Marble is a metamorphic form of calcium carbonate.]**Menthol (CAS# 2216-51-5)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Hexahydrothymol;(1alpha,2beta,5alpha)-5-Methyl-2-(1-methylethyl)cyclohexanol**Notes** Warning: Unknown Odor Threshold; Exposure Limit Not Established.**6-Mercapto-1-hexanol (CAS# 1633-78-9)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness - Very Strong Odor**Notes** Not recommended for ductless enclosures.**This guide is not an approved list of chemicals**

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2-Mercaptoethanol (CAS# 60-24-2)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.12-0.64**Warnings** Odor Threshold < 1ppm; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** beta-Mercaptoethanol; 2-Hydroxyethyl Mercaptan; 2-Hydroxyethanethiol; Thioglycol, 2ME, Thioethyleneglycol, 2-Thioethanol, 2-Hydroxy-1-ethanethiol, 1-Hydroxy-2-mercaptoethane**Notes** Highly Toxic - May be fatal if absorbed through the skin. Irritant - respiratory, skin.**Mercuric nitrate (CAS# 7783-34-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not available**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Mercuric nitrate monohydrate**Notes** Toxic (fatal) - ingestion, inhaled, skin contact. Irritant - skin, eyes, respiratory. Sensitization (allergenic) - skin. Strong Oxidizer - flammable. Environmental Hazard/Toxin.**Mercury (I) nitrate dihydrate (CAS# 10415-75-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.05 mg/m3**OSHA Exposure Limit** Mercury and mercury compounds: 0.1 mg/m3 (TWA), skin**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Mercurous Nitrate, Dihydrate; Nitric acid, mercury (1+) salt, dihydrate; mercury protonitrate; Mercury (I) Nitrate, Dihydrate**Notes** Toxic (fatal) - ingestion, inhaled, skin contact. Irritant - skin, eyes, respiratory. Sensitization (allergenic) - skin. Strong Oxidizer - flammable. Environmental Hazard/Toxin.**Mercury (organo) alkyl compounds (as Hg) (CAS#)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.01 mg/m3 ST 0.03 mg/m3 [skin]**OSHA Exposure Limit** 0.01 mg/m3 C 0.04 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Synonyms vary depending upon the specific (organo) alkyl mercury compound.**Notes** Toxic (fatal) - ingestion, inhaled, skin contact. Irritant - skin, eyes, respiratory. Sensitization (allergenic) - skin. Strong Oxidizer - flammable. Environmental Hazard/Toxin.**Mercury compounds [except (organo) alkyls] (as Hg) (CAS# 7439-97-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Hg Vapor: TWA 0.05 mg/m3 [skin] Other: C 0.1 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Mercury metal: Colloidal mercury, Metallic mercury, Quicksilver**Notes** Toxic (fatal) - ingestion, inhaled, skin contact. Irritant - skin, eyes, respiratory. Sensitization (allergenic) - skin. Strong Oxidizer - flammable. Environmental Hazard/Toxin.**Mesityl oxide (CAS# 141-79-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 22.8%**NIOSH Exposure Limit** 10 ppm (40 mg/m3)**OSHA Exposure Limit** 25 ppm (100 mg/m3)**Odor Threshold Value in ppm** 0.056**Warnings** Odor Threshold < 0.1ppm**Synonyms** Isobutenyl methyl ketone, Isopropylideneacetone, Methyl isobutenyl ketone, 4-Methyl-3-penten-2-one**Notes** Very Low Odor Threshold. Colorless, volatile liquid with strong peppermint-like odor. Flammable. Toxic - inhalation, ingestion, skin contact.**Methacrylic acid (CAS# 79-41-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 20 ppm (70 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.2**Warnings** Unknown Filter Capacity; Unknown Filter Effectiveness; Odor Threshold < 1ppm**Synonyms** Methacrylic acid (glacial), Methacrylic acid (inhibited), alpha-Methacrylic acid, 2-Methylacrylic acid, 2-Methylpropenoic acid**Notes** Warning: Odor Threshold < 1ppm**Methacrylic anhydride (CAS# 760-93-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Methacryloylanhydride; METHACRYLIC ANHYDRIDE; METHACRYLIC ANHTDRIDE; Methacrylsureanhydrid; Methacryloyl anhydride; Dimethacrylic anhydride; methacrylicacidanhydride; Bismethacrylic anhydride; 1-Methylacrylic anhydride; A-METHYLACRYLIC ANHYDRIDE**Methane (CAS# 74-82-8)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness; Simple Asphyxiant; Carbon filtration is an ineffective sorbent for chemical**Synonyms** Biogas; Fire damp; Marsh gas; SA Short OV service life. Methylhydride; Natural gas; R 50 (refrigerant)**Notes** Simple Asphyxiant, carbon filtration is an ineffective sorbent for chemical**Methanesulfonic acid ethyl ester (CAS# 62-50-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Carcinogen; Unknown Filter Effectiveness**Synonyms** Ethyl Methanesulfonate; Ethyl ester of methanesulfonic acid; Ethyl ester of methylsulfonic acid; Ethyl ester of methylsulphonic acid; Ethyl methanesulphonate; Methylsulfonic acid, ethyl ester**Methomyl (CAS# 16752-77-5)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** 2.5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Lannate;; Methyl N-((methylamino)carbonyloxy)ethanimidothioate; S-Methyl-N(methylcarbamoyloxy)thioacetimidate**Notes** Insecticide, restricted use since 1966. Highly Toxic.**Methotrexate (CAS# 59-05-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Amethopterin, Amethopterine, Antifolin, Methotrexat, Methyaminopterin, Methyaminopterinum, Ledertrexate; 4-Amino-4-deoxy-N(sup 10)-methylpteroylglutamate; 4-Amino-4-deoxy-N(sup10)-methylpteroylglutamic acid; 4-Amino-N(sup 10)-methylpteroylglutamic acid**This guide is not an approved list of chemicals**

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1-Methoxy-2-propanol acetate (CAS# 108-65-6)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established.**OSHA Exposure Limit** Not established.**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** PGMEA; 1-Methoxy-2-acetoxypropane; 1-Methoxy-2-propyl acetate; Propylene glycol monomethylacetate; Propyleneglycol monomethyl ether acetate; Dowanol PMA glycol ether acetate**Notes** Paint ingredient. Could have a fairly strong odor.**Methoxychlor (CAS# 72-43-5)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 15 mg/m3**Odor Threshold Value in ppm** 4.7 mg/kg in water**Warnings** Carcinogen; Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** p,p'-Dimethoxydiphenyltrichloroethane; DMDT; Methoxy-DDT; 2,2-bis(p-Methoxyphenyl)-1,1,1-trichloroethane; 1,1,1-Trichloro-2,2-bis-(p-methoxyphenyl)ethane**Notes** Requires both filters. Pesticide (banned in U.S. in 2003, EU in 2002). Highly Toxic. Reproductive toxin.**Beta-Methoxyethyl cyanoacrylate (CAS# 27816-23-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 2-Jan**Warnings** Unknown Filter Effectiveness; Unknown Exposure Limit**Methoxyflurane (CAS# 76-38-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 2 ppm (13.5 mg/m3) [60-minute] [*Note: REL for exposure to waste anesthetic gas.]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2,2-Dichloro-1,1-difluoroethyl methyl ether; 2,2-Dichloro-1,1-difluoro-1-methoxyethane; Methoflurane; Methoxyfluorane; Penthrane**Notes** Anesthetic Gas, used in acute cases. Toxic - renal organ failure.**4-Methoxyphenol (CAS# 150-76-5)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Hydroquinone monomethyl ether, p-Hydroxyanisole, Mequinol, p-Methoxyphenol, Monomethyl ether hydroquinone**Notes** Warning: Unknown Odor Threshold; Unknown Filter Effectiveness**Methyl (n-amyl) ketone (CAS# 110-43-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 14%**NIOSH Exposure Limit** 100 ppm (465 mg/m3)**OSHA Exposure Limit** 100 ppm (465 mg/m3)**Odor Threshold Value in ppm** 0.897 ppb**Warnings** Odor Threshold < 1ppm**Synonyms** Amyl methyl ketone, n-Amyl methyl ketone, 2-Heptanone**Notes** Fruity odor at very low level.**Methyl acetate (CAS# 79-20-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 3.5%**NIOSH Exposure Limit** 200 ppm (610 mg/m3) ST 250 ppm (760 mg/m3)**OSHA Exposure Limit** 200 ppm (610 mg/m3)**Odor Threshold Value in ppm** 6.17**Warnings** Filter Capacity < 5%**Synonyms** Methyl ester of acetic acid, Methyl ethanoate**Notes** Flammable. Liquid with glue-like solvent odor. VOC exempt.**Methyl acetylene (CAS# 74-99-7)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.1%**NIOSH Exposure Limit** 1000 ppm (1650 mg/m3)**OSHA Exposure Limit** 1000 ppm (1650 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life; Unknown Odor Threshold**Synonyms** Allylene, Propine, Propyne, 1-Propyne**Notes** Mildly toxic - High exposure limit. Commonly used in gas welding and rocket fuels - more stable than traditional fuels.**Methyl acetylene-propadiene mixture (CAS# 59355-75-8)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.1%**NIOSH Exposure Limit** 1000 ppm (1800 mg/m3) ST 1250 ppm (2250 mg/m3)**OSHA Exposure Limit** 1000 ppm (1800 mg/m3)**Odor Threshold Value in ppm** 100**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life**Synonyms** MAPP gas, Methyl acetylene-allene mixture, Methyl acetylene-propadiene mixture (stabilized), Propadiene-methyl acetylene, Propyne-allene mixture, Propyne-propadiene mixture**Notes** Mildly toxic - High exposure limit. Commonly used in gas welding and rocket fuels - more stable than traditional fuels.**Methyl acrylate (CAS# 96-33-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 5.8%**NIOSH Exposure Limit** 10 ppm (35 mg/m3) [skin]**OSHA Exposure Limit** 10 ppm (35 mg/m3) [skin]**Odor Threshold Value in ppm** 0.263**Warnings** Odor Threshold < 1ppm**Synonyms** Methoxycarbonylethylene, Methyl ester of acrylic acid, Methyl propenoate**Notes** Sensitization - contact allergen (present in nail lacquer). Highly flammable. Mildly Toxic.**Methyl alcohol (CAS# 67-56-1)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.1%**NIOSH Exposure Limit** 200 ppm (260 mg/m3) ST 250 ppm (325 mg/m3) [skin]**OSHA Exposure Limit** 200 ppm (260 mg/m3)**Odor Threshold Value in ppm** 141**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life**Synonyms** Carbinol, Columbian spirits, Methanol, Pyroligneous spirit, Wood alcohol, Wood naphtha, Wood spirit**Notes** Not recommended due to short service life. A colorless liquid with sweet odor (similar to ethyl alcohol). High exposure limit allows controlled usage as "bench" chemical. For carbon adsorption applications, may be replaceable with isopropyl (or other) alcohols. Highly flammable. Toxic - inhalation, skin contact, ingestion - danger of serious irreversible effects through inhalation, skin contact, ingestion.**Methyl bromide (CAS# 74-83-9)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.3%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** C 20 ppm (80 mg/m3) [skin]**Odor Threshold Value in ppm** 80 mg/m3**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life. Carcinogen**Synonyms** Bromomethane, Monobromomethane**Notes** Not recommended due to short service life. Toxic - inhalation, skin contact, ingestion. Corrosive - burns. Irritant - eyes, skin, respiratory. Harmful (Severe) - inhalation (prolonged). Ozone depleting. Environmental Hazard.**This guide is not an approved list of chemicals**

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2-methyl butane (CAS# 78-78-4)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 12.2%**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 10**Warnings** Unknown Exposure Limit**Synonyms** isopentane; 1,1,2-trimethylethane**Notes** Reproductive system/toxin/female, Development toxin [POSSIBLE]. The substance may be toxic to thyroid. Repeated or prolonged exposure to the substance can produce target organs damage.**Methyl CellosolveÂ® (CAS# 109-86-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13.1%**NIOSH Exposure Limit** 0.1 ppm (0.3 mg/m3) [skin]**OSHA Exposure Limit** 25 ppm (80 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** EGME, Ethylene glycol monomethyl ether, Glycol monomethyl ether, 2-Methoxyethanol**Notes** (NIOSH) OEL < 1ppm (5mg/m3) - OSHA > 1ppm. Use below OEL. Toxic - reproductive, marrow. Used in dyes, varnishes and resins.**Methyl CellosolveÂ® acetate (CAS# 110-49-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13%**NIOSH Exposure Limit** 0.1 ppm (0.5 mg/m3) [skin]**OSHA Exposure Limit** 25 ppm (120 mg/m3) [skin]**Odor Threshold Value in ppm** 1.07**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** EGMEA, Ethylene glycol monomethyl ether acetate, Glycol monomethyl ether acetate, 2-Methoxyethyl acetate**Notes** (NIOSH) OEL < 1ppm (5mg/m3) - OSHA > 1ppm. Use below OEL. Toxic - reproductive, marrow. Used in dyes, varnishes and resins.**Methyl chloride (CAS# 74-87-3)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.1%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3 hours)**Odor Threshold Value in ppm** 10.2**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life; Carcinogen**Synonyms** Chloromethane, Monochloromethane**Notes** Not recommended due to short service life. Forms HCl with water.**Methyl chloroform (CAS# 71-55-6)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 17.3%**NIOSH Exposure Limit** C 350 ppm (1900 mg/m3) [15-minute]**OSHA Exposure Limit** 350 ppm (1900 mg/m3)**Odor Threshold Value in ppm** 22.4**Synonyms** Chloroethene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized)**Notes** Irritant to the upper respiratory tract. Causes severe irritation and swelling to eyes. May form explosive perchlorates. Contributes to Ozone depletion.**Methyl cyclopentadienyl manganese tricarbonyl (as Mn) (CAS# 12108-13-3)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.2 mg/m3 [skin]**OSHA Exposure Limit** C 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Cl-2, Combustion Improver-2, Manganese tricarbonylmethylcyclopentadienyl, 2-Methylcyclopentadienyl manganese tricarbonyl, MMT**Notes** Requires both filters. Flammable. Toxic - ingestion, inhalation, skin contact.**Methyl demeton (CAS# 8022-00-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.5 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Demeton methyl; O,O-Dimethyl 2-ethylmercaptioethyl thiophosphate; Metasystox;; Methyl mercaptophos; Methyl systox**Notes** Toxic - skin contact, ingestion. Environmental Hazard.**Methyl ethyl ketone peroxide (CAS# 1338-23-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 0.2 ppm (1.5 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 2-Butanone peroxide, Ethyl methyl ketone peroxide, MEKP, MEK peroxide, Methyl ethyl ketone hydroperoxide**Notes** Extremely low exposure limit.**Methyl formate (CAS# 107-31-3)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.4%**NIOSH Exposure Limit** 100 ppm (250 mg/m3) ST 150 ppm (375 mg/m3)**OSHA Exposure Limit** 100 ppm (250 mg/m3)**Odor Threshold Value in ppm** 93.3**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life**Synonyms** Methyl ester of formic acid, Methyl methanoate**Notes** Extremely short filter life. Highly flammable. Harmful.**Methyl hydrazine (CAS# 60-34-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca C 0.04 ppm (0.08 mg/m3) [2-hr]**OSHA Exposure Limit** C 0.2 ppm (0.35 mg/m3) [skin]**Odor Threshold Value in ppm** 1.71**Warnings** Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** MMH, Monomethylhydrazine**Notes** Volatile. Rocket Fuel. Flammable. Toxic. Environmental Hazard.**Methyl iodide (CAS# 74-88-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Radioisotope**NIOSH Exposure Limit** Ca TWA 2 ppm (10 mg/m3) [skin]**OSHA Exposure Limit** 5 ppm (28 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Iodomethane, Monoiodomethane**Notes** Naturally found in Rice fields. Volatile. Toxic - Inhalation, ingestion. Irritant - skin, respiratory.**Methyl isoamyl ketone (CAS# 110-12-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 27%**NIOSH Exposure Limit** 50 ppm (240 mg/m3)**OSHA Exposure Limit** 100 ppm (475 mg/m3)**Odor Threshold Value in ppm** 0.042**Warnings** Odor Threshold < 0.1ppm. Unknown filter capacity. Unknown Filter Effectiveness**Synonyms** Isoamyl methyl ketone, Isopentyl methyl ketone, 2-Methyl-5-hexanone, 5-Methyl-2-hexanone, MIAK**Notes** Very Low Odor Threshold. Flammable. Harmful - inhalation. Irritant - eyes, respiratory.**This guide is not an approved list of chemicals**

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Methyl isobutyl carbinol (CAS# 108-11-2)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 24%**NIOSH Exposure Limit** 25 ppm (100 mg/m3) ST 40 ppm (165 mg/m3) [skin]**OSHA Exposure Limit** 25 ppm (100 mg/m3) [skin]**Odor Threshold Value in ppm** 1.1**Synonyms** Isobutylmethylcarbinol, Methyl amyl alcohol, 4-Methyl-2-pentanol, MIBC

Methyl isobutyl ketone (CAS# 108-10-1)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 0.121**Warnings** Odor Threshold < 1ppm; Exposure Limit Not Established.; Unknown Filter Effectiveness**Synonyms** 2-Pentanone,4-methyl-; Hexone; MIBK; Isopropylacetone**Notes** Not Recommended - May form explosive peroxides in air. Highly flammable. Harmful - inhalation. Irritant - eyes, respiratory.

Methyl isocyanate (CAS# 624-83-9)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.5%**NIOSH Exposure Limit** 0.02 ppm (0.05 mg/m3) [skin]**OSHA Exposure Limit** 0.02 ppm (0.05 mg/m3) [skin]**Odor Threshold Value in ppm** 2.1**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Methyl ester of isocyanic acid, MIC**Notes** Highly toxic. Not recommended due to short service life. Highly flammable. Reacts dangerously with water.

Methyl isopropyl ketone (CAS# 563-80-4)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 12.1%**NIOSH Exposure Limit** 200 ppm (705 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 4.47**Synonyms** 2-Acetyl propane, Isopropyl methyl ketone, 3-Methyl-2-butanone, 3-Methyl butan-2-one, MIPK**Notes** Highly flammable.

Methyl mercaptan (CAS# 74-93-1)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.3%**NIOSH Exposure Limit** C 0.5 ppm (1 mg/m3) [15-minute]**OSHA Exposure Limit** C 10 ppm (20 mg/m3)**Odor Threshold Value in ppm** 0.001**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life; Odor Threshold < 0.1ppm. Exposure Limit < 1ppm (5mg/m3)**Synonyms** Mercaptomethane, Methanethiol, Methyl sulfhydrate**Notes** Not recommended due to short service life. Very Low Odor Threshold. Low exposure limit. By-product of metabolizing asparagus - responsible for distinct smell of urine after asparagus consumption.

Methyl methacrylate (CAS# 80-62-6)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 20.6%**NIOSH Exposure Limit** 100 ppm (410 mg/m3)**OSHA Exposure Limit** 100 ppm (410 mg/m3)**Odor Threshold Value in ppm** 0.085**Warnings** Odor Threshold < 0.1ppm**Synonyms** Methacrylate monomer, Methyl ester of methacrylic acid, Methyl-2-methyl-2-propenoate**Notes** Very Low Odor Threshold. Flammable. Used in production of acrylics.

Methyl orange (CAS# 547-58-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Acid Orange 52; SodiummDimethylaminobenzenesulfonate; 4-[Dimethylamino]phenylazo]benzenesulfonic Acid, sodium salt; Orange III; Tropaeolin D

Methyl parathion (CAS# 298-00-0)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.2 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.012**Warnings** Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Azophos; O,O-Dimethyl-O-p-nitrophenylphosphorothioate; Parathion methyl**Notes** Requires both filters. Very Low Odor Threshold. Low Exposure Limit. Used as an insecticide/acaricide, has been banned in many countries. Toxic - skin contact. Toxic (Severe) - inhalation, ingestion. Environmental Hazard.

Methyl phenyl sulfide (CAS# 100-68-5)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** Thioanisole,Methyl phenyl sulfide**Notes** Extremely unpleasant odor

Methyl salicylate (CAS# 119-36-8)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.04**Warnings** Odor Threshold < 0.1 ppm; Unknown Exposure Limit**Synonyms** 2-Hydroxybenzoic Acid Methyl Ester; Methoxybenzoic Acid; Sweet Birch Oil; Wintergreen Oil.

Methyl silicate (CAS# 681-84-5)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 1 ppm (6 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Methyl orthosilicate, Tetramethoxysilane, Tetramethyl ester of silicic acid, Tetramethyl silicate**Notes** Toxic - can cause blindness if hydrolysis occurs in the eyes. Use below exposure limit.

alpha-Methyl styrene (CAS# 98-83-9)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 14%**NIOSH Exposure Limit** 50 ppm (240 mg/m3) ST 100 ppm (485 mg/m3)**OSHA Exposure Limit** C 100 ppm (480 mg/m3)**Odor Threshold Value in ppm** 0.03**Warnings** Odor Threshold < 0.1ppm**Synonyms** AMS, Isopropenyl benzene, 1-Methyl-1-phenylethylene, 2-Phenyl propylene**Notes** Requires both filters. Very Low Odor Threshold. Very Toxic.

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Methyl-2-cyanoacrylate (CAS# 137-05-3)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 2 ppm (8 mg/m3) ST 4 ppm (16 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 2.16**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Mecrylate, Methyl cyanoacrylate, Methyl alpha-cyanoacrylate, Methyl ester of 2-cyanoacrylic acid**Notes** Krazy Glue. Fumes are known eye, nose, respiratory irritant. Typically used in fingerprinting and forensic sciences. Pungent odor. CA bonds to surfaces, may not be suitable for CFE usage unless unit is pretreated (RainX). Similar to ethyl-2-cyanoacrylate but is less common.**N-Methyl-2-Pyrrolidone (CAS# 872-50-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Ammonia-Amine | Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 1-Methyl-2-pyrrolidone, NMP**Notes** Requires both filters. Used to purify petroleum products and in multiple industrial settings. Flammable.**5-Methyl-3-heptanone (CAS# 541-85-5)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 8.3%**NIOSH Exposure Limit** 25 ppm (130 mg/m3)**OSHA Exposure Limit** 25 ppm (130 mg/m3)**Odor Threshold Value in ppm** 6**Synonyms** Amyl ethyl ketone, Ethyl amyl ketone, 3-Methyl-5-heptanone**Methylacrylonitrile (CAS# 126-98-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 6.7%**NIOSH Exposure Limit** 1 ppm (3 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 6.8**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** 2-Cyanopropene-1, 2-Cyano-1-propene, Isoprene cyanide, Isopropenylnitrile, Methacrylonitrile, alpha-Methylacrylonitrile, 2-Methylpropenenitrile**Notes** Use below exposure limit.**Methylal (CAS# 109-87-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 3.6%**NIOSH Exposure Limit** 1000 ppm (3100 mg/m3)**OSHA Exposure Limit** 1000 ppm (3100 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Filter Capacity < 5%; Unknown Odor Threshold**Synonyms** Dimethoxymethane, Formal, Formaldehyde dimethylacetal, Methoxymethyl methyl ether, Methylene dimethyl ether**Notes** Use below exposure limit. Flammable. Irritant - eyes, respiratory, skin.**Methylamine (CAS# 74-89-5)****Rating** Evaluate Warning**Filter Type** Carbon**NIOSH Exposure Limit** 10 ppm (12 mg/m3)**OSHA Exposure Limit** 10 ppm (12 mg/m3)**Odor Threshold Value in ppm** 0.019**Warnings** Odor Threshold < 0.1ppm; Unknown Filter Effectiveness**Synonyms** Aminomethane, Methylamine (anhydrous), Methylamine (aqueous), Monomethylamine**Notes** Very Low Odor Threshold. Gas typically suspended in methanol, ethanol, THF and water. Very Flammable. Very Toxic. Irritant - Inhalation, ingestion. Controlled substance by US DEA as precursor to methamphetamine.**Methylcyclohexane (CAS# 108-87-2)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 17.9%**NIOSH Exposure Limit** 400 ppm (1600 mg/m3)**OSHA Exposure Limit** 500 ppm (2000 mg/m3)**Odor Threshold Value in ppm** 500-630**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Cyclohexylmethane, Hexahydrotoluene**Notes** Very Flammable.**Methylcyclohexanol (CAS# 25639-42-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 14.5%**NIOSH Exposure Limit** 50 ppm (235 mg/m3)**OSHA Exposure Limit** 100 ppm (470 mg/m3)**Odor Threshold Value in ppm** 490**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Hexahydroresol, Hexahydromethylphenol**Notes** Use below Exposure limit.**o-Methylcyclohexanone (CAS# 583-60-8)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15%**NIOSH Exposure Limit** 50 ppm (230 mg/m3) ST 75 ppm (345 mg/m3) [skin]**OSHA Exposure Limit** 100 ppm (460 mg/m3) [skin]**Odor Threshold Value in ppm** 0.5**Warnings** Odor Threshold < 1ppm**Synonyms** 2-Methylcyclohexanone**Methylene bis(4-cyclohexylisocyanate) (CAS# 5124-30-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 0.01 ppm (0.11 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Dicyclohexylmethane 4,4'-diisocyanate; DMDI; bis(4-Isocyanatocyclohexyl)methane; HMDI; Hydrogenated MDI; Reduced MDI; Saturated MDI**Notes** Extremely low exposure limit.**Methylene bisphenyl isocyanate (CAS# 101-68-8)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.05 mg/m3 (0.005 ppm) C 0.2 mg/m3 (0.020 ppm) [10-minute]**OSHA Exposure Limit** C 0.2 mg/m3 (0.02 ppm)**Odor Threshold Value in ppm** 0.384**Warnings** Odor Threshold < 1ppm. OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 4,4'-Diphenylmethane diisocyanate; MDI; Methylene bis(4-phenyl isocyanate); Methylene di-p-phenylene ester of isocyanic acid**Notes** Requires both filters. Harmful - inhalation. Irritant - eyes, skin, respiratory. Sensitization - inhalation, skin contact (allergenic). Low vapor pressure reduces handling hazards, but not benign.**Methylene blue (CAS# 61-73-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Notes** If mixed into solution, will likely contain alcohols resulting in a short filter life**This guide is not an approved list of chemicals**

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Methylene Blue Trihydrate (CAS# 7220-79-3)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Possible Carcinogen**Synonyms** 3,7-bis(dimethylamino)phenazathionium chloride trihydrate, C.I. basic blue 9 trihydrate, methylthionine trihydrate, tetramethylene blue trihydrate**Notes** Fatty, floral odor reminiscent of wine**Methylene chloride (CAS# 75-09-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 2.5%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 25 ppm ST 125 ppm**Odor Threshold Value in ppm** 0.912**Warnings** Filter Capacity < 3% - Low Filter Capacit; Carcinogen; Odor Threshold < 1ppm**Synonyms** Dichloromethane, Methylene dichloride**Notes** A colorless liquid. High volatility leads to acute inhalation hazards. Toxic - metabolized to carbon monoxide.**4, 4'-Methylenebis(2-chloroaniline) (CAS# 101-14-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.003 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** DACPM; 3,3'-Dichloro-4,4'-diaminodiphenylmethane; MBOCA; 4,4'-Methylenebis(o-chloro aniline); 4,4'-Methylenebis(2-chlorobenzeneamine); MOCA**Notes** Extremely low exposure limit.**4, 4'-Methylenedianiline (CAS# 101-77-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 0.010 ppm ST 0.100 ppm**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 4,4'-Diaminodiphenyl-methane; para, para'-Diamino-diphenylmethane; Dianilino-methane; 4,4'-Diphenylmethanediamine; MDA**Notes** Extremely low exposure limit.**1-Methylimidazole (CAS# 616-47-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness; Unknown Exposure Limit**Synonyms** 1H-Imidazole, 1-methyl-; N-Methylimidazole**4-Methylmorpholine (CAS# 109-02-4)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness; Unknown Exposure Limit**Synonyms** Methyl Morpholine**N-methylmorpholine (CAS# 109-02-4)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit, Unknown Filter Effectiveness; Vapors may form explosive mixture with air**Synonyms** Methyl Morpholine**Notes** Vapors may form explosive mixture with air**Metribuzin (CAS# 21087-64-9)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 4-Amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one**Notes** Requires both filters.**Mica (containing less than 1% quartz) (CAS# 12001-26-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 3 mg/m3 (resp)**OSHA Exposure Limit** 20 mppcf**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Biotite, Lepidolite, Margarite, Muscovite, Phlogopite, Roscoelite, Zimwaldite**Notes** Sheet silicate mineral.**Mineral wool fiber (CAS#)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 3 fibers/cm3 (fibers with diameter < or = 3.5 Åµm & length > or = 10 Åµm.) TWA 5 mg/m3 (total)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Man-made mineral fibers, Rock wool, Slag wool, Synthetic vitreous fibers [Note:

Produced by blowing steam or air through molten rock (rock wool) or various furnace slags that are by-products of metal smelting or refining processes (slag wool).]

Notes Recommend use of particulate ventilator (PPE).**Molybdenum (CAS# 7439-98-7)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 15 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Molybdenum metal**Notes** Toxic - ingestion, inhalation.**Molybdenum (soluble compounds, as Mo) (CAS#)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Synonyms vary depending upon the specific soluble molybdenum compound**Notes** Toxic - ingestion, inhalation.

Monocrotophos (CAS# 6923-22-4)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.25 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 3-Hydroxy-N-methylcrotonamide dimethylphosphate, Monocron**Notes** Emits toxic fumes. Acutely toxic to birds and humans. Banned in the U.S. and other countries. Environmental Hazard.**Monomethyl aniline (CAS# 100-61-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 0.5 ppm (2 mg/m3) [skin]**OSHA Exposure Limit** 2 ppm (9 mg/m3) [skin]**Odor Threshold Value in ppm** 1.74**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** MA, (Methylamino)benzene, N-Methyl aniline, Methylphenylamine, N-Phenylmethylamine**Notes** Decomposes on heating to produce toxic fumes (aniline & nitrogen oxides). Reacts with acids, oxidants and plastics. Toxic - inhalation, skin contact, ingestion.**Morpholine (CAS# 110-91-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 19%**NIOSH Exposure Limit** 20 ppm (70 mg/m3) ST 30 ppm (105 mg/m3) [skin]**OSHA Exposure Limit** 20 ppm (70 mg/m3) [skin]**Odor Threshold Value in ppm** 0.036**Warnings** Odor Threshold < 0.1ppm**Synonyms** Diethylene imidoxide; Diethylene oximide; Tetrahydro-1,4-oxazine; Tetrahydro-p-oxazine**Notes** Very Low Odor Threshold. Flammable. Corrosive - burns. Toxic - inhalation, ingestion, skin contact.**MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine) (CAS# 23007-85-4)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Odor Threshold; Unknown Exposure Limit; (Acute toxicity causes Parkinson-like symptoms – highly toxic)**Synonyms** MPTP**MTBE (CAS# 1634-04-4)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.053**Warnings** Not Recommended: Odor Threshold < 0.1ppm**Synonyms** Propane, 2-methoxy-2-methyl- methyl-1,1-dimethylethylether**Nadic methyl anhydride (CAS# 25134-21-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness; Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** 4,7-Methanoisobenzofuran-1,3-dione,3a,4,7,7a-tetrahydromethyl-, (3aa,4a,7a,7aa)-;5-Norbornene-2,3-dicarboxylic anhydride, methyl- (6Cl,7Cl,8Cl);3,6-Endomethylene-1,2,3,6-tetrahydro-3(or 4)-methylphthalic anhydride;AralditeHY 906;Ciba-Geigy 906;Epicure NMA;HY 906;Kayahard MCD;Lindride25;MEA 610;Methyl-endo-bicyclo[2.2.1]-5-heptene-2,3-dicarboxylic anhydride;Methylbicyclo[2.2.1]heptene-2,3-dicarboxylic anhydride;Methylendic anhydride;Methylnadic acid anhydride;Methyl nadic anhydride;Nadic methyl anhydride;endo-Methylenemethyltetrahydrophthalic anhydride**Naphtha (coal tar) (CAS# 8030-30-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 100 ppm (400 mg/m3)**OSHA Exposure Limit** 100 ppm (400 mg/m3)**Odor Threshold Value in ppm** 0.89**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** Crude solvent coal tar naphtha, High solvent naphtha, Naphtha**Notes** May be carcinogenic. Consult your specific Naphtha vendor's MSDS. Various risks associated with different mixtures.**Naphthalene (CAS# 91-20-3)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 10 ppm (50 mg/m3) ST 15 ppm (75 mg/m3)**OSHA Exposure Limit** 10 ppm (50 mg/m3)**Odor Threshold Value in ppm** 0.015**Warnings** Odor Threshold < 0.1ppm; Unknown Filter Effectiveness**Synonyms** Naphthalin, Tar camphor, White tar**Notes** Requires both filters. Can exist as both particulate and vapor. Flammable. Sensitizer. Dust can form explosive mixtures with air. Strong odor of coal tar. Possible Carcinogen. Toxic - ingestion. Environmental Hazard. Very Low Odor Threshold.**Naphthalene diisocyanate (CAS# 3173-72-6)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.040 mg/m3 (0.005 ppm) C 0.170 mg/m3 (0.020 ppm) [10-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1,5-Diisocyanatonaphthalene; 1,5-Naphthalene diisocyanate; 1,5-naphthalene ester of isocyanic acid; NDI**p-Naphtholbenzein (CAS# 145-50-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Low exposure limit, Unknown Odor Threshold**Synonyms** alpha-naphtholbenzein, 4-[(4-hydroxy-1-naphthalenyl)phenyl(methylene)-1(4H)naphthalenone, 4,4'-(alpha-hydroxybenzylidene)di-1-naphthol**Notes** Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.**alpha-Naphthylamine (CAS# 134-32-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Identified as potential occupational carcinogen**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 1-Aminonaphthalene, 1-Naphthylamine**beta-Naphthylamine (CAS# 91-59-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Identified as potential occupational carcinogen**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 2-Aminonaphthalene, 2-Naphthylamine**This guide is not an approved list of chemicals**

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NiaxÂ® Catalyst ESN (CAS# 62765-93-9)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** However, the limited studies to date indicate that these substances have chemical reactivity and mutagenicity similar to acetaldehyde and malonaldehyde. Therefore, NIOSH recommends that careful consideration should be given to reducing exposures to these nine related aldehydes.**OSHA Exposure Limit** However, the limited studies to date indicate that these substances have chemical reactivity and mutagenicity similar to acetaldehyde and malonaldehyde. Therefore, NIOSH recommends that careful consideration should be given to reducing exposures to these nine related aldehydes.**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** None [Note: A mixture of 95% dimethylaminopropionitrile & 5% bis(2-dimethylamino)ethyl ether.]**Nickel carbonyl (CAS# 13463-39-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.001 ppm (0.007 mg/m3)**OSHA Exposure Limit** TWA 0.001 ppm (0.007 mg/m3)**Odor Threshold Value in ppm** 0.5-0.3**Warnings** Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Nickel tetracarbonyl, Tetracarbonyl nickel**Nickel chloride (CAS# 7791-20-0)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 0.1 Ni mg/m3**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Nickel (II) Chloride Hexahydrate**Notes** The substance is toxic to mucous membranes. Repeated or prolonged exposure to the substance can produce targeted organ damage.**Nickel metal and other compounds (as Ni) (CAS# 7440-02-0)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca TWA 0.015 mg/m3 [*Note: The REL does not apply to Nickel carbonyl.]**OSHA Exposure Limit** TWA 1 mg/m3 [*Note: The PEL does not apply to Nickel carbonyl.]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Nickel metal: Elemental nickel, Nickel catalyst.**Nickel sulphate (CAS# 7786-81-4)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** 0.015 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Ca,Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Nickel (II) sulfate hexahydrate (1:1:6); sulfuric acid, nickel (2+) salt, hexahydrate**Nicotine (CAS# 54-11-5)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [skin]**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 3-(1-Methyl-2-pyrrolidyl)pyridine**Ninhydrin (CAS# 485-47-2)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Ninhydrin monohydrate, 1,2,3-triketohydrindene monohydrate, 1,2,3-indantrione monohydrate, 2,2-dihydroxy-1,3-indandione, 1H-indene-1,2,3-trione monohydrate, triketohydrindene hydrate**Nitric acid (CAS# 7697-37-2)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Acid-Sulfur**Filter Capacity Percentage** 12.5%**NIOSH Exposure Limit** 2 ppm (5 mg/m3) ST 4 ppm (10 mg/m3)**OSHA Exposure Limit** 2 ppm (5 mg/m3)**Odor Threshold Value in ppm** 0.267**Warnings** Odor Threshold < 1ppm**Synonyms** Aqua fortis, Engravers acid, Hydrogen nitrate, Red fuming nitric acid (RFNA), White fuming nitric acid**Nitric oxide (CAS# 10102-43-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 25 ppm (30 mg/m3)**OSHA Exposure Limit** 25 ppm (30 mg/m3)**Odor Threshold Value in ppm** 0.3**Warnings** Odor Threshold < 0.1ppm; Unknown Filter Effectiveness**Synonyms** Mononitrogen monoxide, Nitrogen monoxide**p-Nitroaniline (CAS# 100-01-6)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 3 mg/m3 [skin]**OSHA Exposure Limit** 6 mg/m3 (1 ppm) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** para-Aminonitrobenzene, 4-Nitroaniline, 4-Nitrobenzenamine, p-Nitrophenylamine, PNA**Nitrobenzene (CAS# 98-95-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** 1 ppm (5 mg/m3) [skin]**OSHA Exposure Limit** 1 ppm (5 mg/m3) [skin]**Odor Threshold Value in ppm** 0.044**Warnings** Odor Threshold < 0.1ppm**Synonyms** Essence of mirbane, Nitrobenzol, Oil of mirbane**4-Nitrobiphenyl (CAS# 92-93-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Identified as Potential occupational Carci-nogens**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** p-Nitrobipheny, p-Nitrodiphenyl, 4-Nitrodiphenyl, p-Phenylnitrobenzene, 4-Phenylnitrobenzene, PNB**This guide is not an approved list of chemicals**

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p-Nitrochlorobenzene (CAS# 100-00-5)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** p-Chloronitrobenzene, 4-Chloronitrobenzene, 1-Chloro-4-nitrobenzene, 4-Nitrochlorobenzene, PCNB, PNCB**Nitroethane (CAS# 79-24-3)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 8%**NIOSH Exposure Limit** 100 ppm (310 mg/m3)**OSHA Exposure Limit** 100 ppm (310 mg/m3)**Odor Threshold Value in ppm** 2.11**Synonyms** Nitroetan**Nitrogen (CAS# 7727-37-9)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Carbon filtration not an effective sorbent**Notes** Carbon filtration not effective on gas, Toxic, may be fatal if inhaled**Nitrogen dioxide (CAS# 10102-44-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** ST 1 ppm (1.8 mg/m3)**OSHA Exposure Limit** C 5 ppm (9 mg/m3)**Odor Threshold Value in ppm** 0.186**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** Dinitrogen tetroxide (N2O4), Nitrogen peroxide**Nitrogen trifluoride (CAS# 7783-54-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 10 ppm (29 mg/m3)**OSHA Exposure Limit** 10 ppm (29 mg/m3)**Odor Threshold Value in ppm** 1475 mg/m3**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Nitrogen fluoride, Trifluoramine, Trifluorammonia**Nitroglycerine (CAS# 55-63-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** ST 0.1 mg/m3 [skin]**OSHA Exposure Limit** C 0.2 ppm (2 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Glyceryl trinitrate; NG; 1,2,3-Propanetriol trinitrate; Trinitroglycerine**Nitromethane (CAS# 75-52-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 2.1%**NIOSH Exposure Limit** None**OSHA Exposure Limit** 100 ppm (250 mg/m3)**Odor Threshold Value in ppm** 3.5**Warnings** Filter Capacity < 3% - Low Filter Capacity**Synonyms** Nitrocarbol**2-Nitronaphthalene (CAS# 581-89-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** beta-Nitronaphthalene**1-Nitropropane (CAS# 108-03-2)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 16.7%**NIOSH Exposure Limit** 25 ppm (90 mg/m3)**OSHA Exposure Limit** 25 ppm (90 mg/m3)**Odor Threshold Value in ppm** 7.09**Synonyms** Nitropropane, 1-NP**2-Nitropropane (CAS# 79-46-9)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 14.3%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 25 ppm (90 mg/m3)**Odor Threshold Value in ppm** 4.85**Warnings** Carcinogen**Synonyms** Dimethylnitromethane, iso-Nitropropane, 2-NP**N-Nitrosodimethylamine (CAS# 62-75-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Identified as potential occupational carci-nogen**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Dimethylnitrosamine; N,N-Dimethylnitrosamine; DMNA; N-Methyl-N-nitroso-methanamine; NDMA; N-Nitroso-N,N-dimethylamine**m-Nitrotoluene (CAS# 99-08-1)****Rating** Generally Compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** Unknown%**NIOSH Exposure Limit** 2 ppm (11 mg/m3) [skin]**OSHA Exposure Limit** 5 ppm (30 mg/m3) [skin]**Odor Threshold Value in ppm** 1.74**Synonyms** m-Methylnitrobenzene, 3-Methylnitrobenzene, meta-Nitrotoluene, 3-Nitrotoluene

o-Nitrotoluene (CAS# 88-72-2)**Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** Unknown%**NIOSH Exposure Limit** 2 ppm (11 mg/m3) [skin]**OSHA Exposure Limit** 5 ppm (30 mg/m3) [skin]**Odor Threshold Value in ppm** 0.05mg/l**Warnings** Odor Threshold < 0.1ppm**Synonyms** o-Methylnitrobenzene, 2-Methylnitrobenzene, ortho-Nitrotoluene, 2-Nitrotoluene**p-Nitrotoluene (CAS# 99-99-0)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 2 ppm (11 mg/m3) [skin]**OSHA Exposure Limit** 5 ppm (30 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** p-Methylnitrobenzene, 4-Methylnitrobenzene, para-Nitrotoluene, 4-Nitrotoluene**Nitrous oxide (CAS# 10024-97-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 25 ppm (46 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Dinitrogen monoxide, Hyponitrous acid anhydride, Laughing gas**Nonane (CAS# 111-84-2)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 11%**NIOSH Exposure Limit** 200 ppm (1050 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 1.26**Synonyms** n-Nonane, Nonyl hydride**1-Nonanethiol (CAS# 1455-21-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** Unknown%**NIOSH Exposure Limit** C 0.5 ppm (3.3 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness; OEL < 1ppm (5mg/m3)**Synonyms** 1-Mercaptanonane, n-Nonyl mercaptan, Nonylthiol**Octachloronaphthalene (CAS# 2234-13-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.1 mg/m3 ST 0.3 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness.**Synonyms** Halowax; 1051; 1,2,3,4,5,6,7,8-Octachloro-naphthalene; Perchloronaphthalene**1-Octadecanethiol (CAS# 2885-00-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** C 0.5 ppm (5.9 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1-Mercaptooctadecane, Octadecyl mercaptan, Stearyl mercaptan**Octafluoropropane (CAS# 76-19-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit, Unknown Filter Effectiveness**Synonyms** Halon-38, halocarbon 218, perfluoropropane, refrigerant gas R238**Notes** Compressed gas.**Octane (CAS# 111-65-9)****Rating** Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 17.5%**NIOSH Exposure Limit** 75 ppm (350 mg/m3) C 385 ppm (1800 mg/m3) [15-minute]**OSHA Exposure Limit** 500 ppm (2350 mg/m3)**Odor Threshold Value in ppm** 5.75**Synonyms** n-Octane, normal-Octane**1-Octanethiol (CAS# 111-88-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15%**NIOSH Exposure Limit** C 0.5 ppm (3.0 mg/m3) [15-minute]**OSHA Exposure Limit** None**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** 1-Mercaptooctane, n-Octyl mercaptan, Octylthiol, 1-Octylthiol**Octanol (CAS# 111-87-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.006**Warnings** Unknown Exposure Limit; Very Low Odor Threshold; Unknown Filter Effectiveness**Synonyms** Alcohol C-8, Capryl alcohol, Heptyl carbinol, n-Octanol, 1-Hydroxyoctane, N-Octyl alcohol**Di-sec-Octyl phthalate (CAS# 117-81-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca TWA 5 mg/m3 ST 10 mg/m3**OSHA Exposure Limit** 5 mg/m3**Warnings** Carcinogen; Unknown Odor Threshold**Synonyms** DEHP, Di(2-ethylhexyl)phthalate, DOP, bis-(2-Ethylhexyl)phthalate, Octyl phthalate

Oil mist (mineral) (CAS# 8012-95-1)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3 ST 10 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Heavy mineral oil mist, Paraffin oil mist, White mineral oil mist

Orcein (CAS# 1400-62-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Filter Effectiveness

Osmium tetroxide (CAS# 20816-12-0)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** 0.002 mg/m3 (0.0002 ppm) ST 0.006 mg/m3 (0.0006 ppm)**OSHA Exposure Limit** 0.002 mg/m3**Odor Threshold Value in ppm** 0.002**Warnings** Not Recommended: Odor Threshold < 0.1ppm; Odor Threshold > Exposure Limit - Poor

Odor Warning: OEL < 1ppm (5mg/m3)

Synonyms Osmic acid anhydride, Osmium oxide

Oxalic acid (CAS# 144-62-7)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 mg/m3 ST 2 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning: OEL < 1ppm (5mg/m3);

Unknown Filter Effectiveness

Synonyms Ethanedioic acid, Oxalic acid (aqueous), Oxalic acid dihydrate

Oxygen difluoride (CAS# 7783-41-7)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** C 0.05 ppm (0.1 mg/m3)**OSHA Exposure Limit** 0.05 ppm (0.1 mg/m3)**Odor Threshold Value in ppm** 0.098**Warnings** Not Recommended: Odor Threshold < 0.1ppm; Odor Threshold > Exposure Limit - Poor

Odor Warning: OEL < 1ppm (5mg/m3)

Synonyms Difluorine monoxide, Fluorine monoxide, Oxygen fluoride

Ozone (CAS# 10028-15-6)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** C 0.1 ppm (0.2 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.2 mg/m3)**Odor Threshold Value in ppm** 0.051**Warnings** Not Recommended: Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3)**Synonyms** Triatomic oxygen

Panthenol (CAS# 16485-10-2)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** (±)-?,?-Dihydroxy-N-(3-hydroxypropyl)-?,?-dimethylbutyramide, (±)-2,4-Dihydroxy-3,3-dimethylbutyric 3-hydroxypropylamide, DL-Pantothenyl alcohol

Paraffin wax fume (CAS# 8002-74-2)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 2 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Paraffin fume, Paraffin scale fume

Paraformaldehyde (CAS# 30525-89-4)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Formaldehyde-Formalin | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 0.5ppm**Odor Threshold Value in ppm** Not established**Warnings** Low Exposure Limit; Unknown Odor Threshold**Synonyms** Aldacide, Flo-Mor, Formagene, Paraform;Polyoxymethylene; Triformol;

Trioxymethylene,metaformaldehyde

Notes Warning: Low exposure limit, unknown odor threshold

Paraquat (Paraquat dichloride) (CAS# 1910-42-5)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.1 mg/m3 (resp) [skin]**OSHA Exposure Limit** 0.5 mg/m3 (resp) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1,1'-Dimethyl-4,4'-bipyridinium dichloride; N,N'-Dimethyl-4,4'-bipyridinium dichloride; Paraquat chloride; Paraquat dichloride [Note: Paraquat is a cation (C12H14N2++; 1,1-Dimethyl-4,4-bipyridinium ion); the commercial product is the dichloride salt of paraquat.]

Parathion (CAS# 56-38-2)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.05 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3 [skin]**Odor Threshold Value in ppm** 0.04**Warnings** Odor Threshold < 0.1ppm. OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness.**Synonyms** O,O-Diethyl-O(p-nitrophenyl) phosphorothioate; Diethyl parathion; Ethyl parathion; Parathion-ethyl

Pentaborane (CAS# 19624-22-7)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.005 ppm (0.01 mg/m3) ST 0.015 ppm (0.03 mg/m3)**OSHA Exposure Limit** 0.005 ppm (0.01 mg/m3)**Odor Threshold Value in ppm** 0.97**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning: OEL <

1ppm (5mg/m3); Unknown Filter Effectiveness

Synonyms Pentaboron nonahydride

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Pentachloroethane (CAS# 76-01-7)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 30.6%**NIOSH Exposure Limit** Handle with care in the workplace because of their structural similarity to the four chloroethanes shown to be carcinogenic in animals**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Ethane pentachloride, Pentalin**Pentachloronaphthalene (CAS# 1321-64-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [skin]**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Halowax; 1013; 1,2,3,4,5-Pentachloro-naphthalene**Pentachlorophenol (CAS# 87-86-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [skin]**OSHA Exposure Limit** 0.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** PCP; Penta; 2,3,4,5,6-Pentachlorophenol**Pentaerythritol (CAS# 115-77-5)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** 2,2-bis(Hydroxymethyl)-1,3-propanediol; Methane tetramethylol; Monopenta-erythritol; PE; Tetrahydroxy-methylolmethane; Tetramethyl-olmethane**n-Pentane (CAS# 109-66-0)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 5.7%**NIOSH Exposure Limit** 120 ppm (350 mg/m3) C 610 ppm (1800 mg/m3) [15-minute]**OSHA Exposure Limit** 1000 ppm (2950 mg/m3)**Odor Threshold Value in ppm** 31.6**Synonyms** Pentane, normal-Pentane**1-Pentanethiol (CAS# 110-66-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 23.7%**NIOSH Exposure Limit** C 0.5 ppm (2.1 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Amyl hydrosulfide, Amyl mercaptan, Amyl sulfhydrate, Pentyl mercaptan**1-Pentanol (CAS# 71-41-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 12.2%**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 10 ppm**Warnings** Unknown Exposure Limit**Synonyms** n-Amyl alcohol, n-Butyl carbinol, n-Pentyl alcohol, Amyl alcohol, n-Butyl alcohol, Pentanol, n-Pentanol**Notes** Reproductive system/toxin/female, Development toxin [POSSIBLE]. The substance may be toxic to thyroid. Repeated or prolonged exposure to the substance can produce target organs damage.**2-Pentanone (CAS# 107-87-9)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13.3%**NIOSH Exposure Limit** 150 ppm (530 mg/m3)**OSHA Exposure Limit** 200 ppm (700 mg/m3)**Odor Threshold Value in ppm** 1.55**Synonyms** Ethyl acetone, Methyl propyl ketone, MPK**Pepsin (CAS# 9001-75-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** Pepsin A**Perchloric acid (CAS# 7601-90-3)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** perchloric acid solution; dioxonium perchlorate solution; hydronium perchlorate**Perchloromethyl mercaptan (CAS# 594-42-3)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 ppm (0.8 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.8 mg/m3)**Odor Threshold Value in ppm** 0.097**Warnings** Not Recommended: Odor Threshold <0.1ppm. OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** PCM, PMM, Trichloromethane sulphenyl chloride, Trichloromethyl sulfur chloride**Perchloryl fluoride (CAS# 7616-94-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 3 ppm (14 mg/m3) ST 6 ppm (28 mg/m3)**OSHA Exposure Limit** 3 ppm (13.5 mg/m3)**Odor Threshold Value in ppm** 11**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Chlorine fluoride oxide, Chlorine oxyfluoride, Trioxychlorofluoride**This guide is not an approved list of chemicals**

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Perlite (CAS# 93763-70-3)**Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness**Synonyms** Expanded perlite [Note: An amorphous material consisting of fused sodium potassium aluminum silicate.]**Peroxyacetic Acid (CAS# 79-21-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** PAA, Peroxyacetic acid, Acetic peroxide, Acetyl hydroperoxide, Proxitane, Ethaneperoxoic acid**Petroleum distillates (naphtha) (CAS# 05-08-98)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 350 mg/m3 C 1800 mg/m3 [15-minute**OSHA Exposure Limit** 500 ppm (2000 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness.**Synonyms** Aliphatic petroleum naphtha, Petroleum naphtha, Rubber solvent**Phenol (CAS# 108-95-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 10.4%**NIOSH Exposure Limit** 5 ppm (19 mg/m3) C 15.6 ppm (60 mg/m3) [15-minute] [skin]**OSHA Exposure Limit** 5 ppm (19 mg/m3) [skin]**Odor Threshold Value in ppm** 0.011**Warnings** Odor Threshold < 0.1ppm**Synonyms** Carboic acid, Hydroxybenzene, Monohydroxybenzene, Phenyl alcohol, Phenyl hydroxide**Phenolphthalein (CAS# 77-09-8)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca - Not established**OSHA Exposure Limit** Not established for chemical in solid form. If in solution form exposure limits of alcohols: 1000 ppm (TWA) for ethyl alcohol, 400 ppm (TWA) for isopropyl alcohol, 200 ppm (TWA) for methyl alcohol**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 3,3-bis(p-hydroxyphenyl) phthalide; 3,3-bis(4-hydroxyphenyl)-1(3H)-isobenzofuranone**Phenothiazine (CAS# 92-84-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 5 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Dibenzothiazine, Fenothiazine, Thiodiphenylamine**Phenyl ether (vapor) (CAS# 101-84-8)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 17.8%**NIOSH Exposure Limit** 1 ppm (7 mg/m3)**OSHA Exposure Limit** 1 ppm (7 mg/m3)**Odor Threshold Value in ppm** 0.03**Warnings** Odor Threshold < 0.1ppm**Synonyms** Diphenyl ether, Diphenyl oxide, Phenoxy benzene, Phenyl oxide**Phenyl ether-biphenyl mixture (vapor) (CAS# 8004-13-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 ppm (7 mg/m3)**OSHA Exposure Limit** 1 ppm (7 mg/m3)**Odor Threshold Value in ppm** 0.001-0.01**Warnings** Odor Threshold < 0.1ppm. Unknown Filter Effectiveness**Synonyms** Diphenyl oxide-diphenyl mixture; Dowtherm; A**Phenyl glycidyl ether (CAS# 122-60-1)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 17%**NIOSH Exposure Limit** Ca C 1 ppm (6 mg/m3) [15-minute]**OSHA Exposure Limit** 10 ppm (60 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold**Synonyms** 1,2-Epoxy-3-phenoxy propane; Glycidyl phenyl ether; PGE; Phenyl 2,3-epoxypropyl ether**N-Phenyl-beta-naphthylamine (CAS# 135-88-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca [Note: Since metabolized to beta-Naphthylamine]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 2-Anilidonaphthalene, beta-Naphthylphenylamine, PBNA, 2-Phenylaminonaphthalene, Phenyl-beta-naphthylamine**Phenylboronic Acid (CAS# 98-80-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Benzeneboronic acid, Dihydroxyphenylborane, NSC 66487, Phenyl-boric acid, Phenylboric acid, Phenylidihydroxyborane**p-Phenylene diamine (CAS# 106-50-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 4-Aminoaniline; 1,4-Benzenediamine; p-Diaminobenzene; 1,4-Diaminobenzene; 1,4-Phenylene diamine**This guide is not an approved list of chemicals**

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Phenylhydrazine (CAS# 100-63-0)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** Unknown%**NIOSH Exposure Limit** Ca C 0.14 ppm (0.6 mg/m3)**OSHA Exposure Limit** 5 ppm (22 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Unknown Filter Capacity; Unknown Filter Effectiveness**Synonyms** Hydrazinobenzene, Monophenylhydrazine**Phenylphosphine (CAS# 638-21-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** C 0.05 ppm (0.25 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Fenylfosfin, PF, Phosphaniline**Phorate (CAS# 298-02-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.05 mg/m3 ST 0.2 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** O,O-Diethyl S-(ethylthio)methylphosphorodithioate; O,O-Diethyl S-ethylthio-methylthiothionophosphate; Thimet; Timet**Phosdrin® (CAS# 7786-34-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.01 ppm (0.1 mg/m3) ST 0.03 ppm (0.3 mg/m3) [skin]**OSHA Exposure Limit** 0.1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 2-Carbomethoxy-1-methylvinyl dimethyl phosphate, Mevinphos [Note: Commercial product is a mixture of the cis- & trans-isomers.]**Phosgene (CAS# 75-44-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 ppm (0.4 mg/m3) C 0.2 ppm (0.8 mg/m3) [15-minute]**Odor Threshold Value in ppm** 0.55**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Carbon oxychloride, Carbonyl chloride, Carbonyl dichloride, Chloroformyl chloride**Phosphine (CAS# 7803-51-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.3 ppm (0.4 mg/m3) ST 1 ppm (1 mg/m3)**OSHA Exposure Limit** 0.3 ppm (0.4 mg/m3)**Odor Threshold Value in ppm** 0.14**Warnings** Odor Threshold < 1ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Hydrogen phosphide, Phosphorated hydrogen, Phosphorus hydride, Phosphorus trihydride**Phosphoric acid (CAS# 7664-38-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**Filter Capacity Percentage** 11%**NIOSH Exposure Limit** 1 mg/m3 ST 3 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Orthophosphoric acid, Phosphoric acid (aqueous), White phosphoric acid**Phosphorus (yellow) (CAS# 7723-14-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Elemental phosphorus, White phosphorus**Phosphorus oxychloride (CAS# 10025-87-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** 0.1 ppm (0.6 mg/m3) ST 0.5 ppm (3 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Phosphorus chloride, Phosphorus oxytrichloride, Phosphoryl chloride**Phosphorus oxychloride (CAS# 10025-87-3)****Rating** Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 0.1 ppm**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness, Unknown Exposure Limit; May be fatal if inhaled**Synonyms** Phosphorus oxytrichloride, Phosphoryl trichloride, Trichlorophosphine oxide, Trichorophosphorus oxide**Notes** May be fatal if inhaled**Phosphorus pentachloride (CAS# 10026-13-8)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Pentachlorophosphorus, Phosphoric chloride, Phosphorus perchloride**Phosphorus pentasulfide (CAS# 1314-80-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1 mg/m3 ST 3 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** 0.0047**Warnings** Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Phosphorus persulfide, Phosphorus sulfide, Sulfur phosphide

Phosphorus trichloride (CAS# 7719-12-2)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** 0.2 ppm (1.5 mg/m3) ST 0.5 ppm (3 mg/m3)**OSHA Exposure Limit** 0.5 ppm (3 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Phosphorus chloride**Phosphorus-32 (CAS#)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**o-Phthalaldehyde (CAS# 643-79-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particle**NIOSH Exposure Limit** 19ug/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** O-Phthalic dicarboxaldehyde, Benzene-1,2-dicarboxaldehyde, OPA**Phthalic anhydride (CAS# 85-44-9)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 6 mg/m3 (1 ppm)**OSHA Exposure Limit** 12 mg/m3 (2 ppm)**Odor Threshold Value in ppm** 0.052**Warnings** Odor Threshold < 0.1ppm; Unknown Filter Effectiveness**Synonyms** 1,2-Benzenedicarboxylic anhydride; PAN; Phthalic acid anhydride**Phthalimide (CAS# 85-41-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** 1H-Isoindole-1,3(2H)-dione**m-Phthalodinitrile (CAS# 626-17-5)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** 1,3-Benzenedicarbonitrile; m-Dicyanobenzene; 1,3-Dicyanobenzene; Isophthalodinitrile; m-PDN**Piccolyte (CAS# 68240-09-5)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** beta-Pinene, alpha-Pinene, dipentene, beta-phellandrene polymer**Picloram (CAS# 01-31-14)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established RELâ€™s -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 4-Amino-3,5,6-trichloropicolinic acid; 4-Amino-3,5,6-trichloro-2-picolinic acid; ATCP; Tordon;**Picric acid (CAS# 88-89-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 ST 0.3 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3 [skin]**Odor Threshold Value in ppm** 0.0005 mg/m3**Warnings** Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3)**Synonyms** Phenol trinitrate; 2,4,6-Trinitrophenol [Note: An OSHA Class A Explosive (1910.109).]**Pindone (CAS# 83-26-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** tert-Butyl valone; 1,3-Dioxo-2-pivaloyl-indane; Pival; Pivalyl; 2-Pivalyl-1,3-indandione**Piperazine dihydrochloride (CAS# 142-64-3)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Piperazine hydrochloride [Note: The monochloride, C4H10N2 HCl, is also commercially available.]**Piperidine (CAS# 110-89-4)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Not recommended: Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** hexahydropyridine, pentamethyleneimine, azacyclohexane, cyclopentimine, cypentil, hexazane,**This guide is not an approved list of chemicals**

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Plaster of Paris (CAS# 26499-65-0)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Calcium sulfate hemihydrate, Dried calcium sulfate, Gypsum hemihydrate, Hemihydrate gypsum

Platinum (CAS# 06-03-36)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Platinum black, Platinum metal, Platinum sponge

Platinum (soluble salts, as Pt) (CAS#)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.002 mg/m3**OSHA Exposure Limit** 0.002 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Synonyms vary depending upon the specific soluble platinum salt

Poly(dimethylsiloxane) (CAS# 9016-00-6)

Rating Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness, Unknown Exposure Limit**Synonyms** Simethicone; Dimethicone, PDMS**Notes** Adverse reproductive and tumorigenic effects have occurred in experimental animals.

Poly(methyl 2-methylpropenoate) (CAS# 9011-14-7)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Poly(methyl methacrylate) (PMMA) methyl methacrylate resin, Plexiglas

Polyethylene glycol (CAS# 25322-68-3)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold

Polyethylene glycol (CAS# 25322-68-3)

Rating Chemical Assessment Required**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** PEG; Carbowax; Polyglycol; Polyethylene glycol 200, 300, 400, 600, 1000, 1450, 3350, 4000, 6000, 8000 and 20000.

Polyurethane (CAS#)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established.**Synonyms** Can be polymerized from various chemicals

Polyvinyl alcohol (CAS# 25213-24-5)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** PVA; Polyvinol; ethanol homopolymer

Polyvinylpyrrolidone K 30 (CAS# 9003-39-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** PVP; Povidone, K-30; Polyvinylpyrrolidone K-30; Poly[1-(2-oxo-1-pyrrolidinyl)ethylene]

Portland cement (CAS# 65997-15-1)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 50 mppcf**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Cement, Hydraulic cement, Portland cement silicate

Potassium (CAS# 09-07-40)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Kalium**Notes** Explosive when exposed to water or water vapor.

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Potassium bromate (CAS# 01-01-54)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Bromic Acid; Potassium Salt

Potassium bromide (CAS# 7758-88-10)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Hydrobromic Acid Potassium Salt; Bromide Salt of Potassium

Potassium chloride (CAS# 7447-40-7)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Sylvite, Muriate of potash, Potassium monochloride

Potassium chromate (CAS# 7789-00-6)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca, 15.0 mg/m3 As Cr(VI)**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Dipotassium Chromate

Tri-potassium citrate (CAS# 866-84-2)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** Tripotassium citrate**Notes** The substance is toxic to mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage

Potassium cyanide (as CN) (CAS# 151-50-8)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 5 mg/m3 (4.7 ppm) [10-minute] [*Note: The REL also applies to other cyanides (as CN) except Hydrogen cyanide.]**OSHA Exposure Limit** 5 mg/m3 [*Note: The PEL also applies to other cyanides (as CN) except Hydrogen cyanide.]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold.**Synonyms** Potassium salt of hydrocyanic acid

Potassium dichromate (CAS# 7778-50-9)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.001 mg/m3**OSHA Exposure Limit** TWA 0.005 mg/m3**Warnings** Not Recommended: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3);

Unknown Filter Effectiveness

Synonyms Potassium bichromate, Potassium dichromate(VI)

Potassium Ferrocyanide (CAS# 13943-58-3)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** Potassium hexacyanoferrate (II), trihydrate; Tetrapotassium ferrocyanide, trihydrate; Ferrate (4-), hexacyano, tetrapotassium, trihydrate. Additional CAS# 14459-95-1(Tri-hydrate)

Potassium hydrogen phthalate (CAS# 877-24-7)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Potassium biphthalate; Potassium acid phthalate.

Potassium hydroxide (CAS# 1310-58-3)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 2 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Caustic potash, Lye, Potassium hydrate

Potassium iodide (CAS# 7681-11-0)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Radioisotope | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Notes** Requires both filters, pungent odor

Potassium permanganate (CAS# 7722-64-7)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** 5 mg/m3 Ceiling for manganese compounds as Mn**Warnings** Warning Unknown Odor Threshold**Synonyms** Permanganic acid, potassium salt; Condy's crystals

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Potassium phosphate (CAS# 7778-77-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Monopotassium phosphate (KH₂PO₄) Potassium phosphate monobasic, Phosphoric acid, monopotassium salt

Potassium sodium tartrate (CAS# 6381-59-5)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 5mg/m³**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Rochelle salt; Sodium Potassium Tartratetetrahydrate; L(+)-Tartaric acid potassium sodium salt**Notes** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.

Potassium Sorbate (CAS# 590-00-1)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 2,4-hexadienoic acid, Potassium salt; 2,4- hexadienoic acid, Potassium salt

Propane (CAS# 74-98-6)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.5%**NIOSH Exposure Limit** 1000 ppm (1800 mg/m³)**OSHA Exposure Limit** 1000 ppm (1800 mg/m³)**Odor Threshold Value in ppm** 2690.00**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life; Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Bottled gas, Dimethyl methane, n-Propane, Propyl hydride

Propane sultone (CAS# 1120-71-4)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 3-Hydroxy-1-propanesulphonic acid sultone; 1,3-Propane sultone

1,2 Propanediol (CAS# 57-55-6)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Filter Effectiveness, Unknown Exposure Limit, Unknown Odor Threshold**Synonyms** 1,2-Dihydroxy-propane; Methyl glycol, propylene glycol

1-Propanethiol (CAS# 107-03-9)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** C 0.5 ppm (1.6 mg/m³) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.00075**Warnings** Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness**Synonyms** 3-Mercaptopropane, Propane-1-thiol, Propyl mercaptan, n-Propyl mercaptan

Propargyl alcohol (CAS# 107-19-7)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 5.7%**NIOSH Exposure Limit** 1 ppm (2 mg/m³) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.015**Warnings** Odor Threshold < 0.1ppm**Synonyms** 1-Propyn-3-ol; 2-Propyn-1-ol; 2-Propynyl alcohol**Notes** Very Low Odor Threshold. Flammable. Explosive. Toxic/Irritant - inhalation, skin, eyes, ingestion.

beta-Propiolactone (CAS# 57-57-8)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** Identified as Potential occupational Carcinogen**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** BPL; Hydroacrylic acid, beta-lactone; 3-Hydroxy-beta-lactone; 3-Hydroxy-propionic acid; beta-Lactone; 2-Oxetanone; 3-Propiolactone**Notes** A colorless liquid with a sweet odor. Once used as a clinical disinfectant. Usage has been phased out.

Propionic acid (CAS# 79-09-4)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 14.9%**NIOSH Exposure Limit** 10 ppm (30 mg/m³) ST 15 ppm (45 mg/m³)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.037**Warnings** Odor Threshold < 0.1ppm**Synonyms** Carboxyethane, Ethanecarboxylic acid, Ethylformic acid, Metacetonic acid, Methyl acetic acid, Propanoic acid**Notes** Very Low Odor Threshold. Corrosive.

Propionitrile (CAS# 107-12-0)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 3.5%**NIOSH Exposure Limit** 6 ppm (14 mg/m³)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Filter Capacity < 5%; Unknown Odor Threshold**Synonyms** Cyanoethane, Ethyl cyanide, Propanenitrile, Propionic nitrile, Propiononitrile**Notes** Forms cyanide in the body. Poisonous when heated to decomposition or upon treatment with acid. Propanenitrile has been determined to be teratogenic due to the metabolic release of cyanide.

Propoxur (CAS# 114-26-1)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.5 mg/m³**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness**Synonyms** Aprocarb;; o-Isopropoxyphenyl-N-methylcarbamate; N-Methyl-2-isopropoxyphenyl-carbamate**Notes** Used as an insecticide and molluscicide against agricultural, forest, and household pests.

n-Propyl acetate (CAS# 109-60-4)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 16.8%**NIOSH Exposure Limit** 200 ppm (840 mg/m3) ST 250 ppm (1050 mg/m3)**OSHA Exposure Limit** 200 ppm (840 mg/m3)**Odor Threshold Value in ppm** 0.575**Warnings** Odor Threshold < 1ppm**Synonyms** Propylacetate, n-Propyl ester of acetic acid**Notes** Highly Flammable. Irritant - eyes.**n-Propyl alcohol (CAS# 71-23-8)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 6.6%**NIOSH Exposure Limit** 200 ppm (500 mg/m3) ST 250 ppm (625 mg/m3) [skin]**OSHA Exposure Limit** 200 ppm (500 mg/m3)**Odor Threshold Value in ppm** 30**Synonyms** Ethyl carbinol, 1-Propanol, n-Propanol, Propyl alcohol**Notes** Highly Flammable. Irritant - eyes.**n-Propyl nitrate (CAS# 627-13-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 25 ppm (105 mg/m3) ST 40 ppm (170 mg/m3)**OSHA Exposure Limit** 25 ppm (110 mg/m3)**Odor Threshold Value in ppm** 50**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Propyl ester of nitric acid**Notes** Use below exposure limit.**Propylene carbonate (CAS# 108-32-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 4-Methyl-2-oxo-1,3-dioxolane**Propylene carbonate (CAS# 108-32-7)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness, Unknown Exposure Limit**Synonyms** 4-Methyl-2-oxo-1,3-dioxolane**Propylene dichloride (CAS# 78-87-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 17.8%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 75 ppm (350 mg/m3)**Odor Threshold Value in ppm** 0.851**Warnings** Carcinogen; Odor Threshold < 1ppm**Synonyms** Dichloro-1,2-propane; 1,2-Dichloropropane**Notes** Highly Flammable. Harmful - ingestion, inhalation.**Propylene glycol dinitrate (CAS# 6423-43-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 0.05 ppm (0.3 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.231**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** PGDN; Propylene glycol-1,2-dinitrate; 1,2-Propylene glycol dinitrate**Notes** Flammable. Explosive - shock sensitive.**Propylene glycol methyl ether (CAS# 107-98-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 100 ppm**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 1-methoxy-2-propanol, methoxypropanol, PGME, 1-methoxypropan-2-ol, Dowanol 33B, Dowtherm 209, ucar solvent LM, poly-solve mpm, glycol ether PM, propylene glycol methyl ether**Notes** Polymerizes to 2-Methoxy-1-propanol, very flammable, may be explosive, objectionable**Propylene glycol methyl ether acetate (CAS# 108-65-6)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** PGMEA, Glycol Ether PM Acetate, 1-Methoxy-2-acetoxypropane, 1-Methoxy-2-propyl acetate, Propylene glycol monomethylacetate, Propyleneglycol monomethyl ether acetate, Dowanol PMA glycol ether acetate**Notes** Requires both filters.**Propylene glycol monomethyl ether (CAS# 107-98-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 100 ppm (360 mg/m3) ST 150 ppm (540 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.003**Warnings** Odor Threshold < 0.1ppm; Unknown Filter Effectiveness**Synonyms** Dowtherm; 209; 1-Methoxy-2-hydroxypropane; 1-methoxy-2-propanol; 2-Methoxy-1-methylethanol; Propylene glycol methyl ether**Notes** Very Low Odor Threshold.**Propylene imine (CAS# 75-55-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 3%**NIOSH Exposure Limit** Ca TWA 2 ppm (5 mg/m3) [skin]**OSHA Exposure Limit** 2 ppm (5 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Filter Capacity >3%; Carcinogen; Unknown Odor Threshold**Synonyms** 2-Methylaziridine, 2-Methylethyleneimine, Propyleneimine, Propylene imine (inhibited), Propylenimine**Propylene oxide (CAS# 75-56-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 1.2%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 100 ppm (240 mg/m3)**Odor Threshold Value in ppm** 33.1**Warnings** Filter Capacity >3%; Carcinogen**Synonyms** 1,2-Epoxy propane; Methyl ethylene oxide; Methyloxirane; Propene oxide; 1,2-Propylene oxide**Notes** Highly Flammable. Toxic (Severe).

Putrescine (CAS# 110-60-1)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 1,4-diaminobutane, Butanediamine**Notes** Melting point is 27Å°C. Produced by the breakdown of amino acids in living and dead organisms.

Pylocarpine hydrochloride (CAS# 54-71-7)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** (3S,4R)-4,5-Dihydro-3-ethyl-4-(1-methyl-1H-imidazol-5-ylmethyl)-2(3H)-furanonehydrochloride

Pyrethrum (CAS# 8003-34-7)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Cinerin I or II, Jasmolin I or II, Pyrethrin I or II [Note: Pyrethrum is a variable mixture of Cinerin, Jasmolin, and Pyrethrin.]**Notes** Requires both filters.

Pyridine (CAS# 110-86-1)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 16%**NIOSH Exposure Limit** 5 ppm (15 mg/m3)**OSHA Exposure Limit** 5 ppm (15 mg/m3)**Odor Threshold Value in ppm** 0.17**Warnings** Odor Threshold < 1ppm**Synonyms** Azabenzene, Azine**Notes** Nauseating, fish-like odor.

Pyrogalllic acid (CAS# 87-66-1)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 1,2,3-Benzenetriol, 1,2,3-Trihydroxybenzene; pyrogallol; 1,2,3-benzenetriol**Notes** Used in some photographic processes

Pyrrole reagent grade (CAS# 109-97-7)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 48.9**Warnings** Unknown Exposure Limit; POW; Unknown Filter Effectiveness**Synonyms** Pyrrole(8Cl);1-Aza-2,4-cyclopentadiene;Azole;Divylenimine;Imidole;Monopyrrole;NSC 62777;Pyrrol;1H-Pyrrole;

2-Pyrrolidinone (CAS# 616-45-5)

Rating Small Volumes May Be Acceptable**Filter Type** HEPA**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness - May be combustible at high temperatures**Synonyms** Gamma-Butyrolactam**Notes** May be combustible at high temperatures

Quinacrine (CAS# 6151-30-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 6-Chloro-9-[[44-(diethylamino-1-methylbutyl)amino]-2-methoxyacridine hydrochloride**Notes** Harmful if swallowed. Causes eye, skin, and respiratory tract irritation. Light sensitive.

Hygroscopic (absorbs moisture from the air).

Quinone (CAS# 106-51-4)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.4 mg/m3 (0.1 ppm)**OSHA Exposure Limit** 0.4 mg/m3 (0.1 ppm)**Odor Threshold Value in ppm** 0.012**Warnings** Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1,4-Benzoquinone; p-Benzoquinone; 1,4-Cyclohexadiene dioxide; p-Quinone**Notes** Requires both filters. Very Low Odor Threshold. Natural & synthetic quinones show a biological/pharmacological activity. Used in dyes and reagent organic chemistry.

Quinuclidine (CAS# 100-76-5)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 1,4-Ethanopiperidine, 1,4-Ethylenepiperidine, 1-Azabicyclo[2.2.2]octane, [2,2,2]-Azabicyclooctane

Resorcinol (CAS# 108-46-3)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 ppm (45 mg/m3) ST 20 ppm (90 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** 1,3-Benzenediol; m-Benzenediol; 1,3-Dihydroxybenzene; m-Dihydroxybenzene; 3-Hydroxyphenol; m-Hydroxyphenol**Notes** OV and HEPA may be preferable when heat is involved. Harmful. Environmental Toxin.

Retinoic acid (CAS# 302-79-4)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Tretinoin, Retin-A**Notes** Retanoic acid is a metabolite of vitamin A.

Rhodamine 123 (CAS# 62669-70-9)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 2-(6-Amino-3-imino-3H-xanthen-9-yl)benzoic acid methyl ester**Notes** Used as a dye in many biotechnology applications and in water flow.**Rhodamine 6G (CAS# 989-38-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Rhodamine 590, R6G, Rh6G, C.I. Pigment Red 81, C.I. Pigment Red 169, Basic Rhodamine Yellow , C.I. 45160, Xanthylium, 9-[2-(ethoxycarbonyl)phenyl]-3,6-bis(ethylamino)-2,7-dimethyl-, chloride**Notes** Used as a dye in water flow dynamics and as a laser dye.**Rhodamine B (CAS# 81-88-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** 9-(2-carboxyphenyl)-6-diethylamino-3-xanthenylidene]-diethylammonium chloride, 9-(2-carboxyphenyl)-6-diethylamino-3-xanthenylidene]-diethylammonium chloride**Notes** Suspected carcinogen. Used as a dye in many biological applications and in water flow.**Rhodium (metal fume and insoluble compounds, as Rh) (CAS# 7440-16-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Rhodium metal: Elemental rhodium**Notes** Very Low Exposure Limit. Inert**Rhodium (soluble compounds, as Rh) (CAS#)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.001 mg/m3**OSHA Exposure Limit** 0.001 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Synonyms vary depending upon the specific soluble rhodium compound**Notes** Very Low Exposure Limit**Ronnel (CAS# 299-84-3)****Rating** Generally compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 10 mg/m3**OSHA Exposure Limit** 15 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** O,O-Dimethyl O-(2,4,5-trichlorophenyl) phosphorothioate; Fenchlorophos**Notes** Requires both filters.**Rosin core solder, pyrolysis products (as formaldehyde) (CAS#)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [*Note: â€œCaâ€™ in the presence of formaldehyde, acetaldehyde, or malonaldehyde. See Appendices A & C Aldehydes.]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Rosin flux pyrolysis products, Rosin core soldering flux pyrolysis products**Notes** Requires both filters. Very low Exposure Limit.**Rotenone (CAS# 83-79-4)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 1,2,12,12a-Tetrahydro-8,9-dimethoxy-2-(1-methyl-ethenyl)-[1]benzopyrano [3,4-b]furo[2,3-h][1] benzopyran-6(6aH)-one**Notes** Requires both filters. Linked to the development of Parkinson's Disease in mammals (including humans). Toxic - environmental (severe), ingestion, inhalation.**Rouge (CAS# 1309-37-1)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established RELâ€™s -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Iron(III)oxide, Iron oxide red, Red iron oxide, Red oxide**Notes** Red-brown solid (rust). Nanoparticles of iron(III) oxide are biocompatible, non-toxic, and are used in biomedical applications.**Safranin O (CAS# 477-73-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Salicylic acid (CAS# 69-72-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 2-hydroxybenzoic acid**Notes** MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. DEVELOPMENTAL

TOXICITY: Classified Reproductive system/toxin/female, Development

Selenium (CAS# 7782-49-2)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.2 mg/m3 [*Note: The REL also applies to other selenium compounds (as Se) except Selenium hexafluoride.]**OSHA Exposure Limit** 0.2 mg/m3 [*Note: The PEL also applies to other selenium compounds (as Se) except Selenium hexafluoride]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Elemental selenium, Selenium alloy**Notes** Toxic - ingestion (prolonged).**This guide is not an approved list of chemicals**

The Chemical Guide is only a reference and may contain inaccurate or outdated information. You must request a Chemical Assessment to receive Labconco's recommendations. You and your on-site safety officer are responsible for determining the appropriate chemicals, enclosure and filters to ensure your safety. (<https://www.labconco.com/services/request-chemical-assessment>)

Selenium hexafluoride (CAS# 7783-79-1)**Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.05 ppm**OSHA Exposure Limit** 0.05 ppm (0.4 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1 ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Selenium fluoride**Notes** Very Low Exposure Limit. Highly toxic.**Silica, amorphous (CAS# 7631-86-9)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 6 mg/m3**OSHA Exposure Limit** 20 mppcf (80 mg/m3/%SiO2)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Diatomaceous earth, Diatomaceous silica, Diatomite, Precipitated amorphous silica, Silica gel, Silicon dioxide (amorphous)**Notes** Long term exposure (respiratory) to finely divided crystalline silica can lead to silicosis, bronchitis or cancer. Inert in other systems.**Silica, crystalline (as respirable dust) (CAS# 14808-60-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca TWA 0.05 mg/m3**OSHA Exposure Limit** 30 mg/m3 divided by the value $\frac{1}{\%SiO_2} + 2$ **Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Cristobalite, Quartz, Tridymite, Tripoli**Notes** Long term exposure (respiratory) to finely divided crystalline silica can lead to silicosis, bronchitis or cancer. Inert in other systems.**Silicon (CAS# 7440-21-3)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Elemental silicon [Note: Does not occur free in nature, but is found in silicon dioxide (silica) & in various silicates]**Silicon carbide (CAS# 409-21-2)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Carbon silicide; Carborundum;; Silicon monocarbide**Notes** Has a number of industrial uses. Toxic (mild).**Silicon tetrahydride (CAS# 7803-62-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 5 ppm (7 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Monosilane, Silane, Silicane**Notes** Extremely Flammable - combustible in air. Toxic (mild). Highly Explosive.**Silicone (CAS# 63148-62-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Silicone oil, dimethylpolysiloxane hydrolyzate**Notes** Weak odor**Silver (metal dust and soluble compounds, as Ag) (CAS# 7440-22-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.01 mg/m3**OSHA Exposure Limit** 0.01 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Silver metal; Argentum**Notes** Medical/Clinical usages including antibiotics. Silver is inert, silver salts can be toxic (carcinogenic).**Silver nitrate (CAS# 7761-88-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 0.01 mg/m3 (TWA) for silver metal dust and fume as Ag**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1 ppm (5mg/m3)**Synonyms** Lunar caustic; silver nitrate toughened; Nitric Acid, Silver (I) Salt**Notes** Heat, shock, friction, or contact with other materials may cause fire or explosion.**Soapstone (containing less than 1% quartz) (CAS#)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 6 mg/m3 (total) TWA 3 mg/m3 (resp)**OSHA Exposure Limit** 20 mppcf**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Massive talc, Soapstone silicate, Steatite**Sodium (metal) (CAS# 7440-23-5)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** SODIUM; SODIUM-23; SODIUM ATOM; NATRIUM; METALLIC SODIUM; STCC 4916456; UN 1428; S-135; S-206; MAT20850; RTECS VY0686000**Sodium acetate trihydrate (CAS# 6131-90-4)****Rating** Evaluate Warning**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Acetic acid, sodium salt, trihydrate

Sodium acrylate (CAS# 7446-81-3)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 2-Propenoic acid, sodium salt, Acrylic acid, sodium salt, Sodium 2-propenoate, Sodium prop-2-enoate

Sodium aluminum fluoride (as F) (CAS# 15096-52-3)

Rating Evaluate Warning**Filter Type** Carbon**NIOSH Exposure Limit** 2.5 mg/m3 [*Note: The REL also applies to other inorganic, solid fluorides**OSHA Exposure Limit** 2.5 mg/m3 [*Note: The REL also applies to other inorganic, solid fluorides**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Cryocide, Cryodust, Cryolite, Sodium hexafluoroaluminate**Notes** Requires both filters. Use below exposure limit.

Sodium azide (CAS# 26628-22-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 0.1 ppm (as HN3) [skin] C 0.3 mg/m3 (as NaN3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Azide, Azium, Sodium salt of hydrazoic acid**Notes** Not recommended when forms hydrazoic acid in water. HEPA suitable when used as a solid. Contact with acids liberates very toxic gas. Toxic (Severe) - ingestion, environmental.

Sodium benzoate (CAS# 532-32-1)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Antimol; Benzoate of soda; Sodium benzoic acid; Benzoate sodium**Notes** Biological Safety Cabinet should be used. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/ toxin/male [SUSPECTED]. The substance may be toxic to blood, the reproductive system, liver, central nervous system (CNS).

Sodium bicarbonate (CAS# 144-55-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 15 mg/m³ (total dust); 5 mg/m³ (resp fraction)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Baking Soda, Bicarbonate of Soda

Sodium bisulfite (CAS# 7631-90-5)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Monosodium salt of sulfurous acid, Sodium acid bisulfite, Sodium bisulphite, Sodium hydrogen sulfite**Notes** Requires both filters. White solid. Harmful if swallowed. Contact with acids liberates very toxic gas.

Sodium carbonate (CAS# 497-19-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Crystal Carbonate, Disodium Carbonate, Sal Soda, Soda Asha, Washing Soda**Notes** The substance may be toxic to upper respiratory tract, skin, eyes.

Sodium chloride (CAS# 7647-14-5)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Extra fine 200 salt, extra fine 325 salt, H.G. blending, salt, sea salt, table salt, common salt, dendritis, rock salt, top flake, white crystal, saline, halite, purex, USP sodium chloride

Sodium citrate (CAS# 04-03-32)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Sodium citrate dihydrate

Sodium cyanide (as CN-) (CAS# 143-33-9)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** C 5 mg/m3 (4.7 ppm) [10-minute] [*Note: The REL also applies to other cyanides (as CN) except Hydrogen cyanide.]**OSHA Exposure Limit** 5 mg/m3 [*Note: The PEL also applies to other cyanides (as CN) except Hydrogen cyanide.]**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Sodium salt of hydrocyanic acid**Notes** May be fatal if inhaled, swallowed or adsorbed through skin.

Sodium dichromate (CAS# 7789-12-0)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca None**OSHA Exposure Limit** 0.1 mg/m3 (ceiling)**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Sodium bichromate, Sodium dichromate, dihydrate; Sodium bichromate dihydrate**Notes** May be fatal if inhaled or swallowed. Toxic - reproductive/fetal, skin, ingestion, inhalation (severe), environmental. Flammable. Sensitization - inhalation, skin.

Sodium dodecylbenzene sulfonate (CAS# 68081-81-2)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Dodecyl Benzene Sulfonic Acid, Dodecylbenzenesulfonic acid sodium salt ,Sodium 4-dodecylbenzenesulphonate**Notes** Skin and eye irritant. A detergent.

This guide is not an approved list of chemicals

The Chemical Guide is only a reference and may contain inaccurate or outdated information. You must request a Chemical Assessment to receive Labconco's recommendations. You and your on-site safety officer are responsible for determining the appropriate chemicals, enclosure and filters to ensure your safety. (<https://www.labconco.com/services/request-chemical-assessment>)

Sodium fluoride (as F) (CAS# 7681-49-4)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** 2.5 mg/m3 [*Note: The REL also applies to other inorganic, solid fluorides (as F).]**OSHA Exposure Limit** 2.5 mg/m3 [*Note: The REL also applies to other inorganic, solid fluorides (as F).]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Floridine, Sodium monofluoride**Notes** Requires both filters. Toxic - inhalation, ingestion. Irritant - eyes, skin. Contact with acids liberates very toxic gas.

Sodium fluoroacetate (CAS# 62-74-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.05 mg/m3 ST 0.15 mg/m3 [skin]**OSHA Exposure Limit** 0.05 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** SFA, Sodium monofluoroacetate**Notes** Very low exposure limit. Highly toxic to mammals and insects. Toxic - ingestion.

Sodium gluconate (CAS# 527-07-1)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Sodium 2,3,4,5,6, pentahydroxy-hexanoate, D-Gluconic acid monosodium salt

Sodium hyaluronate (CAS# 9067-32-7)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Hyaluronic acid, sodium salt, Hyaluronan**Notes** The toxicological properties of this material have not been fully investigated.

Sodium hydroxide (CAS# 1310-73-2)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 2 mg/m3**OSHA Exposure Limit** 2 mg/m3**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Caustic soda, Lye, Soda lye, Sodium hydrate**Notes** White crystalline solid. Corrosive - causes severe burns.

Sodium hypochlorite (CAS# 7681-52-9)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** PEL:0.5 ppm (TWA), 1 ppm STEL as Chlorine**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Bleach; hypochlorous acid, sodium salt; soda bleach; sodium oxychloride**Notes** Use below exposure limit. Contact with acids liberates very toxic gas. Corrosive. Environmental Toxin. Solutions under 40% are classified as a moderate oxidizing hazard (NFPA).

Sodium iodide (CAS# 7681-82-5)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Sodium monoiodide, sodium iodine**Notes** White solid. Irritant. Reproductive/Fetal toxin. Commonly used to treat iodine deficiency.

Sodium laurel sulfate (CAS# 151-21-3)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Sodium dodecyl sulfate**Notes** Characteristic. Faint odor of fatty substances (Slight.)

Sodium metabisulfite (CAS# 7681-57-4)

Rating Generally compatible**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.5**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** Disodium pyrosulfite, Sodium metabisulphite, Sodium pyrosulfite**Notes** Requires both filters. Contact with acids liberates very toxic gas. Harmful if swallowed. Risk of serious damage to eyes.

Sodium naphthalide (CAS# 3481-12-7)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 15mg/m3 total dust, 5mg/m3 respirable dust**Odor Threshold Value in ppm** Not established**Warnings** Very Low Odor Threshold (<0.1ppm); Unknown Filter Effectiveness**Synonyms** Naphthalene-1-radical anion-sodium; Sodium naphthalene-1-radical anion; Sodium naphthalenide; Sodium 2,3-dihydronaphthalen-3-id-2-yl

Sodium nitrate (CAS# 7631-99-4)

Rating Small Volumes May Be Acceptable**Filter Type** HEPA**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness, Unknown Exposure Limit**Synonyms** Chile saltpeter; soda niter; Sodium saltpeter; Nitric acid, sodium salt; Nitratine

Sodium nitrite (CAS# 7632-00-0)

Rating Evaluate Warning**Filter Type** HEPA**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** Nitrous acid, sodium salt.

Sodium orthovanadate (CAS# 13721-39-6)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.05 mg/m3 TWA**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** OEL < 1ppm (5mg/m3); Unknown Odor Threshold**Synonyms** Na3-O4-V, Na3VO4, "œvanadic acid, trisodium salt"*, "œsodium vanadate"***Sodium perborate tetrahydrate (CAS# 10486-00-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Synonyms** Sodium Perborate, Tetrahydrate Perborax, Hydrate of Peroxometaborate**Sodium perchlorate (CAS# 7601-89-0)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Perchloric Acid Sodium Salt**Notes** Highly explosive in presence of reducing materials, of combustible materials, of organic materials, of metals, of acids.**Sodium saccharin (CAS# 6155-57-3)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Soluble saccharin; Sodium o-benzosulfimide**Sodium sulphate (CAS# 7757-82-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Sodium thiocyanate (CAS# 540-72-7)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Sodium Rhodanide; Sodium Sulfocyanate**Squalene (CAS# 111-02-4)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** 2,6,10,14,18,22-Tetracosahexaene,2,6,10,19, 23-hexamethyl-, (all-E); 2,6,10,15,19,23-, Hexamethyltetracos-2,6,10,14,18,22-hexaene; Spinacene; Supraene.**Stannous chloride (CAS# 10025-69-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2 (mg/m3)**OSHA Exposure Limit** 2 (mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Tin (II) chloride dihydrate; Stannous dichloride**Starch (CAS# 9005-25-8)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Corn starch, Rice starch, Sorghum gum, alpha-Starch, Starch gum, Tapioca starch**Stearic acid (CAS# 57-11-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 20**Warnings** Unknown Exposure Limit**Synonyms** Octadecanoic acid; 1-Heptadecanecarboxylic acid; Stearophanic acid; n-Octadecanoic acid**Notes** A major component of shea and cocoa butter., animal fats, vegetable fats.**Stibine (CAS# 7803-52-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.1 ppm (0.5 mg/m3)**OSHA Exposure Limit** 0.1 ppm (0.5 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Antimony hydride, Antimony trihydride, Hydrogen antimonide**Notes** Highly toxic - environmental, inhalation, ingestion. Flammable.**Stoddard solvent (CAS# 8052-41-3)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 11%**NIOSH Exposure Limit** 350 mg/m3 C 1800 mg/m3 [15-minute]**OSHA Exposure Limit** 500 ppm (2900 mg/m3)**Odor Threshold Value in ppm** æœ1-30â€• 0.5-5 mg/m3**Synonyms** Dry cleaning safety solvent, Mineral spirits, Petroleum solvent, Spotting naphtha [Note: A refined petroleum solvent with a flash point of 102-110Â°F, boiling point of 309-396Â°F, and containing >65% C10 or higher hydrocarbons.]**Notes** Irritant. Mild acute toxin.

Strychnine (CAS# 57-24-9)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.15 mg/m3**OSHA Exposure Limit** 0.15 mg/m3**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Nux vomica, Strychnos**Notes** Very low exposure limit. A highly toxic colorless crystalline alkaloid used as a pesticide, particularly for killing small vertebrates (birds & rodents).**Styrene (CAS# 100-42-5)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 30%**NIOSH Exposure Limit** 50 ppm (215 mg/m3) ST 100 ppm (425 mg/m3)**OSHA Exposure Limit** 100 ppm C 200 ppm 600 ppm (5-minute maximum peak in any 3 hours)**Odor Threshold Value in ppm** 3.44**Synonyms** Ethenyl benzene, Phenylethylene, Styrene monomer, Styrol, Vinyl benzene**Notes** Flammable. Irritant - eyes.**Subtilisins (CAS# 1395-21-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** ST 0.00006 mg/m3 [60-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Bacillus subtilis, Bacillus subtilis BPN, Bacillus subtilis Carlsburg, Proteolytic enzymes, Subtilisin BPN, Subtilisin Carlsburg [Note: Commercial proteolytic enzymes are used in laundry detergents.]**Notes** Very low exposure limit. Used in detergents and cleansers. A protein-digesting enzyme.**Succinonitrile (CAS# 110-61-2)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** C 5 mg/m3 (4.7 ppm) [10-minute] [*Note: The REL also applies to other cyanides (as CN) except Hydrogen cyanide.]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Not Recommended: Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Butanedinitrile; 1,2-Dicyanoethane; Dinile; Ethylene cyanide; Ethylene dicyanide; Succinic dinitrile**Notes** Forms cyanide in the body.**Sucrose (CAS# 57-50-1)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Beet sugar, Cane sugar, Confectioner's sugar, Granulated sugar, Rock candy, Saccarose, Sugar, Table sugar**Sulfamic acid (CAS# 5329-14-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Amidosulfonic acid; amidosulfuric acid; aminosulfonic acid; sulfamidic acid**Notes** May have short filter life with OV Filter. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. May cause pulmonary edema, a medical emergency. Pulmonary edema may be delayed up to 48 hours.**Sulfanilamide (CAS# 63-74-1)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** 4-Aminobenzenesulfonamide**Sulfur dioxide (CAS# 2551-62-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**Filter Capacity Percentage** 1.7%**NIOSH Exposure Limit** 2 ppm (5 mg/m3) ST 5 ppm (13 mg/m3)**Odor Threshold Value in ppm** 0.708**Warnings** Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 1ppm**Synonyms** Sulfurous acid anhydride, Sulfurous oxide, Sulfur oxide**Notes** Gas released by volcanoes and various industrial processes. Toxic - inhalation. Corrosive - causes burns.**Sulfur hexafluoride (CAS# 2551-62-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1000 ppm (6000 mg/m3)**OSHA Exposure Limit** 1000 ppm (6000 mg/m3)**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness**Synonyms** Sulfur fluoride [Note: May contain highly toxic sulfur pentafluoride as an impurity]**Notes** An inorganic, colorless, odorless, non-toxic, non-flammable greenhouse gas.**Sulfur monochloride (CAS# 10025-67-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** C 1 ppm (6 mg/m3)**OSHA Exposure Limit** 1 ppm (6 mg/m3)**Odor Threshold Value in ppm** 0.001**Warnings** Odor Threshold < 0.1ppm; Unknown Filter Effectiveness**Synonyms** Sulfur chloride, Sulfur subchloride, Thiosulfurous dichloride**Notes** Very Low Odor Threshold. Reacts violently with water. Toxic - inhalation, ingestion, environmental. Contact with water liberates toxic gas. Corrosive.**Sulfur pentafluoride (CAS# 5714-22-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** C 0.01 ppm (0.1 mg/m3)**OSHA Exposure Limit** 0.025 ppm (0.25 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Disulfur decafluoride, Sulfur decafluoride**Notes** Highly toxic. Fatal if inhaled as sulfur decafluoride.**Sulfur tetrafluoride (CAS# 7783-60-0)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** C 0.1 ppm (0.4 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Tetrafluorosulfurane**Notes** Highly toxic. Develops hydrofluoric acid (HF) in the presence of water or moisture.**This guide is not an approved list of chemicals**

The Chemical Guide is only a reference and may contain inaccurate or outdated information. You must request a Chemical Assessment to receive Labconco's recommendations. You and your on-site safety officer are responsible for determining the appropriate chemicals, enclosure and filters to ensure your safety. (<https://www.labconco.com/services/request-chemical-assessment>)

Sulfuric acid (CAS# 7664-93-9)**Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**Filter Capacity Percentage** 13%**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** >1mg/m3**Warnings** Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3)**Synonyms** Battery acid, Hydrogen sulfate, Oil of vitriol, Sulfuric acid (aqueous)**Notes** Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m3).**Sulfuryl fluoride (CAS# 2699-79-8)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 5 ppm (20 mg/m3) ST 10 ppm (40 mg/m3)**OSHA Exposure Limit** 5 ppm (20 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Sulfur difluoride dioxide, Vikane;**Notes** Toxic - inhalation (fluoride poisoning). Green house gas.**Sulprofos (CAS# 35400-43-2)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 1 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Bolstar;, O-Ethyl O-(4-methylthio)phenyl S-propylphosphorodithioate**Tacrolimus (CAS# 104987-11-3)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Notes** Eczema drug, organ transplant drug. May be irritating to eyes, skin and respiratory system.**Talc (containing no asbestos and less than 1% quartz) (CAS# 14807-96-6)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2 mg/m3 (resp)**OSHA Exposure Limit** 20 mppcf**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Hydrous magnesium silicate, Steatite talc**Tantalum (metal and oxide dust, as Ta) (CAS# 7440-25-7)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3 ST 10 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Tantalum metal: Tantalum-181**Notes** Chemically inert and highly biocompatible. Used in alloys and often in body implants and coatings.**Tartaric acid (CAS# 87-69-4)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** L-tartaric acid, 2,3-Dihydroxybutanedioic acid; L-(+)-Tartaric Acid; Malic acid, 3-hydroxy-; Succinic acid, 2,3-dihydroxy**TEDP (CAS# 3689-24-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.2 mg/m3 [skin]**OSHA Exposure Limit** 0.2 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Bladafum;, Dithion;, Sulfotep, Tetraethyl dithionopyrophosphate, Tetraethyl dithiopyrophosphate, Thiotep**Notes** Very Low Exposure limit.**Tellurium (CAS# 13494-80-9)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [*Note: The REL also applies to other tellurium compounds (as Te) except Tellurium hexafluoride and Bismuth telluride.]**OSHA Exposure Limit** 0.1 mg/m3 [*Note: The REL also applies to other tellurium compounds (as Te) except Tellurium hexafluoride and Bismuth telluride.]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Aurum paradoxum, Metallum problematum**Notes** Very low exposure limit. Used as an alloy, mildly toxic. Exposure is indicated by the development of "tellurium breath" which has a garlic-like odor.**Tellurium hexafluoride (CAS# 7783-80-4)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.02 ppm (0.2 mg/m3)**OSHA Exposure Limit** 0.02 ppm (0.2 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Tellurium fluoride**Notes** Highly toxic. Unpleasant odor.**Temephos (CAS# 3383-96-8)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Abate;; Temefos; O,O,O',O'-Tetramethyl O,O'-thiodi-p-phenylene phosphorothioate**Notes** A larvicide used to treat water against disease-carrying insects and in lice control.**TEPP (CAS# 107-49-3)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** 0.05 mg/m3 [skin]**OSHA Exposure Limit** 0.05 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3).**Synonyms** Ethyl pyrophosphate, Tetraethyl pyrophosphate, Tetron;**This guide is not an approved list of chemicals**

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m-Terphenyl (CAS# 92-06-8)**Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 5 mg/m3 (0.5 ppm)**OSHA Exposure Limit** C 9 mg/m3 (1 ppm)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** m-Diphenylbenzene; 1,3-Diphenylbenzene; Isodiphenylbenzene; 3-Phenylbiphenyl; 1,3-Terphenyl; meta-Terphenyl; m-Triphenyl**Notes** OV/HEPA may be preferable when heat is involved. Irritant - eyes, skin, respiratory. Environmental toxin.**o-Terphenyl (CAS# 84-15-1)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 5 mg/m3 (0.5 ppm)**OSHA Exposure Limit** C 9 mg/m3 (1 ppm)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** o-Diphenylbenzene; 1,2-Diphenylbenzene; 2-Phenylbiphenyl; 1,2-Terphenyl; ortho-Terphenyl; o-Triphenyl**Notes** OV/HEPA may be preferable when heat is involved. Irritant - eyes, skin, respiratory. Environmental toxin.**p-Terphenyl (CAS# 92-94-4)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 5 mg/m3 (0.5 ppm)**OSHA Exposure Limit** C 9 mg/m3 (1 ppm)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** p-Diphenylbenzene; 1,4-Diphenylbenzene; 4-Phenylbiphenyl; 1,4-Terphenyl; para-Terphenyl; p-Triphenyl**Notes** OV/HEPA may be preferable when heat is involved. Irritant - eyes, skin, respiratory. Environmental toxin.**Terpineol (CAS# 8000-41-7)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 4-Trimethyl-3-cyclohexene-1-methanol**Notes** Not recommended for ductless enclosures**Tert amyl alcohol (CAS# 78-85-4)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Tert-Pentanol; Ethyl dimethyl carbinol; 2-Methyl-2-butanol; 1,1-Dimethyl-1-propanol; Amylene hydrate; Dimethylethylcarbinol; t-Pentyl alcohol; 2-Methylbutan-2-ol.**Notes** Not recommended for ductless enclosures.**1, 1, 2, 2-Tetrachloro-1, 2-difluoroethane (CAS# 76-12-0)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 500 ppm (4170 mg/m3)**OSHA Exposure Limit** 500 ppm (4170 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 1,2-Difluoro-1,1,2,2-tetrachloroethane; Freon; 112; Halocarbon 112; Refrigerant 112**1, 1, 1, 2-Tetrachloro-2, 2-difluoroethane (CAS# 76-11-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 500 ppm (4170 mg/m3)**OSHA Exposure Limit** 500 ppm (4170 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 2,2-Difluoro-1,1,1,2-tetrachloroethane; Freon; 112a; Halocarbon 112a; Refrigerant 112a**2, 3, 7, 8-Tetrachloro-dibenzo-p-dioxin (CAS# 1746-01-6)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.**Synonyms** Dioxin; Dioxine; TCDBD; TCDD; 2,3,7,8-TCDD [Note: Formed during past production of 2,4,5-trichlorophenol, 2,4,5-T & 2(2,4,5-trichlorophenoxy)propionic acid.]**1, 1, 1, 2-Tetrachloroethane (CAS# 630-20-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 41%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** None**Notes** Monitor OV Filters frequently.**1, 1, 2, 2-Tetrachloroethane (CAS# 79-34-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 48%**NIOSH Exposure Limit** Ca TWA 1 ppm (7 mg/m3) [skin]**OSHA Exposure Limit** 5 ppm (35 mg/m3) [skin]**Odor Threshold Value in ppm** 0.21**Warnings** Carcinogen; Odor Threshold < 1ppm**Synonyms** Acetylene tetrachloride, Symmetrical tetrachloroethane**Notes** Little use in the U.S. due to toxicity.**Tetrachloroethylene (CAS# 127-18-4)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 39.2%**NIOSH Exposure Limit** Ca Minimize workplace exposure concentrations**OSHA Exposure Limit** 100 ppm/ C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm**Odor Threshold Value in ppm** 6.17**Warnings** Carcinogen**Synonyms** Perchlorethylene, Perchloroethylene, Perk, Tetrachlorethylene**Notes** Use below exposure limits. Environmental Toxin.**Tetrachloronaphthalene (CAS# 1335-88-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 2 mg/m3 [skin]**OSHA Exposure Limit** 2 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Halowax; Nibren wax, Seekay wax**Notes** Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.**This guide is not an approved list of chemicals**

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Tetraethyl lead (as Pb) (CAS# 78-00-2)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 0.075 mg/m3 [skin]**OSHA Exposure Limit** 0.075 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Lead tetraethyl, TEL, Tetraethylplumbane**Notes** Very low exposure limit.

Tetraethyl silicate (CAS# 78-10-4)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 3.6**Warnings** Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** Silicic acid tetraethyl ester

Tetrafluoroethane (CAS# 811-97-2)

Rating Chemical Assessment Required**Filter Type** Carbon | HEPA**NIOSH Exposure Limit** 1000 ppm TWA**OSHA Exposure Limit** 1000 ppm TWA**Odor Threshold Value in ppm** Not established**Warnings** Not recommended: Unknown Filter Effectiveness**Synonyms** Ethane,1,1,1,2-Tetrafluoro-; 1,2,2,2-Tetrafluoroethane; R 134A; Quickfreeze; E-Series Freez-It 2000**Notes** Gas-use Fume Hood, inhalation and skin contact: frostbite

Tetrahydrofuran (CAS# 109-99-9)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 4.4%**NIOSH Exposure Limit** 200 ppm (590 mg/m3) ST 250 ppm (735 mg/m3)**OSHA Exposure Limit** TWA 200 ppm (590 mg/m3)**Odor Threshold Value in ppm** 3.6**Warnings** Filter Capacity < 5%**Synonyms** Diethylene oxide; 1,4-Epoxybutane; Tetramethylene oxide; THF**Notes** Requires both filters. Food additive, used in the manufacture of containers for food

Tetrahydrofurfuryl alcohol (CAS# 97-99-4)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** 8.6mg/l**Warnings** Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** THFA; Tetrahydro-2-furanmenthanol; Tetrahydro-2-furancarbinol; Tetrahydro-2-furylmethanol**Notes** Requires both filters. Food additive, used in the manufacture of containers for food.

Tetramethyl ammonium chloride (CAS# 75-57-0)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** tetramine chloride, N,N,N-trimethylmethanaminium, TMCI; TMACI; tetranine**Notes** Commonly used in PCR work to increase yield and specificity. Toxic.

Tetramethyl lead (as Pb) (CAS# 75-74-1)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** TWA 0.075 mg/m3 [skin]**OSHA Exposure Limit** TWA 0.075 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Lead tetramethyl, Tetramethylplumbane, TML**Notes** Very Low Exposure Limit.

Tetramethyl succinonitrile (CAS# 3333-52-6)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 3 mg/m3 (0.5 ppm) [skin]**OSHA Exposure Limit** 3 mg/m3 (0.5 ppm) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Tetramethyl succinodinitrile, TMSN**Notes** Highly toxic and hazardous. Acute and prolonged exposure lead to multiple symptoms.

Tetramethylammonium hydroxide (CAS# 75-59-2)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Ammonia-Amine**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** TMAH**Notes** It also smells like dead fish, if it is not pure, from trimethylamine impurity. TMAH has virtually no odor when pure.

Tetramethylenediamine (CAS# 110-18-9)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Ammonia-Amine**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit, Unknown Odor Threshold; Unknown Filter Effectiveness**Notes** Amine-like odor

Tetramethylethylenediamine (CAS# 110-18-9)

Rating Chemical Assessment Required**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Not recommended for ductless enclosures; Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness; Has strong amine-like odor; Harmful by inhalation and if swallowed; Causes burns**Synonyms** 1,2-Bis(dimethylamino)ethane, TEMED, TMEDA**Notes** Has strong amine-like odor. Harmful by inhalation and if swallowed. Causes burns.

Tetranitromethane (CAS# 509-14-8)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 45%**NIOSH Exposure Limit** 1 ppm (8 mg/m3)**OSHA Exposure Limit** 1 ppm (8 mg/m3)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Tetan, TNM**Notes** Use below exposure limit. Toxic (severe). Oxidant - can form explosive mixtures.

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Tetrasodium ethylenediamine tetraacetate (CAS# 64-02-8)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Ethylenediaminetetraacetic acid tetrasodium salt Acetic acid, (ethylenedinitrilo)tetra-, tetrasodium salt N,N'-Ethylenediaminediacetic acid tetrasodium salt EDTA Tetrasodium**Notes** The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

Tetrasodium pyrophosphate (CAS# 7722-88-5)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Pyrophosphate, Sodium pyrophosphate, Tetrasodium diphosphate, Tetrasodium pyrophosphate (anhydrous), TSPP**Notes** Common food additive.

Tetrazolium blue chloride (CAS# 1871-22-3)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** dimethoxy neotetrazolium, ditetrazolium chloride

Tetryl (CAS# 479-45-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1.5 mg/m3 [skin]**OSHA Exposure Limit** 1.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** N-Methyl-N,2,4,6-tetranitroaniline; Nitramine; 2,4,6-Tetryl; 2,4,6-Trinitrophenyl-N-methylnitramine**Notes** Class A explosive. Toxic. Explosive - friction, shock.

Thallium (soluble compounds, as Tl) (CAS#)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Synonyms vary depending upon the specific soluble thallium compound**Notes** Thallium and its compounds are extremely toxic.

4, 4'-Thiobis(6-tert-butyl-m-cresol) (CAS# 96-69-5)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 4,4'-Thiobis(3-methyl-6-tert-butylphenol); 1,1'-Thiobis(2-methyl-4-hydroxy-5-tert-butylbenzene)**Notes** Requires both filters.

Thioglycolic acid (CAS# 68-11-1)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 1 ppm (4 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Acetyl mercaptan, Mercaptoacetate, Mercaptoacetic acid, 2-Mercaptoacetic acid, 2-Thioglycolic acid, Thiovanic acid**Notes** Monitor filters closely.

Thionyl chloride (CAS# 09-06-15)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Acid-Sulfur**NIOSH Exposure Limit** C 1 ppm (5 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Sulfinyl chloride, Sulfur chloride oxide, Sulfurous dichloride, Sulfurous oxychloride, Thionyl dichloride**Notes** Monitor filters closely. Explosive in presence of water or moisture - releases dangerous gases. Controlled under Chemical Weapons Convention.

Thiram (CAS# 137-26-8)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Acid-Sulfur | Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** bis(Dimethylthiocarbamoyl) disulfide, Tetramethylthiuram disulfide**Notes** Requires both filters. Yellow to white crystalline powder. Toxic (acute & chronic) - ingestion, inhalation (severe). Irritant - eyes, skin, respiratory. Sensitization - skin.

Thymidine (CAS# 50-89-5)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** 5mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** 1-(2-Deoxy-beta -D-ribofuranosyl)-5-methyluracil 1-(2-Deoxy-beta -D-ribofuranosyl)thymine Thymine deoxyriboside dT

Tin (CAS# 7440-31-5)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2 mg/m3 [*Note: The REL also applies to other inorganic tin compounds (as Sn) except tin oxides.]**OSHA Exposure Limit** 2 mg/m3 [*Note: The REL also applies to other inorganic tin compounds (as Sn) except tin oxides.]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Metallic tin, Tin flake, Tin metal, Tin powder**Notes** Inorganic tin is mostly inert and non-toxic. Organotin compounds are toxic - comparable to cyanide.

Tin (organic compounds, as Sn) (CAS#)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [skin] [*Note: The REL applies to all organic tin compounds except Cyhexatin.]**OSHA Exposure Limit** 0.1 mg/m3 [*Note: The PEL applies to all organic tin compounds.]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Synonyms vary depending upon the specific organic tin compound. [Note: Also see specific listing for Cyhexatin]**Notes** Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.

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Tin(II) oxide (as Sn) (CAS# 21651-19-4)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Stannous oxide, Tin protoxide [Note: Also see specific listing for Tin(IV) oxide (as Sn).]

Tin(IV) oxide (as Sn) (CAS# 18282-10-5)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 2 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Stannic dioxide, Stannic oxide, White tin oxide [Note: Also see specific listing for Tin(II) oxide (as Sn).]**Notes** Mild toxin. Used as the detecting agent in Carbon Monoxide Alarms.

Titanium dioxide (CAS# 13463-67-7)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 15 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold**Synonyms** Rutile, Titanium oxide, Titanium peroxide**Notes** White Solid used as a pigment or hardening agent. Can be found in Nanotubule (nanoparticle) form.

o-Tolidine (CAS# 119-93-7)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca C 0.02 mg/m3 [60-minute] [skin]**OSHA Exposure Limit** Cancer Risk**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 4,4'-Diamino-3,3'-dimethylbiphenyl; Diaminoditoly; 3,3'-Dimethylbenzidine; 3,3'-Dimethyl-4,4'-diphenyldiamine; 3,3'-Tolidine**Notes** Requires both filters. Toxic - ingestion, environmental.

Toluene (CAS# 108-88-3)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 20.1%**NIOSH Exposure Limit** 100 ppm (375 mg/m3) ST 150 ppm (560 mg/m3)**OSHA Exposure Limit** 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)**Odor Threshold Value in ppm** 0.16**Warnings** Odor Threshold < 1ppm**Synonyms** Methyl benzene, Methyl benzol, Phenyl methane, Toluol**Notes** Warning: Odor Threshold < 1ppm.

Toluene-2, 4-diisocyanate (CAS# 584-84-9)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca (2.5ppm)**OSHA Exposure Limit** 0.02ppm**Odor Threshold Value in ppm** 0.4ppm**Warnings** Carcinogen; Odor Threshold < 1ppm**Synonyms** TDI; 2,4-TDI; 2,4-Toluene diisocyanate**Notes** Warning: Carcinogen; Odor Threshold < 1ppm.

Toluenediamine (CAS# 25376-45-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold**Synonyms** Diaminotoluene, Methylphenylene diamine, TDA, Toluenediamine isomers, Tolylenediamine [Note: Various isomers of TDA exist.]**Notes** Warning: Carcinogen; Unknown Odor Threshold.

m-Toluidine (CAS# 108-44-1)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 42.4%**NIOSH Exposure Limit** Not established RELâ€™s -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.46-5.90**Warnings** Exposure Limit Not Established; Odor Threshold < 1ppm**Synonyms** 3-Amino-1-methylbenzene, 1-Aminophenylmethane, m-Aminotoluene, 3-Methylaniline, 3-Methylbenzenamine, 3-Toluidine, m-Tolylamine**Notes** Warning: Exposure Limit Not Established; Odor Threshold < 1ppm.

o-Toluidine (CAS# 95-53-4)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 43.2%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 5 ppm (22 mg/m3) [skin]**Odor Threshold Value in ppm** 0.025-6.60**Warnings** Odor Threshold < 0.1ppm; Carcinogen**Synonyms** o-Aminotoluene, 2-Aminotoluene, 1-Methyl-2-aminobenzene, o-Methylaniline, 2-Methylaniline, ortho-Toluidine, o-Tolylamine**Notes** Used as an adhesive accelerator (cyanoacrylates glues) and in dyes. Toxic.

p-Toluidine (CAS# 106-49-0)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.027-3.2**Warnings** Odor Threshold < 0.1ppm; Carcinogen**Synonyms** 4-Aminotoluene, 4-Methylaniline, 4-Methylbenzenamine, 4-Toluidine, p-Tolylamine**Notes** Used as an adhesive accelerator (cyanoacrylates glues) and in dyes. Toxic.

2, 2, 2-Tribromoethanol (CAS# 75-80-9)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Tribromoethyl alcohol; 2, 2, 2-Tribromoethyl alcohol; Avertin, Basibrol; beta-Tribromoethanol; Ethobrome; Narcotyl; Rectanol; Tribromethanol; Tribromoethanol

Tributyl phosphate (CAS# 126-73-8)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.2 ppm (2.5 mg/m3)**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Butyl phosphate, TBP, Tributyl ester of phosphoric acid, Tri-n-butyl phosphate**Notes** Requires both filters. In contact with concentrated nitric acid, TBP-kerosene solutions forms hazardous and explosive red oil. Toxic. Flammable.

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1, 1, 2-Trichloro-1, 2, 2-trifluoroethane (CAS# 76-13-1)**Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 28.1%**NIOSH Exposure Limit** 1000 ppm (7600 mg/m3) ST 1250 ppm (9500 mg/m3)**OSHA Exposure Limit** 1000 ppm (7600 mg/m3)**Odor Threshold Value in ppm** 487**Synonyms** Chlorofluorocarbon-113, CFC-113, Freon; 113, Genetron; 113, Halocarbon 113, Refrigerant 113, TTE**Notes** Chlorofluorocarbon - Ozone depleting catalyst. Phased out in 2010 per the Montreal Protocol (1987).**Trichloroacetic acid (CAS# 76-03-9)****Rating** Generally compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 1 ppm (7 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.295**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** TCA, Trichloroethanoic acid**Notes** Requires both filters. Used as a weed killer and in the removal of skin malformations including warts and tattoos. Safe for use while pregnant. Corrosive - causes burns (prolonged). Environmental Toxin.**1, 2, 4-Trichlorobenzene (CAS# 120-82-1)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 58.6%**NIOSH Exposure Limit** C 5 ppm (40 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 2.91**Synonyms** unsym-Trichlorobenzene; 1,2,4-Trichlorobenzol**1, 1, 2-Trichloroethane (CAS# 79-00-5)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 26.4%**NIOSH Exposure Limit** Ca TWA 10 ppm (45 mg/m3) [skin]**OSHA Exposure Limit** 10 ppm (45 mg/m3) [skin]**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold**Synonyms** Ethane trichloride, beta-Trichloroethane, Vinyl trichloride**Notes** Toxic - inhalation, ingestion, skin contact. Irritant - eye, respiratory.**2,2,2-Trichloroethanol (CAS# 115-20-8)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** β,β,β-Trichloroethyl alcohol, (Hydroxymethyl)trichloromethane; 2,2,2Trichloroethyl alcohol; beta, beta, beta-Trichloroethanol; Trichlorethanol; Trichloroethanol**Trichloroethylene (CAS# 79-01-6)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 19.9%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)**Odor Threshold Value in ppm** 1.36**Warnings** Carcinogen**Synonyms** Ethylene trichloride, TCE, Trichloroethene, Trilene**Notes** Most commonly used for cleaning metal parts (degreaser). Toxic - inhalation, ingestion.**Trichloromethylsilane (CAS# 75-54-7)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Methylchlorosilane**Trichloronaphthalene (CAS# 1321-65-9)****Rating** Generally compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 5 mg/m3 [skin]**OSHA Exposure Limit** 5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Halowax; Nibren wax, Seekay wax**Notes** Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.**2,4,5-Trichlorophenoxyacetic acid (CAS# 93-76-5)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3**OSHA Exposure Limit** 10 mg/m3**Odor Threshold Value in ppm** Odorless**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** 2,4,5-T**Notes** A subcomponent of Agent Orange. Banned in the U.S. as an herbicide. A biproduct of manufacturing 2, 4, 5-T is TCDD which is highly Toxic.**1, 2, 3-Trichloropropane (CAS# 96-18-4)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 42.9%**NIOSH Exposure Limit** Ca TWA 10 ppm (60 mg/m3)**OSHA Exposure Limit** 50 ppm (300 mg/m3)**Odor Threshold Value in ppm** 100**Warnings** Carcinogen**Synonyms** Allyl trichloride, Glycerol trichlorohydrin, Glyceryl trichlorohydrin, Trichlorohydrin**Notes** Used as an industrial solvent, paint/varnish remover, cleaning agent and in chemical synthesis. Toxic (acute & chronic) - inhalation, ingestion, skin contact.**Trichlorosilane (CAS# 10025-78-2)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.5**Warnings** Unknown Filter Effectiveness; Unknown Exposure Limit**Synonyms** Silicochloroform**Notes** May form explosive gas mixture with air.**Triethanolamine (CAS# 102-71-6)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** 2,2',2"-Nitriltriethanol; daltogen; troamine; TEA; triethylolamine**Notes** Irritant - eyes, skin (contact allergen), respiratory. Possible Carcinogen, but not listed as such.**This guide is not an approved list of chemicals**

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Triethylamine (CAS# 121-44-8)**Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 7%**NIOSH Exposure Limit** Not established REL[™]s -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m3 for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)**OSHA Exposure Limit** 25 ppm (100 mg/m3)**Odor Threshold Value in ppm** 0.001**Warnings** Odor Threshold < 0.1ppm**Synonyms** TEA**Notes** OV Filter is more effective than AM. Very low odor threshold. Highly Flammable. Harmful - ingestion, inhalation, skin contact. Corrosive.**Triethylenetetramine (CAS# 112-24-3)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit, Unknown Filter Effectiveness**Synonyms** N,N'-bis(2-aminoethyl)-1,2,ethane diamine; 1,4,7,10-Tetraazadecane;1,8-diamino-3,6-diazaoctane; 3,6- if filter is required. diazaoctane-1,8-diamine; Trientine; TETA; TECZA**Trifluoroacetic acid (CAS# 76-05-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold: Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Perfluoroacetic acid; trifluoroacetic acid; trifluoroethanoic acid; trifluoro-acetic acid, TFA**Notes** Harmful by inhalation. Environmental Toxin. Corrosive - causes burns. Carbon is not an effective sorbent.**Trifluorobromomethane (CAS# 75-63-8)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.1%**NIOSH Exposure Limit** 1000 ppm (6100 mg/m3)**OSHA Exposure Limit** 1000 ppm (6100 mg/m3)**Odor Threshold Value in ppm** 16.3**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life**Synonyms** Bromotrifluoromethane, Fluorocarbon 1301, Freon; 13B1, Halocarbon 13B1, Halon; 1301, Monobromotrifluoromethane, Refrigerant 13B1, Trifluoromonobromomethane**Notes** 100 lbs. of carbon holds less than 0.1 lbs. of 13B1. Used as a fire suppressant. Ozone depleting agent. Has many alternatives.**Trimellitic anhydride (CAS# 552-30-7)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.005 ppm (0.04 mg/m3) Should be handled in the workplace as an extremely toxic substance.**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1,2,4-Benzenetricarboxylic anhydride; 4-Carboxyphthalic anhydride; TMA; TMAN; Trimellitic acid anhydride [Note: TMA is also a synonym for Trimethylamine.]**Notes** Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase. Very low exposure limit.**Trimethyl phosphite (CAS# 121-45-9)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 15.9%**NIOSH Exposure Limit** 2 ppm (10 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.001**Warnings** Odor Threshold < 0.1ppm**Synonyms** Methyl phosphite, Trimethoxyphosphine, Trimethyl ester of phosphorous acid**Notes** Very Low Odor Threshold.**Trimethylamine (CAS# 75-50-3)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 1.5%**NIOSH Exposure Limit** 10 ppm (24 mg/m3) ST 15 ppm (36 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.001**Warnings** Not Recommended: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm**Synonyms** N,N-Dimethylmethanamine; TMA [Note: May be used in an aqueous solution (typically 25%, 30%, or 40% TMA.)**Notes** OV Filter is more effective than AM filter. Very low odor threshold.**1, 2, 3-Trimethylbenzene (CAS# 526-73-8)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 35.4%**NIOSH Exposure Limit** 25 ppm (125 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 2.4**Synonyms** Hemellitol [Note: hemimellitene is a mixture of the 1,2,3-isomer with up to 10% of related aromatics such as the 1,2,4-isomer.]**1, 2, 4-Trimethylbenzene (CAS# 95-63-6)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 34%**NIOSH Exposure Limit** 25 ppm (125 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 2.4**Synonyms** Asymmetrical trimethylbenzene, psi-Cumene, Pseudocumene [Note: hemimellitene is a mixture of the 1,2,3-isomer with up to 10% of related aromatics such as the 1,2,4-isomer**1, 3, 5-Trimethylbenzene (CAS# 108-67-8)****Rating** Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 33.4%**NIOSH Exposure Limit** 25 ppm (125 mg/m3)**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 2.4**Synonyms** Mesitylene, Symmetrical trimethylbenzene, sym-Trimethylbenzene**Trimethylopropane trimethacrylate ester (CAS# 3290-92-4)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** TMPTMA**Notes** No significant signs or symptoms indicative of any adverse health hazard are expected to occur at standard conditions due to the low volatility of this material.**2, 4, 6-Trinitrotoluene (CAS# 118-96-7)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 0.5 mg/m3 [skin]**OSHA Exposure Limit** 1.5 mg/m3 [skin]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1-Methyl-2,4,6-trinitrobenzene; TNT; Trinitrotoluene; sym-Trinitrotoluene; Trinitrotoluol**Notes** Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase. Class A explosive.**This guide is not an approved list of chemicals**

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Triorthocresyl phosphate (CAS# 78-30-8)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3 [skin]**OSHA Exposure Limit** 0.1 mg/m3**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** TCP, TOCP, Tri-o-cresyl ester of phosphoric acid, Tri-o-cresyl phosphate**Notes** Flammable - combustible. Severe neurotoxin - TCP cause for "Gingerjake" syndromes during prohibition. Acute toxicity can be fatal.

Triphenyl phosphate (CAS# 115-86-6)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 3 mg/m3**OSHA Exposure Limit** 3 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Phenyl phosphate, TPP, Triphenyl ester of phosphoric acid**Notes** OV/HEPA preferable when heat is involved. Harmful.

Triphenylamine (CAS# 603-34-9)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** N,N-Diphenylaniline; N,N-Diphenylbenzenamine**Notes** Harmful - inhalation, ingestion, skin contact.

Tripotassium phosphate (CAS#)

Rating Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Tripotassium phosphate (K3PO4)**Notes** Food additive

Tris(3(trimethoxysilyl)propyl)isocyanurate (CAS# 26115-70-8)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit; Unknown Filter Effectiveness**Synonyms** 1,3,5-Triazine-2,4,6-(1H,3H,5H)-trione, 1,3,5-tris(3-(trimethoxysilyl)propyl

Tritium (CAS# 7778-53-2)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Hydrogen-3**Notes** Contact Labconco. Radioactive. The low-energy beta radiation from tritium cannot penetrate human skin, so tritium is only dangerous if inhaled, ingested, or""if it is in water molecules, as with tritiated water""absorbed through pores in the skin. Its low energy also creates difficulty detecting tritium labeled compounds except by using liquid scintillation counting.

Triton (CAS# 10028-17-8)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Polyethylene glycol octylphenyl ether; ctylphenoxypolyethoxyethanol; Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl) phenyl] ether

Trizol (CAS# 9002-93-1)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 0.05%**NIOSH Exposure Limit** None**OSHA Exposure Limit** Phenol:19 mg/m³/5 ppm**Warnings** Odor Threshold < 1 ppm; Unknown Filter Effectiveness**Synonyms** Phenol solution**Notes** Contains phenol and thiocyanate compounds, Overexposure may be fatal, Sweet, tarry, pungent

Tungsten (CAS# 45-00-0)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3 ST 10 mg/m3 [*Note: The REL also applies to other insoluble tungsten compounds (as W).]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Tungsten metal, Wolfram**Notes** Chemical Element and compounds are generally inert.

Tungsten (soluble compounds, as W) (CAS# 7440-33-7)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3 ST 3 mg/m3**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Synonyms vary depending upon the specific soluble tungsten compound.**Notes** The median lethal dose (LD50) depends on the organism and vector of administration - 59 mg/kg to 5000 mg/kg.

Tungsten carbide (cemented) (CAS# 7440-67-7)

Rating Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** When the cobalt (Co) content exceeds 2%, its contribution to the potential hazard is judged to exceed that of tungsten carbide. Therefore, the NIOSH REL (10-hour TWA) for cemented tungsten carbide containing >2% Co is 0.05 mg Co/m3; the applicable OSHA PEL is 0.1 mg Co/m3 (8-hour TWA). Nickel (Ni) may sometimes be used as a binder rather than cobalt.

NIOSH considers cemented tungsten carbide containing nickel to be a Potential occupational Carcinogen and recommends a REL of 0.015 mg Ni/m3 (10-hour TWA). The OSHA PEL for Insoluble Nickel (i.e., a 1 mg Ni/m3 8-hour TWA) applies to mixtures of tungsten carbide and nickel

OSHA Exposure Limit Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Cemented tungsten carbide, Cemented WC, Hard metal [Note: The tungsten carbide (WC) content is generally 85-95% & the cobalt content is generally 5-15%.] [1: 85% WC, 15% Co 2: 92% WC, 8% Co 3: 78% WC, 14% Co, 8% Ti]**Notes** Toxic - inhalation (fibrosis)

Turpentine (CAS# 11107-01-0)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** 100 ppm (560 mg/m3)**OSHA Exposure Limit** 100 ppm (560 mg/m3)**Odor Threshold Value in ppm** 100-200**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Gumsprits, Gum turpentine, Spirits of turpentine, Steam distilled turpentine, Sulfate wood turpentine, Turps, Wood turpentine**Notes** Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.

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Turpentine (CAS# 12718-69-3)**Rating** Generally compatible**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**Filter Capacity Percentage** 10%**NIOSH Exposure Limit** 100 ppm (560 mg/m3)**OSHA Exposure Limit** 100 ppm (560 mg/m3)**Odor Threshold Value in ppm** 100-200**Warnings** Odor Threshold > Exposure Limit - Poor Odor Warning**Synonyms** Gumsprits, Gum turpentine, Spirits of turpentine, Steam distilled turpentine, Sulfate wood turpentine, Turps, Wood turpentine**Notes** Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.**1-Undecanethiol (CAS# 8006-64-2)****Rating** Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** C 0.5 ppm (3.9 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Undecyl mercaptan**1-Undecanethiol (CAS# 5332-52-5)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** C 0.5 ppm (3.9 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Undecyl mercaptan**Undecylenic acid (CAS# 5332-52-5)****Rating** Small Volumes May Be Acceptable**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Declid, Desenex, Renselin, Sevinon; 10- Hendecenoic; 10-Henedecenoic acid; 10-Undecylenic acid; Undecyl-10-enic acid**Notes** Warning: Unknown exposure limit, unknown odor threshold**Uranium (insoluble compounds, as U) (CAS# 112-38-9)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.2 mg/m3 ST 0.6 mg/m3**OSHA Exposure Limit** 0.25 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Uranium metal: Uranium I Synonyms of other insoluble uranium compounds vary depending upon the specific compound**Uranium (insoluble compounds, as U) (CAS# 5332-52-5)****Rating** Generally compatible**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.2 mg/m3 ST 0.6 mg/m3**OSHA Exposure Limit** 0.25 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Uranium metal: Uranium I Synonyms of other insoluble uranium compounds vary depending upon the specific compound**Uranium (soluble compounds, as U) (CAS# 7440-61-1)****Rating** Small Volumes May Be Acceptable**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.05 mg/m3**OSHA Exposure Limit** 0.05 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Synonyms vary depending upon the specific soluble uranium compound**Uranium (soluble compounds, as U) (CAS# 7440-61-1)****Rating** Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** Ca TWA 0.05 mg/m3**OSHA Exposure Limit** 0.05 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** Synonyms vary depending upon the specific soluble uranium compound**Urethane (CAS#)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Carbamic acid, ethyl ester; Ethyl carbamate**Notes** If swallowed, inhaled or absorbed through skin, it causes eye/nose/throat/skin irritation. Very high exposure can cause nausea, vomiting, light-headedness or faintness.**Urethane (CAS# 51-79-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established**Synonyms** Carbamic acid, ethyl ester; Ethyl carbamate**Notes** If swallowed, inhaled or absorbed through skin, it causes eye/nose/throat/skin irritation. Very high exposure can cause nausea, vomiting, light-headedness or faintness.**n-Valeraldehyde (CAS# 51-79-6)****Rating** Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13.7%**NIOSH Exposure Limit** 50 ppm (175 mg/m3) See Appendix C (Aldehydes) of the NIOSH guide for more information**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.006**Warnings** Odor Threshold < 0.1ppm**Synonyms** Amyl aldehyde, Pentanal, Valeral, Valeraldehyde, Valeric aldehyde**Notes** Very Low Odor Threshold.**n-Valeraldehyde (CAS# 51-79-6)****Rating** Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 13.7%**NIOSH Exposure Limit** 50 ppm (175 mg/m3) See Appendix C (Aldehydes) of the NIOSH guide for more information**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.006**Warnings** Odor Threshold < 0.1ppm**Synonyms** Amyl aldehyde, Pentanal, Valeral, Valeraldehyde, Valeric aldehyde**Notes** Very Low Odor Threshold.

Vanadium dust (CAS# 110-62-3)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 0.05 mg V/m3 [15-minute] [*Note: The REL applies to all vanadium compounds except Vanadium metal and Vanadium carbide (see Ferro-vanadium dust).]**OSHA Exposure Limit** C 0.5 mg V2O5/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Divanadium pentoxide dust, Vanadic anhydride dust, Vanadium oxide dust, Vanadium pentaoxide dust

Vanadium dust (CAS# 110-62-3)

Rating Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 0.05 mg V/m3 [15-minute] [*Note: The REL applies to all vanadium compounds except Vanadium metal and Vanadium carbide (see Ferro-vanadium dust).]**OSHA Exposure Limit** C 0.5 mg V2O5/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Divanadium pentoxide dust, Vanadic anhydride dust, Vanadium oxide dust, Vanadium pentaoxide dust

Vanadium fume (CAS# 1314-62-1)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** C 0.05 mg V/m3 [15-minute]**OSHA Exposure Limit** C 0.1 mg V2O5/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Divanadium pentoxide fume, Vanadic anhydride fume, Vanadium oxide fume, Vanadium pentaoxide fume

Vanillin (CAS# 1314-62-1)

Rating Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.2 to 2 ppm**Warnings** Odor Threshold < 1ppm; Unknown Exposure Limit**Synonyms** Vanilla; Vanillaldehyde; 4-Hydroxy-m-anisaldehyde; 4-Hydroxy-3-methoxy-benzaldehyde; Lioxin; Methyl-protocatechualdehyde; p-Vanill

Vegetable oil mist (CAS# 1314-62-1)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Vegetable mist

Vinyl acetate (CAS# 68956-68-3)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 8.6%**NIOSH Exposure Limit** C 4 ppm (15 mg/m3) [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.603**Warnings** Odor Threshold < 1ppm**Synonyms** 1-Acetoxylethylene, Ethenyl acetate, Ethenyl ethanoate, VAC, Vinyl acetate monomer, Vinyl ethanoate**Notes** Highly flammable.

Vinyl bromide (CAS# 108-05-4)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 3000**Warnings** Carcinogen; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Bromoethene, Bromoethylene, Monobromoethylene**Notes** Very high odor threshold. Extremely flammable. Harmful - inhalation, ingestion, skin contact. Irritant - eyes, skin, respiratory.

Vinyl chloride (CAS# 593-60-2)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Capacity Percentage** 0.4%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** 1 ppm C 5 ppm [15-minute]**Odor Threshold Value in ppm** 0.253**Warnings** Not Recommended: Filter Capacity < 1% - Short Filter Life; Carcinogen; Odor Threshold < 1ppm**Synonyms** Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)**Notes** Monomer used for production of PVC. Highly toxic. Highly flammable.

Vinyl cyclohexene dioxide (CAS# 75-01-4)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** Ca TWA 10 ppm (60 mg/m3) [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** 1-Epoxyethyl-3,4-epoxy-cyclohexane; 4-Vinylcyclohexene diepoxide; 4-Vinyl-1-cyclohexene dioxide

Vinyl fluoride (CAS# 106-87-6)

Rating Evaluate Warning**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 1 ppm C 5 ppm [use 1910.1017]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Fluoroethene, Fluoroethylene, Monofluoroethylene, Vinyl fluoride monomer**Notes** IARC Group 2A carcinogen. Extremely flammable.

Vinyl methyl ether (CAS# 75-02-5)

Rating Generally Compatible**Filter Type** Carbon**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Warnings** Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** methyl vinyl ether; methoxyethylene, ethylene, methoxy-; MVE, Vinyl methyl ether; ethene, methoxyethene; 1-methoxyethylene**Notes** Extremely flammable, liquefied gas

Vinyl toluene (CAS# 107-25-5)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 35.8%**NIOSH Exposure Limit** 100 ppm (480 mg/m3)**OSHA Exposure Limit** 100 ppm (480 mg/m3)**Odor Threshold Value in ppm** 10**Synonyms** Ethenylmethylbenzene, Methylstyrene, Tolyethylene

Vinylidene chloride (CAS# 25013-15-4)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 6.4%**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 35.5**Warnings** Carcinogen; Exposure Limit Not Established**Synonyms** 1,1-DCE; 1,1-Dichloroethene; 1,1-Dichloroethylene; VDC; Vinylidene chloride monomer; Vinylidene dichloride**Notes** Extremely Explosive. Toxic - CNS acute at high concentrations.

Vinylidene fluoride (CAS# 75-35-4)

Rating Chemical Assessment Required**Filter Type** Carbon**NIOSH Exposure Limit** 1 ppm C 5 ppm [use 1910.1017]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Filter Effectiveness**Synonyms** Difluoro-1,1-ethylene; 1,1-Difluoroethene; 1,1-Difluoroethylene; Halocarbon 1132A; VDF; Vinylidene difluoride

VM & P Naphtha (CAS# 75-38-7)

Rating Chemical Assessment Required**Filter Type** Carbon**Filter Application** Organic Vapor**NIOSH Exposure Limit** 350 mg/m3 C 1800 mg/m3 [15-minute]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** 0.89**Warnings** Odor Threshold < 1ppm; Unknown Filter Effectiveness**Synonyms** Ligroin, Painters naphtha, Petroleum ether, Petroleum spirit, Refined solvent naphtha, Varnish makers' & painters' naphtha

Warfarin (CAS# 8032-32-4)

Rating Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 0.1 mg/m3**OSHA Exposure Limit** 0.1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** 3-(alpha-Acetyl)-benzyl-4-hydroxycoumarin, 4-Hydroxy-3-(3-oxo-1-phenyl butyl)-2H-1-benzopyran-2-one, WARF

Welding fumes (CAS# 81-81-2)

Rating Evaluate Warning**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** Ca**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness**Synonyms** Synonyms vary depending upon the specific component of the welding fumes**Notes** Requires both filters.

Wood dust (CAS#)

Rating Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Ca 1 mg/m3**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Hard wood dust, Soft wood dust, Western red cedar dust

m-Xylene (CAS# 108-38-3)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 27.6%**NIOSH Exposure Limit** 100 ppm (435 mg/m3) ST 150 ppm (655 mg/m3)**OSHA Exposure Limit** 100 ppm (435 mg/m3)**Odor Threshold Value in ppm** 0.324**Warnings** Odor Threshold < 1ppm**Synonyms** 1,3-Dimethylbenzene; meta-Xylene; m-Xylol**Notes** Some Acute and Chronic symptoms have been recorded. Irritant - skin, eyes, respiratory.

o-Xylene (CAS# 95-47-6)

Rating Generally Compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 28.7%**NIOSH Exposure Limit** 100 ppm (435 mg/m3) ST 150 ppm (655 mg/m3)**OSHA Exposure Limit** 100 ppm (435 mg/m3)**Odor Threshold Value in ppm** 0.851**Warnings** Odor Threshold < 1ppm**Synonyms** 1,2-Dimethylbenzene; ortho-Xylene; o-Xylol**Notes** Some Acute and Chronic symptoms have been recorded. Irritant - skin, eyes, respiratory.

p-Xylene (CAS# 106-42-3)

Rating Generally compatible**Filter Type** Carbon**Filter Application** Organic Vapor**Filter Capacity Percentage** 27.4%**NIOSH Exposure Limit** 100 ppm (435 mg/m3) ST 150 ppm (655 mg/m3)**OSHA Exposure Limit** 100 ppm (435 mg/m3)**Odor Threshold Value in ppm** 0.49**Warnings** Odor Threshold < 1ppm**Synonyms** 1,4-Dimethylbenzene; para-Xylene; p-Xylol**Notes** Some Acute and Chronic symptoms have been recorded. Irritant - skin, eyes, respiratory.

m-Xylene-alpha, alpha-diamine (CAS# 108-38-3)

Rating Small Volumes May Be Acceptable**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** C 0.1 mg/m3 [skin]**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3); Unknown Filter Effectiveness**Synonyms** 1,3-bis(Aminomethyl)benzene; 1,3-Benzenedimethanamine; MXDA; m-Phenylenebis(methylamine); m-Xylylenediamine**Notes** Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.

Xylidine (CAS# 1300-73-8)

Rating Chemical Assessment Required**Filter Type** Carbon | HEPA**Filter Application** Organic Vapor | Particulate**NIOSH Exposure Limit** 2 ppm (10 mg/m3) [skin]**OSHA Exposure Limit** 5 ppm (25 mg/m3) [skin]**Odor Threshold Value in ppm** 0.005-0.06**Warnings** Odor Threshold < 0.1ppm; Unknown Filter Effectiveness**Synonyms** Aminodimethylbenzene, Aminoxylene, Dimethylaminobenzene, Dimethylaniline, Xylidine isomers (e.g., 2,4-Dimethylaniline) [Note: Dimethylaniline is also used as a synonym for N,N-Dimethylaniline]**Notes** Requires both filters. Very low odor threshold.

Yttrium (CAS# 7440-65-5)

Rating Chemical Assessment Required**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3 [*Note: The REL also applies to other yttrium compounds (as Y).]**OSHA Exposure Limit** 1 mg/m3 [*Note: The REL also applies to other yttrium compounds (as Y).]**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Yttrium metal

This guide is not an approved list of chemicals

The Chemical Guide is only a reference and may contain inaccurate or outdated information. You must request a Chemical Assessment to receive Labconco's recommendations. You and your on-site safety officer are responsible for determining the appropriate chemicals, enclosure and filters to ensure your safety. (<https://www.labconco.com/services/request-chemical-assessment>)

Zinc chloride fume (CAS# 7646-85-7)**Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 1 mg/m3 ST 2 mg/m3**OSHA Exposure Limit** 1 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; OEL < 1ppm (5mg/m3)**Synonyms** Zinc dichloride fume**Zinc nitrate hexahydrate (CAS# 10196-18-6)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Not established**OSHA Exposure Limit** Not established**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold; Unknown Exposure Limit**Zinc oxide (CAS# 1314-13-2)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** Dust: TWA 5 mg/m3 C 15 mg/m3 Fume: TWA 5 mg/m3 ST 10 mg/m3**OSHA Exposure Limit** 5 mg/m3 (fume) TWA 15 mg/m3 (total dust) TWA**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Zinc peroxide**Zinc stearate (CAS# 557-05-1)****Rating** Generally Compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 10 mg/m3 (total) TWA 5 mg/m3 (resp)**OSHA Exposure Limit** 15 mg/m3 (total) TWA 5 mg/m3 (resp)**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Dibasic zinc stearate, Zinc salt of stearic acid, Zinc distearate**Zinc sulfate monohydrate (CAS# 7733-02-0)****Rating** Evaluate Warning**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** None**OSHA Exposure Limit** None**Odor Threshold Value in ppm** Not established**Warnings** Unknown Exposure Limit; Unknown Odor Threshold**Synonyms** Zinc Sulfate, 7446-19-7 (monohydrate) 13986-24-8 (hexahydrate) 7446-20-0 (heptahydrate)**Zirconium compounds (as Zr) (CAS# 7440-67-7)****Rating** Generally compatible**Filter Type** HEPA**Filter Application** Particulate**NIOSH Exposure Limit** 5 mg/m3 ST 10 mg/m3 [*Note: The REL applies to all zirconium compounds (as Zr) except Zirconium tetrachloride.]**OSHA Exposure Limit** 5 mg/m3**Odor Threshold Value in ppm** Not established**Warnings** Unknown Odor Threshold**Synonyms** Zirconium metal: Zirconium

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