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2018 CHEMICAL SELECTION GUIDE

WARNING

The information in the *2018 Moldex Chemical Selection Guide* is dated and was accurate to the best of Moldex's knowledge as of January 2018. This *2018 Guide* supercedes all previous *Guides*, including printed and electronic versions. If you have an electronic version other than the *2018 Guide* please delete it from your computer. The *2018 Guide* can be accessed online at <http://www.moldex.com/pdf/datasheets/chemicalselectionguide.pdf>

Before selecting Moldex respirators for use, it is important that you refer to the most recent *Guide* available. If you have any questions on how to use this guide or on the selection and use of any respiratory protection device, call the Moldex Technical Services Department at +1 (800) 421-0668, +1 (310) 837-6500, ext. 512/550 or tech@moldex.com.

Products listed in this *Guide* are subject to the Moldex limited warranty located on the back cover.

The user must use the NIOSH multi-vapor program in conjunction with this guide to determine the service life of cartridges.

TERMS OF USE

"The information contained in this guide are only guidelines. It is the user's responsibility to make a respirator equipment selection based on factors only known to the user including, but not limited to worksite specific information, air sampling, warning properties, change out schedules and any other criteria that may affect the health and safety of a worker. If you are uncertain as to the appropriateness of a particular device for a specific situation, do not use OR ALLOW USE OF any Moldex –Metric Inc. (Moldex) respirator, **DO NOT ENTER OR ALLOW OTHERS TO ENTER ANY AREA WHERE RESPIRATORY PROTECTION IS REQUIRED** and seek the advice of a Health and Safety Professional."

Moldex makes no warranties, understandings or representations, whether expressed, implied, or statutory regarding this Chemical Selection Guide. Moldex specifically disclaims any warranty for merchantability or fitness for a particular purpose. In no event shall Moldex or anyone else who has been involved in the creation, production or delivery of this website be liable for any direct, indirect, special, incidental or consequential damages arising out of the use of or inability to use this respirator selector or for any claim by any other party. Information obtained from the Moldex Chemical Selection Guide serves as a guideline only. Please refer to national and local standards for detailed information about respiratory protection requirements and utilize the services of an Industrial Hygienist or other Safety and Health Professional to make final decisions about selection of proper respiratory equipment for your workplace or use.

I have read and accept the Terms and Conditions.

INTRODUCTION

This *Guide* may be used as an aid to select appropriate respiratory protection for specific contaminants. Because conditions at the worksite can vary substantially, a comprehensive evaluation must be made to determine the correct respiratory protection. When contaminants at a worksite have been identified and concentrations measured, this *Guide* may be used to help select the appropriate respirator. Only qualified professionals, familiar with the actual working conditions and knowledgeable in the benefits and the limitations of respiratory protection equipment, should make the selection. Once a respirator has been selected, it is important to continually monitor its effectiveness, as well as the dynamic worksite situation. If selection criteria changes, including but not limited to worksite conditions or standards and regulations, a new evaluation must be made to determine the appropriate respiratory protection.

COMPREHENSIVE RESPIRATORY PROTECTION PROGRAM

Wherever respirators are used in a work environment, a comprehensive respiratory protection program must be implemented in accordance with OSHA 29 CFR 1910.134, as a minimum. This regulation covers permissible practice, written programs, training, maintenance and care, selection, use, fit testing, cleaning and storage, medical evaluation, breathing air quality, identification of filters and cartridges, program evaluation, and record keeping. When a chemical cartridge respirator is used, it can only be used if a cartridge change schedule is developed in accordance with 29 CFR 1910.134 (d)(3)(III)(B)(2). If a change schedule is not developed you should not use Moldex respirators. See pages 29-31 for more information.

RESPIRATOR FIT TESTS

Any respirator used by an employee must be fit tested to ensure that the respirator is providing adequate protection to the wearer. All Moldex respirator users should be fit tested to ensure proper fit of the respirator. OSHA 1910.134 describes the various types of fit tests that may be utilized.

ASSIGNED PROTECTION FACTORS (APF)

All Moldex respirators listed in this *Guide* are half mask or full face, negative pressure, air purifying respirators. Generally, these are assigned an APF of 10 or 50 respectively, unless a specific OSHA, Federal, State or Local standard assigns a lower APF for a particular class of respirator to be used to protect against a particular substance. In such cases the lower APF must be used. A full facepiece respirator fitted using a qualitative fit test only receives an APF of 10.

OTHER PERSONAL PROTECTIVE EQUIPMENT (PPE)

Certain chemicals may require other forms of PPE in addition to respirators due to absorption or damage to the skin, eyes or mucous membranes. When supplying respiratory protective equipment, other PPE must also be considered. Failure to provide appropriate protection with certain chemicals may result in adverse health effects and render the use of a respirator ineffective. Lastly, always consider all the hazards that an employee may be exposed to and the advantages and disadvantages of using a particular piece of equipment in concert with other items (e.g. hard hats, gloves, faceshields, etc.).

When using any Moldex respirator, read all applicable warnings and information provided with it. Not all Moldex respirators have been sold with warnings or use instructions for personnel involved in healthcare or related situations, where there may be the possibility of contact with disease or biological hazards. If you are considering such uses, first call the Moldex Technical Dept., +1 (310) 837-6500 ext. 512/550 or +1 (800) 421-0668 ext. 512/550. See additional warnings in packaging or Moldex Website or page 4 of this guide.

EXPLANATION OF GUIDE FORMAT

Chemical Names listed are either those used by OSHA in 29 CFR 1910.1000, NIOSH's Pocket Guide to Chemical Hazards or ACGIH's 2016 Guide to Occupational Exposure Values. Only substances that have OSHA Permissible Exposure Limits (PEL) and/or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) are listed in the Moldex suggestions section of this guide, when appropriate.

CAS Numbers are below the name of most chemicals and are the Chemical Abstracts Service (CAS) registry number. This number is unique for each chemical.

Synonyms listed are some of those common "other" names of a substance found in various references, [this list is not all inclusive](#).

Filter Type generally indicates what type of filter and/or cartridge may be considered for protection from a particular substance. Remember these suggestions are not absolute. Selection must be based on consideration of the work and use situation encountered in a particular environment.

"N" means Dusts and Non-Oil Based Mists

"R" means Dusts, and Oil and Non-Oil Based Mists with time restrictions

"P" means Dusts and Oil and Non-Oil Based Mists, extended life for Dusts and Non-Oil Based Mists (see Moldex time restrictions on instructions)

"AM" means Ammonia/Methylamine

"AG" means Acid Gas

"FORM" means Formaldehyde

"OV" means Organic Vapor

"OV/AG" means Organic Vapor/Acid Gas

"MULTI" means Multi Gas/Vapor

"95" means 95% efficient

"99" means 99% efficient

"100" means 99.97% efficient

"/" means OR. For example, 8970/8940 means you may use either filter.

"FF" means full face respirator; 9000 is suggested.

Note that combinations of the above may be listed. Also note that combination Moldex cartridges (7300/8300) may be used where an OV or AG is listed, but the service life of the cartridge will be considerably less for the particular substance. A similar situation of reduced service life exists with the 7600/8600 multi-gas cartridges used against various contaminants, see instructions for specific information.

Moldex Suggestions are the Moldex respirators that are appropriate for protection from the substance listed. For example, remember, anywhere the 2200N95 (EZ 22) or 2300N95 (EZ 23) are suggested the 2400N95 (2800N95) or 2500N95 (2940R95) may also be used. **The 2400N95 or 2800N95 is usually suggested where protection from dusts or non-oil based mists is required and nuisance level (below the PEL) organic vapor odors are also present. The 2500N95 is usually suggested where protection from dusts or non-oil based mists is required and nuisance level (below the PEL) acid gas irritants are also present and 2940R95 for dusts and both oil and non-oil based mist.**

Additionally, any situation where a particular Moldex product is suggested you may move to a higher level of protection provided the type of protection is equivalent. For example,

- you may use the 2310N99 in place of the 2200N95 if dust or non-oil based mist protection is required;
- you may use the 7940/8940 in place of the 2310N99 if protection from a dust, fume or mist is required;
- you may use any N99 respirator/filter in place of any N95 respirator/filter.
- you may go from a half mask facepiece respirator to a full facepiece respirator with equivalent or higher filters/cartridges.

BUT

- you may not go from 2200N95 to 7100/8100 to protect against a fume because 7100/8100 is used to protect against organic vapors only;

AND

- you may not go from a 7940P100/8940P100 to a 2300N95 to protect against things such as lead because lead requires an N, R, or P100 filter, or from a 2730N100 to a 2400N95 because the efficiency level is lower.
- you may not go down from a full facepiece to a half mask without proper evaluation of the workplace.
- Note: Where oil based aerosols are present only an R or P Series filter may be used. Moldex suggests that you assume that any non-aqueous liquid is oil-based.

TLV's and PEL's are listed where either one or both exist. We suggest that in cases where both a TLV and PEL exist for a particular substance, that the lower of the two be used. You must also check if state and local regulations may be applicable.

An "o" next to exposure limit indicates it is an OSHA PEL. A "t" indicates it is an ACGIH TLV.

Exposure limit concentrations may be listed as either ppm (parts per million), or mg/m³ (milligrams per cubic meter),mppcf (million particles per cubic foot) or f/cc (fibers per cubic centimeter of air).

All exposure limits refer to 8 hours per day, 40 hours per week Time Weighted Averages (TWA), unless otherwise stated.

If a "c" appears next to a limit this indicates that it is a ceiling value which refers to the concentration that should not be exceeded at any time during work exposure.

If an "s" appears next to a limit this indicates that it is a short term

exposure limit (STEL), which refers to a 15 minute TWA (unless otherwise indicated), which shall not be exceeded during a workday.

Both "s" and/or "c" designations may be in addition to or in lieu of another exposure limit.

A "skin" designation indicates that the substance can be absorbed through the skin, eyes or mucous membranes and appropriate measures must be taken to avoid absorption.

A "SEN" indicates TLV-confirmed potential for worker sensitization as a result of dermal contact and/or inhalation exposure based on the weight of scientific evidence.

A "DSEN" designation indicates that the substance may cause dermal sensitization resulting from the interaction of the absorbed agent and ultraviolet light (i.e. photosensitization).

A "RSEN" designation indicates the substance may cause respiratory sensitization.

For more specific definitions refer to 29 CFR 1910.1000 and to the ACGIH TLV Booklet.

IDLH (Immediately Dangerous to Life and Health) and LEL (Lower Explosion Limit) are levels taken directly from the 2005 NIOSH Pocket Guide to Chemical Hazards. In cases where the LEL is listed it is considered as IDLH. In all cases the LEL is listed as 10% LEL to provide a safety factor against explosion.

N.D. means not determined.

Comments list any additional points that should be noted such as:

- If a substance is a carcinogen or a suspected carcinogen, it is listed here. Note that only when OSHA or ACGIH consider a substance a carcinogen or suspected carcinogen it is listed. Carcinogen or suspected carcinogen from any other organizations or agencies have not been included in this *Guide*.

ACGIH designates carcinogens as follows:

TLV-A1: Confirmed Human Carcinogen. The agent is carcinogenic to (t-A1) humans based upon the weight of evidence from epidemiologic studies.

TLV-A2: Suspected Human Carcinogen. Human data are accepted as (t-A2) adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogen; OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primarily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans.

TLV-A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans: (t-A3) The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

TLV-A4: Not Classifiable as a Human Carcinogen: Agents which cause

(t-A4) concern that they could be carcinogenic for humans, but which cannot be assessed conclusively because of a lack of data. *In vitro* or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories.

TLV-A5: Not Suspected as a Human Carcinogen: The agent is not suspected (t-A5) to be a human carcinogen on the basis of properly conducted epidemiologic studies in humans. These studies have sufficiently long follow-up, reliable exposure histories, sufficiently high dose, and adequate statistical power to conclude that exposure to the agent does not convey a significant risk of cancer to humans; OR, the evidence suggesting a lack of carcinogenicity in experimental animals is supported by mechanistic data.

Substances for which no human or experimental animal carcinogenic data have been reported are assigned no carcinogen designation.

Exposures to carcinogens must be kept to a minimum. Workers exposed to A1 carcinogens without a TLV should be properly equipped to eliminate to the fullest extent possible all exposure to the carcinogen. For A1 carcinogens with a TLV and for A2 and A3 carcinogens, worker exposure by all routes should be carefully controlled to levels as low as reasonably achievable below the TLV.

OSHA designates carcinogens as follows:

CA: Carcinogen defined with no further categorization.

Additionally,

- If specific OSHA standards exist for a substance, it is listed in this section.
- If OSHA is in the process of changing the regulation of a particular substance, it is listed as "OSHA in the process of 6b rulemaking."
- If ACGIH intends to change a TLV or a carcinogen designation, it is listed as "ACGIH NIC (Notice of Intended Change)."
- If ACGIH has a Biological Exposure Indices (BEI), it is listed as "Substance for which an ACGIH BEI exists."
- If ACGIH intends to change a short term exposure limit or ceiling value, it is listed as ACGIH NIC STEL/CEIL.

Pages 32-34 contains names of chemicals that Moldex does not recommend its respirators to be used against. Refer to this list when you are not able to locate a chemical in the *Guide* as it may be listed there. Moldex does not make suggestions for chemicals not listed in the *Guide*.

Short service life means that cartridge will have a low service life.

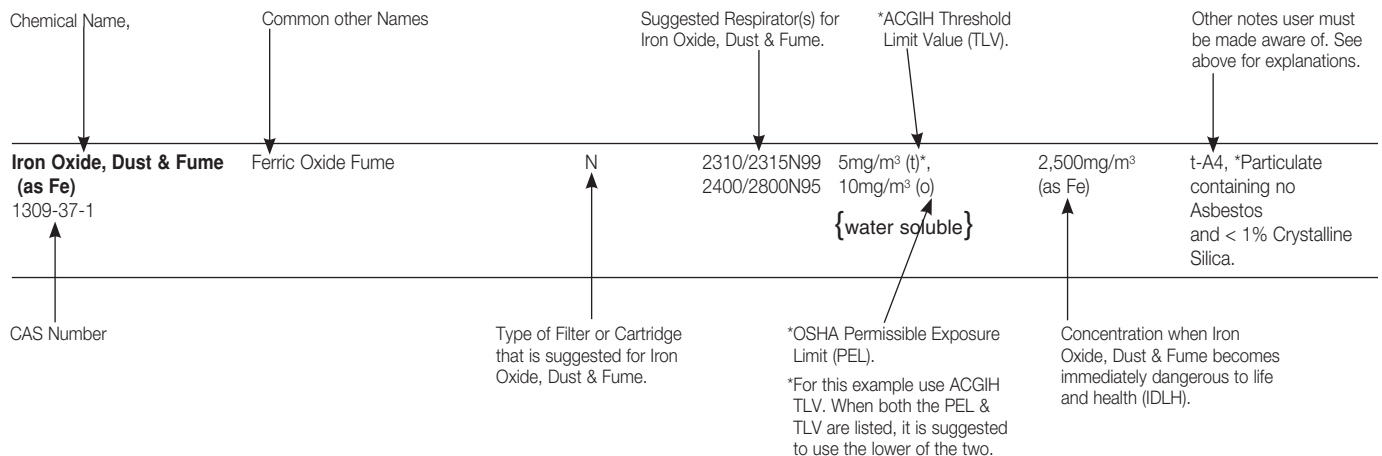
REFERENCES:

AIR CONTAMINANTS – PERMISSIBLE EXPOSURE LIMITS TITLE 29, CFR1910.1000 U.S. Department of Labor, Occupational Safety and Health Administration

POCKET GUIDE TO CHEMICAL HAZARDS U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, 2005

2017 GUIDE TO OCCUPATIONAL EXPOSURE VALUES American Conference of Governmental Industrial Hygienists, 2017

Example on how to use the Moldex 2018 Chemical Selection Guide



SUPPLEMENTAL HAZARD WARNINGS FOR MOLDEX PARTICULATE RESPIRATORS

These are **Warnings and Limitations** that all users must be made aware of in addition to all warnings and other information on the outside of the oldex respirator packaging or other published related information. **You must read and comply with these Warnings and Limitations at all times** and if your employer as determined that it is appropriate to use this respirator.

Proper use of this respirator may reduce but will not eliminate the risk of illness or death from exposure to some Chemical, Biological, Radiological, or Nuclear (CBRN) hazards. CBRN hazards include, but are not limited to, bacteria, toxins, and viruses that can cause death, serious bodily injury or disfigurement. The long-range and short-range risks of CBRN hazards and the amount and manner of exposure that may produce such risks remain to a great extent unknown. Use of this respirator must be in accordance with the Centers for Disease Control (CDC) Health Advisories or any other Local, State or Federal recommendations for use of respirators against specific CBRN hazards. This respirator should not be used for many CBRN hazards.

There are more efficient models of respirators with a higher level of protection available from Moldex and other manufacturers. It is up to the employer, and not Moldex, to determine if a respirator should be worn and if so, which type, size, level of protection, and model.

BACKGROUND

The National Institute for Occupational Safety and Health (NIOSH), a branch of the CDC and a U.S. Government agency, is responsible for testing and certifying respirators for protection against hazardous industrial contaminants. Procedures for selecting and using proper respiratory protection are regulated by various governmental agencies, such as the Occupational Safety and Health Administration (OSHA).

NIOSH tests and certifies certain respirators for use against chemical warfare agents, biological warfare agents or biohazards and provides advisory information for some biohazards, but OSHA and other government agencies have not set any exposure standards for these agents or biohazards, in general.

Moldex does not make recommendations for any type of respirator to be used against CBRN hazards for workers or the general public.

You should know that there may be no obvious warnings of the presence or release of CBRN hazards.

WARNINGS FOR ALL USERS

- **This respirator must only be used for substances having Permissible Exposure Limits (PELs) and only where deemed appropriate by your employer.**
- **This respirator must be fit tested. If you cannot obtain a proper fit, do not use the respirator and do not enter the risk area.**
- **This respirator is not for use with beards or other facial hair that prevents direct contact between the face and sealing surface of the respirator.**
- **Moldex respirators, when properly fitted and used as part of a comprehensive respiratory protection program, may reduce wearer exposure to some airborne hazards, but not all.**
- **In the event of a sudden or unexpected CBRN hazard release, you may use this respirator for escape only if you have not been provided with a more appropriate respirator for this type of situation. Do not remove the mask from the face until you have left the contaminated area.**
- **Do not reuse or store for reuse or hang around neck unless your employer specifically authorizes reuse. Dispose of respirator as a hazardous waste in accordance with your employer's directions.**
- **Use other personal protective equipment, as directed by your employer. Where appropriate use protective gloves when handling or removing respirator and dispose of respirator and then gloves in accordance with your employer's directions.**
- **If CDC or other Local, State or Federal agency issues new or revised guidelines for respirator use against specific hazards, users must strictly comply.**

WARNINGS FOR USE OF PARTICULATE RESPIRATORS AGAINST TB

OSHA and CDC have recommended the use of any of the particulate respirators approved under 42CFR84 as a means of providing help in complying with a program designed to reduce occupational exposure to tuberculosis.

The level of effectiveness of respiratory protection from tuberculosis cannot be determined with currently available data. However, proper use of appropriate Moldex respirators in conjunction with a comprehensive respiratory protection program may reduce, but will not eliminate, risk of infection.

- **Be sure to read the Limitations outlined below and strictly follow all Warnings set forth under the WARNINGS FOR ALL USERS.**
- **When using any Moldex respirator, filter replacement and/or disposal must be handled in accordance with your Healthcare Facility's comprehensive respiratory protection program.**
- **If disinfectants are used to sanitize reusable facepieces, you must consult with your Healthcare Facility and run tests to ensure the compatibility of any disinfectant with Moldex reusable facepiece materials. Use of disinfectants could impair the efficiency of the respirator and result in a loss of protection.**

LIMITATIONS

- **Respirators may reduce but do not eliminate wearer exposure to airborne hazards or the risk of contracting any disease or infection. Only use this respirator as part of a comprehensive respiratory protection program. You will receive no respiratory protection if this respirator is not properly fitted and worn. Additionally, potentially hazardous particles, including infectious agents, smaller than the particle sizes used in NIOSH certifications are likely to exist in certain environments. Some published data indicates that these smaller particles may not be filtered out as effectively as the particle sizes used by NIOSH [N Series Count Median Diameter (CMD) $0.075 \pm .02\mu\text{m}$ Geometric Standard Deviation 1.86 (GSD) and R & P Series CMD $0.185 \pm .02\mu\text{m}$ 1.6 (GSD)] when certifying respirators. It is imperative that you determine the size and potential hazards of the particles that may be present in the environment before selecting appropriate respiratory protection, and that you refer to CDC guidelines when selecting and using any respirator, particularly in environments where smaller types of particles, such as those referenced above, may be present.**
- **If the respirator comes in contact with blood or fluids, including body fluids, leave contaminated area as soon as possible and discard and replace the respirator.**
- **Moldex respirators must not be used on children.**

For further information on use of respirators contact Moldex at +1 (800) 421-0668 or +1 (310) 837-6500 ext. 512/550, your Employer, or CDC at www.cdc.gov or +1 (800) 311-3435 or +1 (404) 498-1515.

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
-A-						
Acetic Acid 64-19-7	Acetic acid (aqueous), Ethanoic acid, Glacial acetic acid (pure compound), Methanecarboxylic acid [Note: Can be found in concentrations of 5-8% in vinegar]	FF-OV	9001/2/3+ 7100	10ppm (o)(t)	50ppm	
Acetic Anhydride 108-24-7	Acetic acid anhydride, Acetic oxide, Acetyl oxide, Ethanoic anhydride	FF-OV	9001/2/3+ 7100	5ppm (o) 1ppm (t)	200ppm	t-A4
Acetone 67-64-1	Dimethyl Ketone, Ketone Propane 2-Propane	OV	7100/8100	250ppm (t) 1,000 (o) 500 (s)(t)	2,500ppm [10% Lower explosion limit]	Substance for which ACGIH BEI exists; t-A4 Short service life
Acetonitrile 75-05-8	Cyanomethane, Ethyl nitrile, methyl cyanide	OV	7100/8100	20ppm (t) 40ppm (o) -skin-	500 ppm	t-A4
Acetylenedichloride 540-59-0 156-59-2 156-60-5	See 1,2-Dichloroethylene					
Acetylene tetrabromide 79-27-6	See 1,1,2,2-Tetrabromoethane					
Acrolein 107-02-8	Acryldehyde; Acraldehyde; Acrylic aldehyde; Allyl aldehyde; Propenal; 2-Propenal	FF-OV	9001/2/3+ 7100	0.1(t)-c) 0.1ppm(o) -skin-	2ppm	t-A4 Short service life
Acetylsalicylic Acid 50-78-2	Aspirin	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (t)	N.D.	
Acrylamide 79-06-1	Acrylamide monomer, Acrylic amide, Propenamamide, 2-Propenamamide	OV/P100	7100+7940 8100+8940	.03mg m ³ (t)*; .3mg/m ³ (o) -skin-	60mg/m ³	t-A3; -*Measured as inhalable fraction and vapor
Acrylic Acid 79-10-7	Acroleic acid, Aqueous acrylic acid (technical grade is 94%), Ethylenecarboxylic acid, Glacial acrylic acid (98% in aqueous solution), 2-Propenoic acid	FF-OV	9001/2/3+ 7100	2ppm,(t) -skin-	N.D.	t-A4
Acrylonitrile 107-13-1	Acrylonitrile monomer, AN, Cyanoethylene, Propenenitrile, 2-Propenenitrile, VCN; Cyanoethylene	OV; Change every shift	7100/8100	2ppm (o)(t)*; 10ppm (c)(o) -skin-	85ppm	Dispose of cartridge after shift; See 29CFR1910.1045; O-Ca; t-A3 Odor detectable only above PEL
Allyl Alcohol 107-18-6	AA, Allylic alcohol, Propenol, 1-Propen-3-ol, 2-Propenol, Vinyl carbinol	FF-OV	9001/2/3+ 7100	2ppm (o) 0.5ppm (t) -skin	20ppm	t-A4
Allyl Glycidyl Ether 106-92-3	AGE, 1-Allyloxy-2, 3-epoxypropane, Glycidyl allyl ether, [[2-propenyloxy)methyl] oxirane	FF-OV	9001/2/3+ 7100	1ppm (t) 10ppt (c)-(o)	50 ppm	t-A4
Allyl Propyl Disulfide 2179-59-1	4,5-Dithia-1-octene, Onion oil, 2-Propenyl propyl disulfide, Propyl allyl disulfide	FF-OV	9001/2/3+ 7100	0.5ppm (t) 2ppm (o) -DSEN-	N.D.	
a-Alumina 1344-28-1	Activated Aluminum Oxide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust, 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	t-A4
Aluminum, Metal Dust 7429-90-5		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust, 15mg/m ³ (o); Respirable dusts 5mg/m ³ (o); Respirable fraction 1mg/m ³ (t)	N.D.	T-A4
Aluminum Oxide 1344-28-1	(See a-Alumina)	N95				
2-Aminopyridine 504-29-0	a-Aminopyridine, a-Pyridylamine	OV	7100/8100	0.5ppm(t) 0.5ppm(o)	5ppm	
Ammonia 7664-41-7	Anhydrous ammonia, Aqua ammonia, Aqueous ammonia	AM	7400/8400 7600/8600	35ppm (s)(t); 25ppm (t) 50ppm (o)	300ppm	Must wear chemical goggles when using half mask respirator
Ammonium Chloride Fume 12125-02-9	Ammonium chloride, Ammonium muriate fume, Sal ammoniac fume	solids N liquids AM/N	EZ22/EZ23N95 2200/2300N95 2600/2700N95 {water-based} 8400+8910	10mg/m ³ (t); 20mg/m ³ (s)(t)	N.D.	
Ammonium Sulfamate 7773-06-0	Ammate herbicide, Ammonium amidosulfonate, AMS, Monoammonium salt of sulfamic acid, Sulfamate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust, 10mg/m ³ (t),15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	1,500mg/m	

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
n-Amyl Acetate 628-63-7	Amyl acetic ester, Amyl acetic ether, 1-Pentanol acetate, Pentyl ester of acetic acid, Primary amyl acetate	OV	7100/8100	50ppm (t) 100ppm (o) 100ppm (s)(t)	1,000ppm	Add 8940 to 8100 if Particulate is present or 7940 to 7100
sec-Amyl Acetate 626-38-0	1-Methylbutyl acetate, 2-Pentanol acetate, 2-Pentyl ester of acetic acid	OV	7100/8100	50ppm (t) 125ppm (o) 100ppm (s)(t)	1,000ppm	Add 8940 to 8100 if Particulate is present or 7940 to 7100
Aniline (and homologs) 62-53-3	Aminobenzene, Aniline oil, Benzenamine, Phenylamine	OV	7100/8100	5ppm (o) 2ppm (t) -skin-	100ppm	t-A3
O-Anisidine 90-04-0	ortho-Aminoanisole, 2-Anisidine, 2-Anisidine, o-Methoxyaniline [Note: o-Anisidine has been used as a basis for many dyes.]	OV/RP OV/N	7100+7940 7100+8970 7100+8910 8100+8970/8940 8100+8910	0.5mg/m ³ (o)(t); -skin-	50mg/m ³	t-A3
p-Anisidine 104-94-9	para-Aminoanisole, 4-Anisidine, p-Methoxyaniline	OV/RP OV/N	7100+7940 7100+8970 7100+8910 8100+8970/8940 8100+8910	0.5mg/m ³ (o)(t); -skin-	50mg/m ³	t-A4r
Antimony* & Compounds (as Sb), Dusts & Mists *7440-36-0		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (o)(t) {water-based mists}	50mg/m ³ (as Sb)	
ANTU 86-88-4	-Naphthyl thiocarbamide, 1-Naphthyl thiourea, -Naphthyl thiourea	OV/NRP100	7100+7940 8100+8940	0.3mg/m ³ (o)(t) -skin-	100mg/m ³	t-A4
Arsenic, Elemental & Inorganic Compounds (except Arsine) (as As) *7440-38-2		Multi/P	7640/ 8600/8740/ 7600/7940/ 7000, 7800, 8000 or 9000	0.01mg/m ³ (o)(t)	5mg/m ³ (as AS)	*See 29CFR1910.1018; O-Ca; t-A1; substance for which an ACGIH BEI exists
Asbestos, all forms 1332-21-4 12172-73-5 12001-29-5 12001-28-4		NRP100	8940/8990 7940/7990	0.1 f/cc (o)(t)*; 1.0 f/cc (s)(o) 30 minutes	N.D.	*Fiber longer than 5 um; aspect ratio > 3:1 set by 400-450 X mag. (4 mm objective) pcm. See 29CFR1910.1001 & 1926.58; A-1; O-Ca
Asphalt (petroleum; Bitumen) Fume 8052-42-4		OV/RP	8100+8970/8940 7100+8970/7940	0.5mg/m ³ (t)* Soluble aerosol as benzene (or equivalent method) inhalable particulate	N.D.	2740R95/2840R95 may be suitable for some app's. t-A4; substance for which ACGIH BEI exists
Azinphos-methyl 86-50-0	Guthion	OV/RP	8100+8970/8940 7100+8970/7940	0.2mg/m ³ (o)(t)*; -skin- -DSEN-	10mg/m ³	Substance for which an ACGIH BEI exists, t-A4; *measured as inhalable fraction and vapor
-B-						
Barium-Soluble Compounds (as Ba) 7440-39-3		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (o)(t) {water-based}	50mg/m ³ (as Ba)	t-A4
Barium Sulfate 7727-43-7		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ *(t); 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	Total dust containing no Asbestos and <1% Crystalline Silica. *Measured as inhalable fraction of the aerosol
Benzene 71-43-2	Benzol, Phenyl hydride	OV	7100 8100	1ppm (o); 5ppm (s)(o); 0.5ppm (t); 2.5 (s)(t) -skin-	500ppm	t-A1. Change cartridge every shift. See table Z-2 and 29CFR1910.1028; O-Ca; 1/2 mask allowed with constant monitoring; substance for which an ACGIH BEI exists.
Benzenethiol 108-98-5	Mercaptobenzene, Phenyl mercaptan, Thiophenol	OV	7100 8100	0.1ppm (t) -skin-	N.D.	
Benzyl Chloride 100-44-7	Chloromethylbenzene, a-chlorotoluene	FF-OV/AG	9001/2/3+ 7300/7600	1ppm (o)(t)	10ppm	t-A3 Add particulate prefilter if particulate is present
Benzoyl Peroxide 94-36-0	Benzoperoxide, Dibenzoyl peroxide	OV/N	8100+8910 7100+8910	5mg/m ³ (o)(t)	1,500mg/m ³	t-A4

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Beryllium & Compounds (as Be) 7440-41-7	Beryllium Other synonyms vary depending upon the specific beryllium compound.	NRP100	2730N100 2360P100 4400P100 8940/8990 7940/7990	0.0005mg/m ³ (t) as inhalable fraction; 0.002mg/m ³ (o); 0.025mg/m ³ (s)(o) For 30 minutes during 8 hour shift; 0.005ppm (c)(o) -skin- -DSEN- for soluble compounds -RSEN- for soluble and insoluble compounds	4mg/m ³	t-A1; 0.0001mg/m ³ OSHA action level
Bismuth Telluride un-doped, as Bi₂Te₃ 1304-82-1	Bismuth sesquiteroxide, Bismuth telluride, Bismuth tritelluride, Tellurobismuthite	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 15mg/m ³ (o) 10mg/m ³ (t); Respirable fraction 5mg/m ³ (o)	N.D.	t-A4
Bismuth Telluride; Se-doped, as Bi₂Te₃ 1304-82-1	*Doped Bismuth sesquiteroxide, Doped Bismuth Telluride, Doped Tellurobismuthite	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (t)	N.D.	t-A4
Boron Oxide 1303-86-2	Anhydrous Boric Acid; Boric Anhydride; Boric Oxide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total Dust 15mg/m ³ (o); 10mg/m ³ (t)	2,000mg/m ³	
Boron Tribromide 10294-33-4	Boron bromide, Tribromoborane	FF-AG	9001/2/3+ 7200	0.7ppm (c)(t)	N.D.	
Boron Trifluoride 7637-07-2	Boron fluoride, Trifluoroborane	FF-AG	9001/2/3+ 7200	0.7ppm (c)(t) 0.1ppm (t), 1.0ppm (c)(o)	25ppm	
Bromine Pentafluoride 7789-30-2	Bromine Fluoride	AG	7200/8200	0.1ppm (t)	N.D.	
Bromine 7726-95-6	Molecular bromine	FF-AG	9001/2/3+ 7200	0.1ppm (o)(t) 0.2ppm (s)(t)	3ppm	
Bromoform 75-25-2	Methyl tribromide, Tribromomethane	FF-OV	9001/2/3+ 7100	0.5ppm (o)(t) -skin-	850ppm	t-A3
1,3-Butadiene 106-99-0	Biethylene; Biviny Butadiene; Diviny Erythrene; Vinyl Ethylene	OV	7100 8100	1ppm (o) ^{1,2} ;2ppm (t) [5ppm (s)(o)]	2,000ppm [10% Lower explosion limit]	See OSHA 1910.1051; t-A2 1) Replace cartridge every 4 hours for concentration > 5ppm. 2) Replace cartridge every 3 hours for concentration>10ppm.
2-Butanone 78-93-3	Methyl Ethyl Ketone, MEK, Methyl acetone, Ethyl methyl ketone	FF-OV	9001/2/3+ 7100	200ppm (o)(t) 300ppm (s)(t)	3000ppm	Substance for which ACGIH BEI exists
2-Butoxy Ethanol Acetate 112-07-2	2-Butoxyethyl acetate, Butyl Cellosolve® Butyl glycol acetate, EGBEA, Ektasolve EB® Ethylene glycol monobutyl ether acetate	OV	7100 8100	20ppm (t)	N.D.	t-A3
2-Butoxyethanol 111-76-2	Butyl Cellosolve®, Butyl oxitol, Dowanol® EB, EGBE, Ektasolve EB®, Ethylene glycol monobutyl ether, Jeffersol EB	FF-OV	9001/2/3+ 7100	50ppm (o) 20ppm (t) -skin-	700ppm	Substance for which ACGIH BEI exists Add particulate prefilter if particulate is present; t-A3
n-Butyl Acetate 123-86-4	Butyl acetate, n-Butyl ester of acetic acid, Butyl ethanoate	FF-OV	9001/2/3+ 7100	150ppm (o)	1700ppm [10%LEL]	Add particulate prefilter if particulate is present
sec-Butyl Acetate 105-46-4	sec-Butyl ester of acetic acid, 1-Methylpropyl acetate	FF-OV	9001/2/3+ 7100	200ppm (o)	1700ppm [10%LEL]	Add particulate prefilter if particulate is present
tert-Butyl Acetate 540-88-5	tert-Butyl ester of acetic acid	FF-OV	9001/2/3+ 7100	200ppm (o)	1500ppm [10%LEL]	
Butyl Acrylate 141-32-2	n-Butyl acrylate, Butyl ester of acrylic acid, Butyl-2-propenoate	OV	7100 8100	2ppm (t) -DSEN-	N.D.	t-A4
n-Butyl Alcohol 71-36-3	1-Butanol, n-Butanol, Butyl alcohol, 1-Hydroxybutane, n-Propyl carbinol	FF-OV	9001/2/3+ 7100	20ppm (t) 100ppm (o)	1400ppm [10%LEL]	
sec-Butyl Alcohol 78-92-2	2-Butanol, Butylene hydrate, 2-Hydroxybutane, Methyl ethyl carbinol	FF-OV	9001/2/3+ 7100	150ppm (o) 100ppm (t)	2000ppm	
tert-Butyl Alcohol 75-65-0	2-Methyl-2-propanol, Trimethyl carbinol, tert-Butanol	FF-OV	9001/2/3+ 7100	100ppm (o)(t)	1600ppm	t-A4

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
n-Butylamine 109-73-9	1-Aminobutane, Butylamine	AM	7400/8400 7600/8600	5ppm (c)(o)(t) -skin-	300ppm	Not specifically approved, but better service life than O.V.
n-Butyl Lactate 138-22-7	Butyl ester of 2-hydroxypropanoic acid, Butyl ester of lactic acid, Butyl lactate	OV	7100 8100	5ppm (t)	N.D.	
Tert-Butyl Chromate (as CrO₃) 1189-85-1	di-tert-Butyl ester of chromic acid	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.005mg/m ³ (o); 0.1mg/m ³ (c)(t) -skin-	15mg/m ³ as Cr(VI)	See 29CFR1910.1026
Butyl Mercaptan 109-79-5	Butanethiol, 1-Butanethiol, n-Butanethiol, 1-Mercaptobutane	OV	7100 8100	0.5ppm (t) 10ppm (o)	500ppm	
o-sec-Butylphenol 89-72-5	2-sec-Butylphenol, 2-(1-Methylpropyl) phenol	OV/RP	7100+8970/7940 8100+8970/8940	5ppm (t) -skin-	N.D.	
p-tert-Butyltoluene 98-51-1	4-tert-Butyltoluene, 1-Methyl-4-tert-butylbenzene	OV	7100/8100	1ppm (t) 10ppm (o)	100 ppm	
-C-						
Cadmium, Dust as Cd and compounds 7440-43-9	Cadmium. Other synonyms vary depending upon the specific cadmium compound	NRP100	2730N100 2360P100 4400P100 7940/7990 8940/8990	Total (inhalable) dust/particulates 0.005mg/m ³ (o); 0.01mg/m ³ (t); Respirable 0.002mg/m ³ (t)	9mg/m ³	See 29CFR1910.1027 and Table Z-2; O-Ca; t-A2. Substance for which an ACGIH BEI exists.
Cadmium, Fume 1306-19-0	Cadmium monoxide, Cadmium oxide fume	NRP100	2730N100 2360P100 4400P100 7940/7990 8940/8990	Total (inhalable) dust/particulate 0.005 mg/m ³ (o) 0.01mg/m ³ (t); Respirable 0.002mg/m ³ (t)	9mg/m ³	See 29CFR1910.1027 and Table Z-2; O-Ca; t-A2. Substance for which an ACGIH BEI exists.
Calcium Arsenate 7778-44-1		N100	2730N100		5mg/m ³ (as As)	See 29CFR1910.1018
Calcium Carbonate 471-34-1 1317-65-3	Calcium salt of carbonic acid [Note: Occurs in nature as limestone, chalk, marble, dolomite, aragonite, calcite & oyster shells.]	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total particulates 15mg/m ³ (o) Respirable fraction 5mg/m ³ (o)	N.D.	
Calcium Cyanamide 156-62-7	Calcium carbimide, Cyanamide, Lime nitrogen, Nitrogen lime	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (t)	N.D.	t-A4
Calcium Hydroxide 1305-62-0	Calcium hydrate, Caustic lime, Hydrated lime, Slaked lime	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 5mg/m ³ (t), 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
Calcium Oxide 1305-78-8	Burned lime, Burnt lime, Lime, Pebble lime, Quick lime, Unslaked lime	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (o); 2mg/m ³ (t)	25mg/m ³	
Calcium Silicate (synthetic) (non-fibrous) 1344-95-2	Calcium hydrosilicate, Calcium; metasilicate, Calcium monosilicate, Calcium salt of silicic acid	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
Calcium Sulfate 7778-18-9	(See Plaster of Paris)					
Camphor 76-22-2	2-Camphonone, Gum camphor, Laurel camphor, Synthetic camphor	FF-OV/N95	9001/2/3+ 7100+8910	2ppm (o)(t) 3ppm (s)(t)	200mg/m ³	t-A4
Caprolactam Vapor and Aerosol 105-60-2	Aminocaproic lactam, epsilon-Caprolactam, Hexahydro-2H-azepin-2-one, 2-Oxohexamethyleneimine	OV/N	7100+8910 8100+8910	5.0mg/m ³ (t)*	N.D.	t-A5 *Measured as inhalable fraction and vapor
Captan (Inhalable Fraction) 133-06-2	Captane; N-Trichloromethylmercapto-4-cyclohexene-1,2-dicarboximide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (t) -DSEN-		t-A3
Carbon Black 1333-86-4	Channel Black; Lamp Black; Furnace Black; Thermal Black; Acetylene Black	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	3.5mg/m ³ (o)(t) 3.0mg/m ³ (t)*	1,750mg/m ³	*Measured as inhalable fraction fraction t-A3
Carbon Disulfide 75-15-0	Carbon Bisulfide	OV	7100 8100	1ppm (t); 20ppm -(o); 30ppm -(c)(o); [100ppm (c)(o) 30 min. peak/8 hour shift]; -skin-	500ppm	Substance for which an ACGIH BEI exists; short service life t-A4
Carbon tetrachloride 56-23-5	Carbon chloride, Carbon tet, Freon® 10, Halon® 104, Tetrachloromethane	FF-OV	9001/2/3+ 7100	5ppm (t) 10ppm (t)(s) 10ppm (o) 25ppm (c)(o) 200ppm, 5 min peak in any 4h -skin-	200 ppm	t-A2

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Catechol 120-80-9	1,2-Benzenediol; o-Benzenediol; 1,2-Dihydroxybenzene; o-Dihydroxybenzene; 2-Hydroxyphenol; Pyrocatechol	OV/N	7100+8910 8100+8910	5ppm (t); -skin-	N.D.	t-A3
Cellulose 9004-34-6	Hydroxycellulose, Pyrocellulose	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total Dust 15 mg/m ³ (o), 10mg/m ³ (t); Respirable fraction 5mg/m ³ (o)		
Cesium Hydroxide 21351-79-1	Cesium hydrate, Cesium hydroxide dimer	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	2mg/m ³ (t)	N.D.	
Chlorine 7782-50-5	Molecular chlorine	AG	7200/8200 7300/8300 7600/8600	0.5ppm (t); 1ppm (c)(s)(o)(t)	10ppm	Chemical goggles required when using a half mask, t-A4 ACHIH NIC to 0.1ppm (t)
Chlorine Dioxide 10049-04-4	Chlorine oxide, Chlorine peroxide	AG	7200/8200 7300/8300 7600/8600	0.1ppm (t)(o); 0.3ppm (c)(t)	5ppm	Chemical goggles required when using a half mask; ACHIH NIC to 0.1ppm (t) and 1ppm (t)(c)
Chloroacetaldehyde 107-20-0	Chloroacetaldehyde (40% aqueous solution), 2-Chloroacetaldehyde, 2-Chloroethanal	FF-OV	9001/2/3+ 7100	1ppm (c)(t) 1ppm (c)(o) -skin-	45 ppm	
Chloroacetyl Chloride 79-04-9	Chloroacetic acid chloride, Chloroacetic chloride, Monochloroacetyl chloride	FF-OV/AG	9001/2/3+ 7300/7600	0.05ppm(t) 0.15ppm(s)(t) -skin-	N.D.	
Chloroacetophenone 532-27-4	2-Chloroacetophenone, Chloromethyl phenyl ketone, Mace®, Phenacyl chloride, Phenyl chloromethyl ketone, tear gas	FF-OV/N95	9001/2/3+ 7100+8910	0.05ppm (o)(t)	2.3ppm	t-A4
Chlorobenzene 108-90-7	Benzene Chloride; Chlorobenzol; MCB Monochlorobenzene; Phenylchloride	OV	7100 8100	75ppm (o); 10ppm (t)	1,000ppm	Substance for which ACGIH BEI exists; t-A3
Chlorobromomethane 74-97-5	Bromochloromethane; CB; CBM; Fluorocarbon 1011; Halon 1011®; Methyl chlorobromide	FF-OV	9001/2/3+ 7100	200ppm(t)(o)	2,000ppm	short service life
Chlorodiphenyl (42% chlorine) 53469-21-9	Aroclor® 1242, polychlorinated diphenyl, PCBs	FF-OV/N95	9001/2/3+ 7100+8910	1ppm (o)(t) -skin-	5mg/m ³	
Chlorodiphenyl (54% chlorine) 11097-69-1	Aroclor® 1254, polychlorinated diphenyl, PCBs	FF-OV/N95	9001/2/3+ 7100+8910	0.5ppm (o)(t) -skin-	5mg/m ³	t-A3
2-Chloroethanol 107-07-3	See Ethylene Chlorohydrin					
1-Chloro-1-nitropropane 600-25-9	Korax, Lanstan	FF-OV	9001/2/3+ 7100	2ppm (t) 20ppm(o)	100ppm	
o-Chlorotoluene 95-49-8	1-Chloro 2-Methylbenzene; 2-Chloro-1-Methylbenzene; 2-Chlorotoluene; o-Tolylchloride	OV	7100 8100	50ppm (t)	N.D.	For specific information, refer to: NIOSH Pocket Guide to Chemical Hazards
Chromium, Metal (as Cr) 7440-47-3		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (t)*; 1mg/m ³ (o)	250mg/m ³	For specific information, refer to NIOSH Pocket Guide to Chemical Hazards; t-A4; *As inhalable fraction of aerosol
Chromium (II) Compounds – (as Cr)		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (o)	250mg/m ³	For specific information, refer to NIOSH Pocket Guide to Chemical Hazards
Chromium (III) Compounds – (as Cr)		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (o)(t)	25mg/m ³	For specific information, refer to NIOSH Pocket Guide to Chemical Hazards; t-A4

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Chromium (VI) Compounds – Dusts; Water Soluble (as Cr) Includes Chromic Acid and (see also Lead and Zinc Chromate)		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.05mg/m ³ (t); 0.005mg/m ³ (o); as Cr(VI) 0.1mg CrO ₃ /m ³ (c)(o) DSEN RSEN	15mg/m ³	t-A1; Also see specific compounds. Substance for which an ACGIH BEI exists. For specific information, refer to OSHA 29CFR1910.1026 ACGIH NIC to 0.0002 mg/m ³ (t) and 0.0005 (s)(t) measured as inhalable fraction of aerosol and skin
Chromium (VI) Compounds; Certain Water Insolubles (as Cr)		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.01mg/m ³ (t); 0.005mg/m ³ (o) as Cr(VI) DSEN	15mg/m ³	t-A1; For specific information, refer to OSHA 29CFR1910.1026 ACGIH NIC to 0.0002 mg/m ³ (t) and 0.0005 (s)(t) measured as inhalable fraction of aerosol and RSEN
Chromyl Chloride 14977-61-8	Chlorochromic anhydride, Chromic oxychloride, Chromium chloride oxide, Chromium dichloride dioxide, Chromium dioxide dichloride, Chromium dioxychloride, Chromium oxychloride, Dichlorodioxochromium			0.025ppm(t) DSEN RSEN	N.D.	ACGIH NIC to 0.00025ppm (s)(t) as Cr(VI) measured as inhalable fraction and vapor; ACGIH NIC to 0.001ppm (t) as inhalable fraction and vapor; ACGIH NIC to t-A1, skin
Coal Dust	Anthracite coal dust, Bituminous coal dust, Lignite coal dust	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Respirable fraction .4mg/m ³ (t) Anthracite; .9mg/m ³ (t) Bituminous; or 2.4mg/m ³ (o)* %SiO ₂ +2 or 10mg/m ³ (o)** %SiO ₂ +2	15mg/m ³	For specific information, refer to NIOSH Pocket Guide to Chemical Hazards; *<5% SiO ₂ Resp.quartz fraction; **>5% SiO ₂ Resp. quartz fraction; t-A4
Coal Tar Pitch Volatiles (as Benzene Solubles) 65996-93-2		RP	2740R95 4300P95 2360P100 4400P100 7940/7990 8940/8990	0.2mg/m ³ (o)(t)	80mg/m ³	Confirmed Human Carcinogen; t-A1; Substance for which ACGIH BEI exists for Polycyclic Aromatic Hydrocarbons (PAHS)
Cobalt, Metal Dusts and Fumes (as Co) 7440-48-4		NRP100	2730N100 2360P100 4400P100 7940/7990 8940/8990	0.1mg/m ³ (o)*; 0.02mg/m ³ (t)	20mg/m ³	t-A3; substances for which an ACGIH BEI exists. *For metal dusts and fumes
Coke Oven Emissions		RP	2740R95/8970 4300P95 4400P100 2360P100 7940/7990 8940/8990	0.15mg/m ³ (o) (Benzene soluble fraction)	N.D.	See 29CFR1910.1029; O-Ca
Copper, Dusts and Mists (as Cu) 7440-50-8		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1.0mg/m ³ (o)(t) {water-based mists}	100mg/m ³	
Copper, Fume (as Cu) 7440-50-8		N	2310/2315N99 2400/2800N95	0.1mg/m ³ (o); 0.2mg/m ³ (t)	100mg/m ³	
Cotton Dust, (Raw) Untreated		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.1mg/m ³ (t) – measured as thoracic fraction of aerosol; 1mg/m ³ (o) – Respirable dust is measured by vertical elutriator; Cotton Waste processing operations (of waste recycling and ginning)	100mg/m ³	5x PEL maximum for disposables. See 29CFR1910.1043 for other grade of cotton If oil is present use 2740R95, 4300P95
Crag Herbicide 136-78-7	2-(2,4-Dichlorophenoxy)-Ethyl Sodium Sulfate, Sesone	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	15mg/m ³ (o) total dust; 5mg/m ³ (o) respirable fraction	500mg/m ³	t-A4
o,m,p Cresol 1319-77-3 08-39-4 95-48-7 106-44-5	Cresylic Acid	OV/P	7100+7940 8100+8940	5ppm (o); 20mg/m ³ (t)* -skin-	250ppm	*Measured as inhalable fraction and vapor, t-A4
Cristobalite	(See Silica, Crystalline)					
Crotonaldehyde 4170-30-3	2-Butenal, β-Methyl acrolein, Propylene aldehyde	FF-OV	9001/2/3+ 7100	2ppm (o) 0.3ppm (c)(t) -skin-	50ppm	t-A3

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Cumene 98-82-8	Isopropyl Benzene; 2-Phenyl Propane; Cumol	OV	7100 8100	50ppm (o)(t); -skin-	900ppm [10% Lower explosion limit]	ACHIH NIC to 0.1ppm and t-A2
Cyanamide 420-04-2	Amidocyanogen, Carbimide, Carbodiimide, Cyanogen nitride, Hydrogen cyanamide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	2mg/m ³ (t)	N.D.	
Cyclohexane 110-82-7	Benzene hexahydride, Hexahydrobenzene, Hexamethylene, Hexanaphthene	FF-OV	9001/2/3+ 7100	300ppm (o) 100ppm (t)	1300ppm [10% LEL]	
Cyclohexanol 108-93-0	Hexalin; Hydralin; Hydroxycyclohexane; Anol; Hexahydrophenol; Cyclohexyl Alcohol	OV	7100 8100	50ppm (o)(t); -skin-	400ppm	Add 8970/8940/7940 if particulate is present
Cyhexatin 13121-70-5	TCHH, Tricyclohexylhydroxystannane, Tricyclohexylhydroxytin, Tricyclohexylstannium hydroxide, Tricyclohexyltin hydroxide	OV/N	7100+8910 8100+8910	5mg/m ³ (t) 0.1mg/m ³ (o) (as SN)	80mg/m ³ 25mg/m ³	t-A4
Cyclohexylamine 108-91-8	Aminocyclohexane, Aminohexahydrobenzene, Hexahydroaniline, Hexahydrobenzenamine	FF-OV	9001/2/3+ 7100	10ppm (t)	N.D.	t-A4
Cyclohexene 110-83-8	Benzene Tetrahydride; Tetrahydrobenzene	OV	7100 8100	300ppm (o)(t)	2,000ppm	
Cyclohexanone 108-94-1	Pimelic Ketone; Cyclohexyl Ketone	OV	7100 8100	20ppm (t); 50ppm (o); -skin-	700ppm	t-A3
Cyclonite 121-82-4	Cyclotrimethylenetrinitramine; Hexahydro-1,3,5-trinitro-s-triazine; RDX; Trimethylenetrinitramine; 1,3,5-Trinitro-1,3,5-triazacyclohexane	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (t); -skin-	N.D.	t-A4
Cyclopentadiene 542-92-7	1,3-Cyclopentadiene	OV	7100 8100	75ppm (o)(t)	750ppm	Short service life
-D-						
2,4-D 94-75-7	2,4-Dichlorophenoxyacetic acid, Dichlorophenoxyacetic acid	OV/NRP100	7100+7940 8100+8940	10mg/m ³ (o); 10mg/m ³ (t) inhalable fraction -skin-	100mg/m ³	t-A4
Diacetone Alcohol 123-42-2	4-hydroxy-4 methyl-2 pentanone, Diacetone, 2-Methyl-2-pentanol-4-one	FF-OV	9001/2/3+ 7100	50ppm (o)(t)	1800ppm [10% LEL]	
Diatomaceous earth (uncalcined Silica-amorphous) 61790-53-2	(See Silica)					
Dibutyl phthalate 84-74-2	DBP; Dibutyl-1,2-Benzene dicarboxylate; Di-n-butylphthalate	OV/RP	7100+8970/7940 8100+8970/8940	5mg/m ³ (o)(t)	4,000mg/m ³	
Dibutyl phosphate 107-66-4	Dibutyl Acid-o-Phosphate; Di-n-Butyl Hydrogen Phosphate; Dibutyl Phosphoric Acid	OV/RP	7100+8970/7940 8100+8970/8940	1ppm (o); 0.6 (t) measured as inhalable fraction and vapor	30ppm	
1,2-Dichloroethylene 156-59-2; 156-60-5; 540-59-0	Acetylene dichloride; cis-Acetylene dichloride; trans-Acetylene dichloride; sym-Dichloroethylene	FF-OV	9001/2/3+ 7100	200ppm(t)(o)	1000ppm	short service life
1,1-Dichloro-1-Nitroethane 594-72-9	Dichloronitroethane	OV	7100/8100	2ppm(t) 10ppm(c)(o)	25 ppm	
1,3-Dichloropropene 542-75-6	Bicyclopentadiene; DCPD; 1,3-Dicyclopentadiene dimer; 3a,4,7,7a-Tetrahydro-4,7-methanoindene	FF-OV	7100+ 90001/2/3	1ppm(t) -skin-	N.D.	t-A3
2,2-Dichloropropionic Acid 75-99-0	Dalapon; 2,2-Dichloropropanoic acid; a,a-Dichloropropionic acid	FF-OV/N95	9001/2/3+ 7100 and 8910	5ppm(t)*	N.D.	t-A4 *measured as inhalable fraction of the aerosol
1,3-Dichloro-5,- 5-Dimethylhydantoin 118-52-5	Dactin; DDH; Halane	OV/N	7100+8910 8100+8910	0.2mg/m ³ (o)(t); 0.4mg/m ³ (s)(t)	5mg/m ³	
o-Dichlorobenzene 95-50-1	o-DCB; 1,2-Dichlorobenzene; ortho- Dichlorobenzene; Dichlorocide	FF-OV	9001/2/3+ 7100	25ppm (t) 50ppm (c)(o)	200ppm	t-A4 Add particulate prefilter if particulate is present

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
p-Dichlorobenzene 106-46-7	p-DCB; 1,4-Dichlorobenzene; para-Dichlorobenzene; Dichlorocide	FF-OV/N95	9001/2/3+ 7100/8910	10ppm (t) 75ppm (o)	150ppm	t-A3
Dichloroethyl ether 111-44-4	bis(2-Chloroethyl)ether; 2,2'-Dichlorodiethyl ether, 2,2'-Dichloroethyl ether	FF-OV	9001/2/3+ 7100	5ppm (t) [10ppm (s)(t)] [15ppm (o)(c)] -skin-	100ppm	t-A4
1,2 Dichloropropane 78-87-5	(See Propylene Dichloride)					
Dicyclopentadiene 77-73-6	Bicyclopentadiene; DCPD; 1,3-Dicyclopentadiene dimer; 3a,4,7,7a-Tetrahydro-4,7-methanoindene	OV/N	7100+8910 8100+8910	5ppm (t)	N.D.	
Dicyclopentadienyl Iron 102-54-5	bis-Cyclopentadienyl Iron; Ferrocene	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m ³ (t); Total Dust-15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
Diethanolamine 111-42-2	DEA; Di(2-hydroxyethyl)amine; 2,2'-Dihydroxydiethylamine; Diolamine; bis(2-Hydroxyethyl)amine; 2,2'-Iminodiethanol	OV	7100 8100	0.2 (t)*; -skin-	N.D.	Add 8970/8940/7940 if particulate is present. *Measured as inhalable fraction and vapor
Diethylamine 109-89-7	Diethamine; N,N-Diethylamine; N-Ethylanamine	FF-OV	9001/2/3+ 7100	5ppm (t) 15ppm (s)(t) 25ppm-(o) -skin-	200ppm	t-A4
2-Diethylaminoethanol 100-37-8	Diethylaminoethanol; 2-Diethylaminoethyl alcohol; N,N-Diethylethanolamine; Diethyl-(2-hydroxyethyl)amine; 2-Hydroxytriethylamine	OV	7100 8100	10ppm (o); 2ppm (t); -skin-	100ppm	Short service life
Diethyl Ether 60-29-7	(See Ethyl Ether)					
Diethyl Ketone 96-22-0	DEK, Dimethylacetone, Ethyl ketone, Metacetone, 3-Pentanone, Propione	OV	7100 8100	200ppm (t) 300ppm (s)(t)	N.D.	
Diethylenetriamine 111-40-0	N-(2-Aminoethyl)-1,2-ethanediamine; bis(2-Aminoethyl)amine; DETA; 2,2'-Diaminodiethylamine	FF-OV	9001/2/3+ 7100	1ppm(t) -skin-	N.D.	
1,1-Dimethylhydrazine 57-14-7	Dimzine; DMH; UDMH; Unsymmetrical dimethylhydrazine	FF-AM	9001/2/3+ 7400	0.01ppm(t) 0.5ppm(o) -skin-	15ppm	t-A3
Diglycidyl Ether 2238-07-5	Diallyl ether dioxide; DGE; Di(2,3-epoxypropyl) ether; 2-Epoxypropyl ether; bis(2,3-Epoxypropyl) ether	FF-OV	9001/2/3+ 7100/8100	0.01ppm(t) 0.5ppm(c)(o)	10 ppm	t-A4
Diethyl Phthalate 84-66-2	Ethylphthalate; DEP	RP	2360P100 4300P95 4400P100 2740R95/8970 7940/7990 8940/8990	5mg/m ³ (t)	N.D.	t-A4
Diisobutyl Ketone 108-83-8	DIBK; sym-Diisopropyl acetone; 2,6-Dimethyl-4-hepanone; Isovalerone; Valerone	FF-OV	9001/2/3+ 7100	25ppm (t) 50ppm (o)	500ppm	Add particulate prefilter if particulate is present
Diisopropylamine 108-18-9	DIPA, N-(1-Methylethyl)-2-propanamine	FF-OV	9001/2/3+ 7100	5ppm (o)(t) -skin-	200ppm	
Dimethylamino Benzene 1300-73-8	(See Xylidine)					
Dimethylamine 124-40-3	Dimethylamine (anhydrous), N-Methylmethanamine	AM	7400 8400	5ppm (t); 10ppm (o); 15ppm (s)(t) -DSEN-	500ppm	AM not specifically approved & short OV service life; t-A4;
Dimethylaniline 121-69-7	N,N-Dimethylbenzamine; N,N-Dimethylphenylamine	OV	7100 8100	5ppm (o)(t); 10ppm (s)(t); -skin-	100ppm	Substance for which an ACGIH BEI exists, t-A4
Dimethyl-1,2-Dibromo-2,2-Dichloroethyl Phosphate 300-76-5	Dibrom®; 1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate; Naled	N	2310/2315N99 2400/2800N95	3mg/m ³ (o); 0.1mg/m ³ (t) -skin- -DSEN-	200mg/m ³	Substance for which an ACGIH BEI (Acetyl-Cholinesterase Inhibiting Pesticide) exists, t-A4; *Inhalable fraction & vapor/ aerosol

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Dimethylphthalate 131-11-3	Dimethyl ester of 1,2-benzenedicarboxylic acid; DMP	OV/RP	7100+8970/7940 8100+8970/8940	5mg/m ³ (o)(t)	2,000mg/m ³	
Dinitrobenzene (All Isomers) 100-25-4; 528-29-0; 99-65-0	o-Dinitrobenzene; 1,2-Dinitrobenzene; m-Dinitrobenzene; 1,3-Dinitrobenzene; p-Dinitrobenzene; 1-4-Dinitrobenzene	OV/N	7100+8910 8100+8910	1mg/m ³ (o)(t); -skin-	50mg/m ³	Substance for which an ACGIH BEI exists (Methemoglobin Inducer) exists
Dinitro-o-Cresol 534-52-1	4,6-Dinitro-o-cresol; 3,5-Dinitro-2-hydroxytoluene; 4,6-Dinitro-2-methyl phenol; DNC; DNOC	FF-P100	9001/2/3+ 7990 or 7940	0.2mg/m ³ (o)(t); -skin-	5mg/m ³	
Dinitolmide 148-01-6	3,5-Dinitro-o-toluamide; 2-Methyl-3,5-dinitrobenzamide; Zoalene	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1mg/m ³ (t)	N.D.	t-A4
Dinitrotoluene 25321-14-6	Dinitroluol; DNT; Methyl dinitrobenzene	OV/P100	7100+7940 8100+8940	1.5mg/m ³ (o); 0.2mg/m ³ (t); -skin-	50mg/m ³	Substance for which an ACGIH BEI (Methemoglobin Inducer) exists; t-A3
1,4-Dioxane 123-91-1	Diethylene dioxide; Diethylene ether; Dioxan; p-Dioxane; 1,4-Dioxane	OV	7100 8100	20ppm (t);100ppm (o) -skin-	500ppm	t-A3
Dipropyl Ketone 123-19-3	Butyrone, DPK, 4-Heptanone, Heptan-4-one, Propyl ketone	OV	7100/8100	50ppm(t)	N.D.	
Diphenyl 92-52-4	Biphenyl, Phenylbenzene	OV/N	8100+8910 7100+8910	0.2ppm (o)(t)	100mg/m ³	
Diphenylamine 122-39-4	Anilinobenzene, DPA, Phenylaniline, N-Phenylaniline, N-Phenylbenzenamine	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m ³ (t)	N.D.	May want to use 2400N95, 2800N95 or 4800N95 if odor is a nuisance, t-A4
Di-sec-octylphthalate 117-81-7	DOP,bis-(2-Ethylhexyl) Phthalate; Di-2-Ethylhexyl Phthalate; DEHP	RP	2740R95, 4300P95, 4400P100, 7940/7990, 8970/8940/8990	5mg/m ³ (o)(t);	5,000mg/m ³	ACGIH NIC to delete STEL; t-A3
2,6-Di-tert-butyl-p-cresol 128-37-0	BHT; Butylated hydroxytoluene; Dibutylated hydroxytoluene; 4-Methyl-2,6-di-tert-butyl phenol	FF-OV/N95	9001/2/3+ 7100+8910	2mg/m ³ (t) *	N.D.	*Measured as inhalable fraction and vapor; t-A4
1-Dodecanethiol 112-55-0	Dodecyl mercaptan, 1-Dodecyl mercaptan, n-Dodecyl mercaptan, Lauryl mercaptan, n-Lauryl mercaptan, 1-Mercaptododecane	OV	7100 8100	0.1ppm (t)	N.D.	R or P filter may be needed with oily aerosols
-E-						
Emery 1302-74-5	Aluminum oxide, Aluminum trioxide, Corundum, Impure corundum, Natural aluminum oxide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total Dust 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
Endrin 72-20-8	Hexadrin®, 1,2,3,4,10,10-Hexachloro-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,endo-5,8-dimethanonaphthalene	OV/NRP100	7100+7940 8100+8940	0.1mg/m ³ (o)(t); -skin-	2mg/m ³	t-A4
Epichlorohydrin 106-89-8	1-Chloro-2,3-epoxypropane; 2-Chloropropylene oxide; γ-Chloropropylene oxide	FF-OV	9001/2/3+ 7100	0.5ppm(t) 5ppm(o) -skin-	75ppm	t-A3
Epoxies	(See Specific Compounds)					
Ethanolamine 141-43-5	Ethanolamine; Monoethanolamine; B-Aminoethyl alcohol; 2-Aminoethanol; 2-Hydroxyethylamine	OV	7100 8100	3ppm (o)(t); 6ppm (s)(t)	30ppm	
2-Ethoxyethanol 110-80-5	Cellosolve®, EGEE, Ethylene glycol monoethyl ether	OV	7100 8100	5ppm (t); 200ppm (o); -skin-	500ppm	Substances for which ACGIH BEI exists
2-Ethoxyethyl acetate 111-15-9	Cellosolve® acetate, EGEEA, Ethylene glycol monoethyl ether acetate, Glycol monoethyl ether acetate	OV	7100 8100	100ppm (o); 5ppm (t); -skin-	500ppm	Substances for which ACGIH BEI exists
Ethyl Acetate 141-78-6	Acetic ester, Acetic ether, Ethyl ester of acetic acid, Ethyl ethanoate	FF-OV	9001/2/3+ 7100	400ppm (o)(t)	2000ppm [10% LEL]	
Ethyl Acrylate 140-88-5	Ethyl acrylate (inhibited), Ethyl ester of acrylic acid, Ethyl propenoate	FF-OV	9001/2/3+ 7100	5ppm (t) 15ppm (s)(t) 25ppm (o) -skin-	300ppm	t-A4
Ethylamine 75-04-7	Aminoethane, Ethylamine (anhydrous), Monoethylamine	FF-OV	9001/2/3+ 7100	5ppm (t); 15ppm (s)(t); 10ppm (o) -skin-	600ppm	

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Ethyl Benzene particulate	Phenylethane; Ethylbenzol 100-41-4	OV	7100	20ppm (t); 8100	800ppm 100ppm (o);	Add 8940 or 7940 if [10% Lower is present. Substance explosion limit] for which a t-A3; ACGIH BEI exists
Ethyl Butyl Ketone 106-35-4	Butyl ethyl ketone, 3-Heptanone	OV	7100 8100	50ppm (o)(t); 75ppm (s)(t)	1,000ppm	Add 8940 or 7940 if particulate is present
Ethylene Chlorohydrin 107-07-3	2-Chloroethanol; 2-Chloroethyl Alcohol	OV	7100 8100	5ppm (o) 1ppm (c)(t); -skin-	7ppm	t-A4
Ethylene Diamine 107-15-3	1,2-Diaminoethane; 1,2-Ethanediamine; Ethylenediamine (anhydrous)	FF-OV	9001/2/3+ 7100	10ppm (o)(t) -skin-	1000ppm	t-A4
Ethylene Dibromide 106-93-4	1,2-Dibromoethane; Ethylene bromide; Glycol dibromide, EDB	FF-OV	9001/2/3+ 7100	20ppm (o) 30ppm (c)(o) 50ppm 5 minute peak per 8-hr shift -skin-	100ppm	t-A3
Ethylene Glycol, Aerosol 107-21-1	Ethylene Alcohol; Glycol; 1,2-Ethanediol	OV/N	7100+8910 8100+8910	25ppm (t)* 50ppm (s)(t)* 10mg/m ³ **	N.D.	*Vapor fraction **Measured as inhalable fraction of the aerosol, t-A4
Ethyl Ether 60-29-7	Diethyl ether, Diethyl oxide, Ethyl oxide, Ether, Solvent ether	OV	7100 8100	400ppm (o)(t); 500ppm (s)(t)	1,900ppm [10% Lower explosion limit]	Short service life;
Ethyl Formate 109-94-4	Ethyl ester of formic acid, Ethyl methanoate	FF-OV	9001/2/3+ 7100	100ppm (o) 100ppm (t)	1500ppm	t-A4 Short service life
Ethylidene Norbornene 16219-75-3	ENB, 5-Ethylidenebicyclo(2.2.1)hept- 2-ene, 5-Ethylidene-2-norbornene	FF-OV	9001/2/3+ 7100	2ppm (t) 4ppm (s)(t)	N.D.	
Ethylene Dichloride 107-06-2	1,2-Dichloroethane; Ethylene chloride; Glycol dichloride	OV	7100/8100	10ppm(t) 50ppm(o) 100ppm(c)(o) 200ppm 5 min peak in any 3 hrs	50 ppm	t-A4
Ethyl Mercaptan 75-08-1	Ethanethiol, Ethyl sulfhydrate, Mercaptoethane	OV	7100 8100	0.5ppm (t); 10ppm (c)(o)	500ppm	
n-Ethylmorpholine 100-74-3	4-Ethylmorpholine	FF-OV	9001/2/3+ 7100	5ppm (t) 20ppm (o) -skin-	100ppm	
Ethyl Silicate 78-10-4	Ethyl orthosilicate, Ethyl silicate (condensed), Tetraethoxysilane, Tetraethyl orthosilicate, Tetraethyl silicate	OV	7100 8100	10ppm (t) 100ppm (o)	700ppm	
-F-						
Ferbam 14484-64-1	tris(Dimethyldithiocarbamato)iron, Ferric dimethyl dithiocarbamate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 15mg/m ³ (o) 5mg/m ³ (t)*	800mg/m ³	t-A4 *Measured as inhalable fraction of the aerosol
Ferrovandium Dust 12604-58-9		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1mg/m ³ (o)(t); 3mg/m ³ (s)(t)	500mg/m ³	
Fibrous Glass Dust	Fiber glas®, Fiberglass, Glass fibers, Glass wool	N95	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total 15mg/m ³ (o); respirable fraction 5mg/m ³ (o)		
Flourides (as F)	(See Specific Compound)					
Formaldehyde 50-00-0	Methanal, Methyl aldehyde, Methylene oxide; Formalin	FORM	7500/7600 8500/8600	0.75ppm (o); 0.1ppm (t); 2ppm (s)(o) 0.3ppm (c)(t) -DSEN- -RSEN-	20ppm	See 29CFR1910.1048; O-Ca; Dispose of cartridges at the end of each work shift; wear gas-proof goggles with half-mask. Do not use same cartridge for any other gases or vapors;
Formamide 75-12-7	Carbamide; Methanamide	OV	7100/8100	10ppm(t) -skin-	N.D.	
Fufural 98-01-1	Fural, 2-Furancarboxaldehyde, Furfuraldehyde,2-Furfuraldehyde	FF-OV	9001/2/3+ 7100	0.2ppm (t) 5ppm (o) -skin-	100ppm	t-A3 Substance for which ACGIH BEI exists;

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Furfuryl Alcohol 98-00-0	2-Furylmethanol, 2-Hydroxymethylfuran	FF-OV	9001/2/3+ 7100	0.2ppm (t) 50ppm (o) -skin-	75ppm	Add particulate prefilter if particulate is present
-G-						
Gasoline 8006-61-9	Motor fuel, Motor spirits, Natural gasoline, Petrol [Note: A complex mixture of volatile hydrocarbons (paraffins, cycloparaffins & aromatics).]	FF-OV	9001/2/3+ 7100	300ppm (t) 500ppm (s)(t) Bulk handling	N.D.	t-A3
Glutaraldehyde 111-30-8	Glutaric Dialdehyde; 1,5-Pentanedial	FF-OV	9001/2/3+ 7100	0.05ppm (c)(t)* -DSEN- -RSEN-	N.D.	t-A3 Add particulate prefilter if particulate is present *Activated or inactivated t-A3
Glycerin, Mist 56-81-5	Glycerin (anhydrous); Glycerol; Glycyl alcohol; 1,2,3-Propanetriol; Trihydroxypropane	RP	2740R95/ 4300R95/ 4400P100/ 7940/7990/ 8940/8990/8970	Total dust 15mg/m ³ (o), Respirable fraction 5mg/m ³ (o)	N.D.	
Glycidol 556-52-5	2,3-Epoxy-1-propanol; Epoxypropyl alcohol; Glycide;Hydroxymethyl ethylene oxide; 2-Hydroxymethyl oxiran; 3-Hydroxypropylene oxide	OV	7100/8100	2ppm(t) 50ppm(o)	150ppm	t-A3
Glycol monoethyl Ether 110-80-5	(See 2-Ethoxyethanol)					
Grain Dust (Oat, Wheat, Barley)		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	4mg/m ³ (t)*; 10mg/m ³ (o)	N.D.	*Inhalable dust
Gypsum 13397-24-5	Calcium(II) sulfate dihydrate, Gypsum stone, Hydrated calcium sulfate, Mineral white	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust, 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
Graphite (Natural) 7782-42-5	Black lead, Mineral carbon, Plumbago, Silver graphite, Stove black	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	2.0mg/m ³ (t)* (all forms except graphite fibers); 15MPPCF(o)**	1,250mg/m ³	*Respirable particulate fraction, **based on impinger samples counted by light field techniques
Graphite (Synthetic) (all forms except fibers) 7440-44-0	Acheson graphite, Artificial graphite	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o); 2.0mg/m ³ (t)*	N.D.	*All forms except graphite fibers; Respirable particulate fraction
-H-						
Hafnium & Compounds, Dusts & Mists 7440-58-6	Celtium; Elemental Hafnium; Hafnium metal	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (o)(t)	50mg/m ³ (as Hf)	
n-Heptane 142-82-5	Normal heptane; n-heptane	OV	7100 8100	400ppm (t); 500ppm -(o) 500ppm (s)(t)	750ppm	
2-Heptanone 110-43-0	(See Methyl n-amyl ketone)					
3-Heptanone 106-35-4	(See Ethyl butyl ketone)					
Hexachlorobutadiene 87-68-3	HCBD; Hexachloror-1,3-butadiene; 1,3-Hexachlorobutadiene; Perchlrobutadiene	FF-OV	9001/2/3+ 7100	0.02ppm(t) -skin-	N.D.	t-A3
Hexachlorocyclopentadiene 77-47-4	HCCPD; Hexachloro-1,3-cyclopentadiene; 1,2,3,4,5,5-Hexachloro-1,3-cyclopentadiene; Perchlorocyclopentadiene	FF-OV	9001/2/3+ 7100	0.01ppm(t)	N.D.	t-A4
Hexachloroethane 67-72-1	Perchloroethane	OV/N	7100+8910 8100+8910	1ppm (o)(t); -skin-	300ppm	t-A3
Hexachloronaphthalene 1335-87-1	Halowax 1014	OV/N	7100+8910 8100+8910	0.2mg/m ³ (o)(t); -skin-	2mg/m ³	
n-Hexane 110-54-3	Hexane, Hexyl hydride, normal-Hexane	OV	7100 8100	50ppm (t); 500ppm (o); -skin-	1100ppm [10% lower explosion limit]	Substance for which ACGIH BEI exists
2-Hexanone 591-78-6	Butyl methyl ketone, MBK, Methyl butyl ketone, Methyl n-butyl ketone	OV	7100 8100	5ppm (t);100ppm (o); 10ppm (s)(t); -skin-	1,600ppm	

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Hexone 108-10-1	Methyl Isobutyl Ketone, Isobutyl methyl ketone, 4-Methyl 2-pentanone, MIBK	FF-OV	9001/2/3+ 7100	20ppm (t) 100ppm (o) 75ppm (s)(t)	500ppm	t-A3 Substance for which ACGIH BEI exists
sec-Hexyl acetate 108-84-9	1,3-Dimethylbutyl acetate; Methylisoamyl acetate	FF-OV	9001/2/3+ 7100	50ppm (o) (t)	500ppm	Add particulate prefilter if particulate is present
Hexylene glycol 107-41-5	2,4-Dihydroxy-2-methylpentane; 2-Methyl-2,4-pentanediol; 4-Methylpentane-2,4-diol	FF-OV	9001/2/3+ 7100	25ppm (t)* 50ppm (s)(t)* 10ppm**	N.D.	*Vapor fraction **Aerosol only, measured as inhalable fraction of aerosol
Hydrogen Bromide 10035-10-6	Hydrobromic acid, Anhydrous hydrogen bromide; Aqueous hydrogen bromide	AG	7200 8200	3ppm (o) 2ppm (c)(t)	30ppm	
Hydrogen Chloride 7647-01-0	Hydrochloric acid (when in aqueous form)	AG	7200 8200	2ppm (c)(t) 5ppm (c)(o)	50ppm	t-A4
Hydrogen Fluoride (as F) 7664-39-3	Anhydrous hydrogen fluoride; Aqueous hydrogen fluoride (i.e., Hydrofluoric acid); HF-A	FF-AG	9001/2/3+ 7200/7300/ 7600	0.5ppm (t)* 2ppm (c)(t)* 3ppm (o)* *as F, -skin-	30ppm	Substance for which ACGIH BEI exists
Hydrogen Sulfide 7783-06-4	Sulfuretted Hydrogen; Hydrosulfuric Acid; Hepatic Gas; Sewer Gas	AG	7200 8200	1ppm (t); 5ppm (s)(t); 20ppm (c)(o); [50ppm 10 min peak/ 8 hr shift] (c)(o)	100ppm	Escape only; Poor warning; Olfactory fatigue; (t)
Hydrogenated Terphenyls 61788-32-7	Hydrogenated diphenylbenzenes, Hydrogenated phenylbiphenyls, Hydrogenated triphenyls	RP	2740R95 2360P100 4300P95 4400P100 7940/7990 8940/8970/8990	0.5ppm (t)	N.D.	
Hydroquinone 123-31-9	p-Benzenediol; 1,4-Benzenediol; Dihydroxybenzene; 1,4- Dihydroxybenzene; Quinol	FF-OV/N95	9001/2/3+ 7100+8910	1mg/m ³ (t) 2mg/m ³ (o) -DSEN-	50mg/m ³	t-A3
Hydrazine 302-01-2	Diamine; Hydrazine (anhydrous); Hydrazine base	FF-AM	9001/2/3+ 7400	0.01ppm(t) 1ppm(o) -skin-	50ppm	t-A3
2-Hydroxypropyl Acrylate 999-61-1	HPA, b-Hydroxypropyl acrylate, Propylene glycol monoacrylate	OV	7100/8100	0.5ppm(t) -skin- DSEN	N.D.	
- -						
Indium, Dusts 7440-74-6	Indium Metal	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.1mg/m ³ (t) {water soluble}	N.D.	
Iron Oxide, Dust & Fume (as Fe) 1309-37-1	Ferric oxide, Iron(III) oxide	N	2310/2315N99 2400/2800N95	5mg/m ³ (t)*, 10mg/m ³ (o)	2,500mg/m ³ (as Fe)	t-A4, *Measured as respirable fraction of aerosol
Iron Salts, Soluble (as Fe)	FeSO ₄ : Ferrous sulfate, Iron(II) sulfate; FeCl ₂ : Ferrous chloride, Iron(II) chloride; Fe(NO ₃) ₃ : Ferric nitrate, Iron(III) nitrate; Fe(SO ₄) ₃ : Ferric sulfate, Iron(III) sulfate; FeCl ₃ : Ferric chloride, Iron (III) chloride	N	EZ22/EZ23N95 2200/2300N95 2400/2800N95	1mg/m ³ (t)	N.D.	
Isoamyl Acetate 123-92-2	Banana oil, Isopentyl acetate, 3-Methyl-1-butanol acetate, 3-Methylbutyl ester of acetic acid, 3-Methylbutyl ethanoate	OV	7100 8100	100ppm (o) 50ppm (t)	1,000ppm	Add 8910 if particulate is present.
Isoamyl Alcohol Primary and Secondary 123-51-3 6032-29-7	Primary fermentation amyl alcohol, Fusel oil, Isobutyl carbinol, Isopentyl alcohol, 3-Methyl-1-butanol, Primary isoamyl alcohol; Secondary 3-Methyl-2-butanol, Secondary isoamyl alcohol	FF-OV	9001/2/3+ 7100	100ppm (o)(t) 125ppm (s)(t)	500ppm	Add particulate prefilter if particulate is present
N-Isopropylaniline 768-52-5	N-IPA; Isopropylaniline; N-(1-Methylethyl)-benzenamine; N-Phenylisopropylamine	OV	7100/8100	2ppm(t) -skin-		Substance for which an ACGIH BEI exists

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Isobutyl Acetate 110-19-0	Isobutyl ester of acetic acid, 2-Methylpropyl acetate, 2-Methylpropyl ester of acetic acid, β-Methylpropyl ethanoate	FF-OV	9001/2/3+ 7100	150ppm (o)	1300ppm [10% LEL]	
Isobutyl Alcohol 78-83-1	IBA, Isobutanol, Isopropylcarbinol, 2-Methyl-1-propanol	FF-OV	9001/2/3+ 7100	50ppm (t) 100ppm (o)	1600ppm	
Isooctyl Alcohol 26952-21-6	Isoctacol; Oxooctyl Alcohol	OV	7100/8100	50ppm(t) -skin-	N.D.	
Isophorone 78-59-1	Isoacetophorone; 3,5,5-Trimethyl-2-cyclohexenone; 3,5,5-Trimethyl-2-cyclo-hexen-1-one	OV	7100 8100	25ppm (o); 5ppm (c)(t)	200ppm	Add 8910 if particulate is present; t-A3
2-Isopropoxy-Ethanol 109-59-1	Ethylene glycol isopropyl ether, -Hydroxyethyl isopropyl ether, Isopropyl Cellosolve®, Isopropyl	OV	7100 8100	25ppm (t); -skin-	N.D.	
Isopropyl Alcohol 67-63-0	Dimethyl carbinol, IPA, Isopropanol, 2-Propanol, sec-Propyl alcohol, Rubbing Alcohol	FF-OV	9001/2/3+ 7100	400ppm (o) 200ppm (t) 400 (s)(t)	2000ppm [10% LEL]	Substance for which ACGIH BEI exists; t-A4
Isopropyl Acetate 108-21-4	Isopropyl ester of acetic acid, 1-Methylethyl ester of acetic acid, 2-Propyl acetate	FF-OV	9001/2/3+ 7100	250ppm (o) 100ppm (t) 200ppm (s)(t)	1800ppm	
Isopropyl Amine 75-31-0	2-aminopropane, monoisopropylamine, 2-propylamine, sec-propylamine	FF-OV	9001/2/3+ 7100	5ppm (o) (t) 10ppm (s)(t)	750ppm	
Isopropyl Ether 108-20-3	Diisopropyl ether, Diisopropyl oxide, 2-Isopropoxy propane	OV	7100 8100	500ppm (o); 250ppm (t); 310ppm (s)(t)	1,400ppm; [10% Lower explosion limit]	
Isopropyl Glycidyl Ether 4016-14-2	1,2-Epoxy-3-Isopropoxypropane; IGE; Isopropoxymethyl oxirane	FF-OV	9001/2/3+ 7100	50ppm (o)(t); 75ppm (s)(t)	400ppm	
-K-						
Kaolin 1332-58-7	China Clay; Aluminum Silicate	N	EZ22/EZ23N95 2200/2300N95 2600/2800N95	Total dust 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o), 2mg/m ³ (t)		t-A4, Particulate containing no Asbestos and <1% Crystalline Silica. Does not include stearates of toxic metals
Kerosene 8008-20-6		OV/RP	7100+ 8970/7940 8100+ 8970/8940	200ppm (t) as total Hydrocarbon vapor -skin-		t-A3, avoid prolonged and repeated skin contact
-L-						
Lacquer Thinner	(See Specific Ingredients)					
Lead, Metal* and Inorganic Compounds (Dust and Fume) 7439-92-1	Lead metal, Plumbum	NRP100	2730N100 2360P100 4400P100 7940/7990 8940/8990	0.05mg/m ³ (o)(t)	100mg/m ³ (as Pb)	See 29CFR1910.1025 t-A3, Substance for which an ACGIH BEI exists; 29CFR1910.62 Construction standard
Limestone 1317-65-3	Calcium carbonate, Natural calcium carbonate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 15mg/m ³ (o), Respirable fraction 5mg/m ³ (o)		
Lindane 58-89-9	BHC; HCH; -Hexachlorocyclohexane; gamma isomer of 1,2,3,4,5,6-Hexachlorocyclohexane	OV/NRP100 R95/P100	7100+ 8970/7940 8100/8940 8970/8940	0.5mg/m ³ (o)(t); -skin-	50mg/m ³	t-A3
Lithium Hydride 7580-67-8	Lithium monohydride	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.025mg/m ³ (o) 0.05 (c)(t)*	0.5mg/m ³	*Measured as inhalable fraction of the aerosol
-M-						
Magnesite 546-93-0	Carbonate magnesium, Hydromagnesite, Magnesium carbonate, Magnesium(II) carbonate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
Magnesium Oxide Fume 1309-48-4	Magnesia Fume	N	2310/2315N99	15mg/m ³ (o)** 10mg/m ³ (t)*	750mg/m ³	*Measured as inhale fraction of the aerosol t-A4 **Total particulate fume

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Malathion 121-75-5	S-[1,2-bis(ethoxycarbonyl) ethyl]O, O-dimethyl-phosphorodithioate; Diethyl (dimethoxyphosphinothioylthio) succinate	OV/RP	7100+ 8970/7940 8100+ 8970/8940	Total dust 15mg/m ³ (o), 1mg/m ³ (t)*; -skin-	250mg/m ³	Substance for which an ACGIH BEI exists, t-A4; *Measured as inhalable fraction and vapor
Maleic Anhydride 108-31-6	cis-Butenedioic anhydride; 2,5-Furandione; Maleic acid anhydride; Toxicic anhydride	FF-OV/N95	9001/2/3+ 7100+8910	0.0025ppm(t)* 0.25ppm(o) DSEN; RSEN	10 mg/m ³	t-A4 *Measured as inhalable fraction and vapor
Manganese²⁺ Dust & Inorganic Compounds (as Mn) *7439-96-5	Colloidal manganese, Manganese-55	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (c)(o); 0.02mg/m ³ (t)* 0.1mg/m ³ (t)**	500mg/m ³ (as Mn)	TLV-A4 *Respirable **Inhalable
Manganese, Metal Fume (as Mn) 7439-96-5	Colloidal manganese, Manganese-55	N	2310/2315N99 2400/2800N95	0.02mg/m ³ (t)*; 5mg/m ³ (c)(o) 0.1mg/m ³ (t)**	500mg/m ³ (as Mn)	*Respirable **Inhalable
Marble	(See Calcium Carbonate)					
Mesityl Oxide 141-79-7	Isobutenyl methyl ketone, Isopropylideneacetone, Methyl isobutenyl ketone, 4-Methyl-3- penten-2-one	FF-OV	9001/2/3+ 7100	15ppm (t) 25ppm (o) 25ppm (s)(t)	1400ppm [10% LEL]	
Methacrylic Acid 79-41-4	Methacrylic acid (glacial), Methacrylic acid (inhibited), α-Methacrylic acid, 2-Methylacrylic acid, 2-Methylpropenoic acid	FF-OV	9001/2/3+ 7100	20ppm(t)	N.D.	
Methanethiol 74-93-1	(See Methyl Mercaptan)					
2-Methoxyethyl Acetate 110-49-6	Ethylene Glycol Methyl Ether Acetate; Glycol Monomethyl Ether Acetate; Methyl Cellosolve Acetate®; EG-ME	OV	7100 8100	0.1ppm (t); 25ppm (o); -skin-	200ppm	Substance for which ACGIH BEI exists
4-Methoxyphenol 150-76-5	Hydroquinone monomethyl ether, p-Hydroxyanisole, Mequinol, p-Methoxyphenol Monomethyl ether hydroquinone	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (t)	N.D.	
Methyl Acetate 79-20-9	Methyl ester of acetic acid, Methyl ethanoate	OV	7100 8100	200ppm (o)(t); 250ppm (s)(t)	3100ppm [10% Lower explosion limit]	Short service life
Methyl Acrylate 96-33-3	Methoxycarbonylethylene, Methyl ester of acrylic acid, Methyl propenoate	FF-OV	9001/2/3+ 7100	2ppm (t) 10ppm (o) -skin- -DSEN-	250ppm	t-A4
Methyl Cellosolve® 109-86-4	EGME, Ethylene glycol monomethyl ether, Glycol monomethyl ether, 2-Methoxyethanol	OV	7100 8100	0.1ppm (t); 25ppm (o); -skin-	200ppm	Substance for which ACGIH BEI exists
5-Methyl-3-Heptanone 541-85-5	Amyl ethyl ketone, Ethyl amyl ketone, 3-Methyl-5-heptanone	FF-OV	9001/2/3+ 7100	10ppm (t) 25ppm (o)	100ppm	
Methylamine 74-89-5	Aminomethane, Methylamine (anhydrous), Methylamine (aqueous), Monomethylamine	AM	7400 8400	10ppm (o), 5ppm (t); 15ppm (s)(t)	100ppm	Must use goggles for half mask
Methyl Cellosolve Acetate® 110-49-6	(See 2-Methoxyethyl Acetate)					
Methyl Chloroform 71-55-6	Chloroethene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized)	OV	7100 8100	350ppm (t)(o) 450ppm (s)(t)	700ppm	ACGIH BEI exists; t-A4
Methyl 2 Cyanoacrylate 137-05-3	Mecrylate, Methyl cyanoacrylate, Methyl -cyanoacrylate, Methyl ester of 2-cyanoacrylic acid	FF-OV	9001/2/3+ 7100	0.2ppm(t)	N.D.	ACGIH NIC to withdraw adopted TLV and documentation
Methylcyclopentadienyl Manganese Tricarbonyl 12108-13-3	Cl-2, Combustion Improver-2, Manganese tricarbonylmethylcyclopentadienyl, 2-Methylcyclopentadienyl manganese tricarbonyl, MMT	OV/N	7100+8910 8100+8910	0.2mg/m ³ (t); -skin-	N.D.	If heat involved, use supplied air
Methylcyclohexane 108-87-2	cyclohexylmethane; hexahydrotoluene	OV	7100/8100	400ppm(t) 500ppm(o)	1200ppm (LEL)	

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
4,4-Methylenedianiline 101-77-9	4,4-Diaminodiphenylmethane; MDA	NRP100	2730N100 2360P100 4400P100 7940/7990 8940/7990	0.01ppm (o); 0.1ppm (t); 0.1ppm (s)(o); -skin-	N.D.	Need OV/NRP100 if heat is involved. See 29 CFR 1910.1050; O-Ca; t-A3
Methyl Ethyl Ketone 78-93-3	see 2-Butanone					
Methyl Ethyl Ketone Peroxide 1338-23-4	2-Butanone peroxide; Ethyl methyl ketone peroxide; MEKP; MEK peroxide; Methyl ethyl ketone hydroperoxide	FF-OV	9001/2/3+ 7100	0.2ppm(t)(c)	N.D.	
Methyl Isoamyl Ketone 110-12-3	Isoamyl methyl ketone, Isopentyl methyl ketone, 2-methyl-5-hexanone, 5-Methyl-2-hexanone, methyl-2-Hexanone, MIAK	FF-OV	9001/2/3+ 7100	20ppm (t) 100ppm (o) 50ppm (s)(t)	N.D.	
Methyl Hydrazine 60-34-4	MMH, Monomethylhydrazine	FF-AM	9001/2/3+ 7400	0.01ppm(t) 0.2(c)(o) -skin-	20 ppm	t-A3
Methyl Isobutyl Carbinol 108-11-2	Methyl Amyl Alcohol	OV	7100 8100	25ppm (o)(t); 40ppm (s)(t); -skin-	400ppm	
Methyl Isobutyl Ketone 108-10-1	see Hexanone					
Methyl Isopropyl Ketone 563-80-4	2-Acetyl propane, Isopropyl methyl ketone, 3-Methyl-2-butanone, 3-Methyl butan-2-one, MIPK		9001/2/3+ 7100	20ppm (t)	N.D.	
Methyl (n-amy)l Ketone 110-43-0	Amyl methyl ketone, n-Amyl methyl ketone, 2-Heptanone, Amyl methyl ketone	OV	7100 8100	100ppm (o); 50ppm (t)	800ppm	Add 8940 or 7940 if Particulate is present
Methyl Mercaptan 74-93-1	Mercaptomethane, Methanethiol, Methyl sulfhydrate	OV	7100 8100	0.5ppm (t); 10ppm (c)(o)	150ppm	Very short service life
Methyl Methacrylate 80-62-6	Methacrylate monomer, Methyl ester of methacrylic acid, Methyl-2-methyl-2-propenoate	OV	7100 8100	100ppm (o) 50ppm (t) 100ppm (s)(t) -DSEN- -skin-	1,000ppm	t-A4
Methyl Parathion 298-00-0	Azophos®; O,O-Dimethyl-O-p-nitrophenylphosphorothioate; Parathion methyl	OV/P100	7100+7940 8100+8940	0.02mg/m³ (t);* -skin-	N.D.	Substance for which an ACGIH BEI exists; t-A4; *Measured as inhalable fraction and vapor
Methyl Propyl Ketone 107-87-9	see 2-Pentanone					
a-Methyl Styrene 98-83-9	1-Methyl-1-Phenyl-Ethylene; AMS; 2 Phenylpropylene; Isopropenyl Benzene	OV	7100 8100	10ppm (t); 100ppm (c)(o)	700ppm	Add 8970 or 7940 if Particulate is present t-A3
Mica (less than 1% quartz) 12001-26-2	Biotite, Lepidolite, Margarite, Muscovite, Phlogopite, Roscoelite, Zimmwaldite	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	20mppcf (o);** 3mg/m³ (t)*	1,500mg/m³	Does not include strearates of toxic metals; *Measured as respirable fraction of aerosol **<1% Silica
Mineral Spirits	(See Stoddard Solvent)					
Molybdenum - Soluble Compounds – Inorganics only (as Mo) 7439-98-7		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m³ (o) 0.5mg/m³ (t)* {water soluble}	1,000mg/m³ (as Mo)	*Respirable fraction; t-A3
Molybdenum - Insoluble Compounds and Metal Dust – Inorganics only (as Mo) 7439-98-7		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m³ (t)** 15mg/m³ (o)* 3mg/m³ (t)***	5,000mg/m³ (as Mo)	*Total dust; ***Respirable fraction and **Inhalable fraction
Monochlorobenzene 108-90-7	(See Chlorobenzene)					
Morpholine 110-91-8	Diethylene imidoxide; Diethylene oximide, Tetrahydro-1,4-oxazine; Tetrahydro-p-oxazine	FF-OV	9001/2/3+ 7100	20ppm (o) (t) -skin-	1400ppm [10% LEL]	t-A4
Muriatic Acid 7647-01-0	(See Hydrogen Chloride)					

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
-N-						
Naphtha (Coal tar) 8030-30-6	crude solvent coal tar naphtha, High solvent naphtha, Naptha	FF-OV	9001/2/3+ 7100	100ppm (o)	1000ppm [10% LEL]	
Napthalene 91-20-3	Naphthalin, Tar camphor, White tar	OV/N	7100+8910 8100+8910	10ppm (o)(t); -skin-	250ppm	ACGIH BEI exists t-A3
a-Naphthylamine 134-32-7	1-Aminonaphthalene, 1-Naphthylamine				N.D.	See 29CFR1910.1003 and 1004; O-Ca
b-Naphthylamine 91-59-8	2-Aminonaphthalene, 2-Naphthylamine	{water soluble}			N.D.	See 29CFR1910.1003, t-A1; O-Ca
Nickel, Soluble Compounds (as Ni) (Inorganic only) (Not including Nickel Carbonyl)		N {water soluble}	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.1mg/m ³ (t)* 1mg/m ³ (o)	10mg/m ³ (as Ni)	*Inhalable fraction, t-A4
Nickel, Insoluble Compounds (as Ni) (Not including Nickel Carbonyl)		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1.0mg/m ³ (o), 0.2mg/m ³ (t)*	10mg/m ³ (as Ni)	*Inhalable fraction, t-A1
Nickel, Metal 7440-02-0		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1mg/m ³ (o), 1.5mg/m ³ (t)*	10mg/m ³ (as Ni)	*Inhalable fraction, t-A5
Nicotine 54-11-5	3-(1-Methyl-2-Pyrrolidyl) Pyridine	OV/RP	7100+8970/7940 8100+8970/8940	0.5mg/m ³ (o)(t); -skin-	5mg/m ³	
p-Nitroaniline 100-01-6	para-Aminonitrobenzene, 4-Nitroaniline, 4-Nitrobenzenamine, p-Nitrophenylamine, PNA	OV/N	7100+8910 8100+8910	3mg/m ³ (t); 6mg/m ³ (o) -skin-	300mg/m ³	Substance for which an ACGIH BEI exists t-A4
Nitrobenzene 98-95-3	Essence of mirbane, Nitrobenzol, Oil of mirbane	OV	7100 8100	1ppm (o)(t); -skin-	200ppm	t-A3
Nitroethane 79-24-3	Nitroetan	FF-OV	9001/2/3+ 7100	100ppm (o) (t)	1000ppm	
Nitromethane 75-52-5	Nitrocarbol	OV	7100 8100	20ppm (t) 100ppm (o)	750ppm	t-A3
1-Nitropropane 108-03-2	Nitropropane, 1-NP	OV	7100 8100	25ppm (t)(o)	1000ppm	t-A4
2-Nitropropane 79-46-9	Dimethylnitromethane, iso-Nitropropane, 2-NP	OV	7100 8100	10ppm (t) 25ppm (o)	100ppm	t-A3
Nonane 111-84-2	n-Nonane, Nonyl hydride	OV	7100 8100	200ppm (t)	N.D.	
Nuisance particulates	See (Particulates not otherwise classified)					
-O-						
Octachloronaphthalene 2234-13-1	Halowax 1051, 1,2,3,4,5,6,7,8-Octachloronaphthalene, Perchloronaphthalene	OV/N	7100+8910 8100+8910	0.1mg/m ³ (o)(t); 0.3mg/m ³ (s)(t); -skin-	1mg/m ³ *	Add 8910 if particulate is present. *NIOSH set "Effective" IDLH at 10x the Recommended Exposure Limit (REL)
Octane 111-65-9	n-Octane, normal-Octane	OV	7100 8100	500ppm (o)* 300ppm (t)	1,000ppm; [10% Lower explosion limit]	*n-Octane only
Oil Mist (Mineral) 8021-95-1	White Mineral Oil; Heavy Mineral Oil; Paraffin Oil	RP	2740R95/8970 7940/7990 8940/8990	5mg/m ³ (o)	2,500mg/m ³	
Oxalic Acid 144-62-7	Ethanedioic acid, Oxalic acid (aqueous), Oxalic acid dihydrate	OV/N	7100+8910 8100+8910	1mg/m ³ (o)(t); 2mg/m ³ (s)(t)	500mg/m ³	
-P-						
Paraffin Wax Fume 8002-74-2		RP	2740R95/ 2360P100/8970 7940/7990 8940/8990	2mg/m ³ (t)	N.D.	
Paraquat Dichloride 1910-42-5	1,1'-Dimethyl-4,4'-bipyridinium dichloride; N,N'-Dimethyl-4,4'-bipyridinium dichloride; Paraquat chloride; Paraquat dichloride	OV/NRP	7100+8910/ 8970/8940 8100+8910/ 8970/8940	0.5mg/m ³ (o);* 0.5mg/m ³ (t); 0.1mg/m ³ (t);* *Respirable dust as Fraction of the aerosol -skin-	1mg/m ³ (t)	ACHIH NIC to 0.05 measured as inhalable fraction of the aerosol as the cation and t-A4 and -skin-

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Parathion 56-38-2	O,O-Diethyl-O(p-nitrophenyl) phosphorothioate; Diethyl parathion; Ethyl parathion;	OV/P100	7100+7940 8100+8940	0.1mg/m ³ (o); -05mg/m ³ (t)* -skin-	10mg/m ³	Substance for which an ACGIH BEI exists; t-A4; *Measured as inhalable fraction and vapor
Particulates Not Otherwise Classified (PNOC)		NRP	See note**	Total dust 15mg/m ³ (o) or 50mppcf(o); Respirable fraction 5mg/m ³ (o) or 15mppcf (o)		**Caution is advised category includes many materials, R or P filter is suggested if oils are present
Pentachloronaphthalene 1321-64-8	Halowax® 1013; 1,2,3,4,5-Pentachloronaphthalene	OV/N	7100+8910 8100+8910	0.5mg/m ³ (o)(t); -skin-	5mg/m ³ *	*NIOSH set "Effective" IDLH at 10x the Recommended Exposure Limit (REL)
Pentachlorophenol 87-86-5	PCP; Penta; 2,3,4,5,6-Pentachlorophenol	OV/N	7100+8910 8100+8910	0.5mg/m ³ (o); 0.5mg/m ³ (t)*; 1.0mg/m ³ (s)(t)* -skin-	2.5mg/m ³	Substance for which an ACGIH BEI exists; t-A3; *Measured as inhalable fraction and vapor
Pentaerythritol 115-77-5	2,2-bis(Hydroxymethyl)-1,3-propanediol; Methane tetramethylol; Monopentaerythritol; PE; Tetrahydroxymethylolmethane; Tetramethylolmethane	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m ³ (t); Total dust 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
2-Pentanone 107-87-9	Methyl Propyl Ketone, MPK, Ethyl acetone	FF-OV	9001/2/3+ 7100	200ppm (o) 150ppm (s)(t)	1500ppm	
Perchloroethylene	see tetrachoroethylene					
Perchloromethyl Mercaptan 594-42-3	PCM, PMM, Trichloromethane sulfenyl chloride, Trichloromethyl sulfur chloride	OV	7100 8100	0.1ppm (o)(t)	10ppm	
Perlite 93763-70-3	Sodium Potassium Aluminum Silicate Expanded perlite	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total Dust 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
Petroleum Distillates (Naptha) 8002-05-9	Petroleum Naptha; Aliphatic Petroleum Naptha; Rubber Solvent	OV	7100 8100	500ppm (o)	1,100ppm; [10% Lower explosion limit]	Odors vary. Must have good warning properties to use 8100 or 7100. Specific TLV's apply
Phenol 108-95-2	Carbolic acid, Hydroxybenzene, Monohydroxybenzene, Phenyl alcohol, Phenyl hydroxide	OV/N	7100+8910 8100+8910	5ppm (o)(t); -skin-	250ppm	Substance for which an ACGIH BEI exists; t-A4
p-Phenylene Diamine 106-50-3	4-Aminoaniline; 1,4-Benzenediamine; p-Diaminobenzene; 1,4-Diaminobenzene; 1,4-Phenylene diamine	OV/N	7100+8910 8100+8910	0.1mg/m ³ (o)(t); -skin-	25mg/m ³	Use supplied air if heat is involved; t-A4
Phenyl Ether, Vapor 101-84-8	Diphenyl ether, Diphenyl oxide, Phenoxy benzene, Phenyl oxide	OV/N	7100+8910 8100+8910	1ppm (o)(t); 2ppm (s)(t)	100ppm	
Phenyl Ether - Biphenyl Mixture; Vapor 8004-13-5	Dowtherm™ A, Diphenyl Oxide - Diphenyl Mixture	OV/N	7100+8910 8100+8910	1ppm (o)	10ppm	Add 8910 if Particulate is present
Phenylphosphine 638-21-1	Fenylfosfin, PF, Phosphaniline	OV	7100/8100	0.05ppm(c)(t)	N.D.	
Phenylethylene 100-42-5	(see Styrene Monomer)					
Phosphoric Acid 7664-38-2	Orthophosphoric acid, Phosphoric acid (aqueous), White phosphoric acid	FF-N95	9001/2/3+ 7940/7990	1mg/m ³ (o)(t) 3mg/m ³ (s)(t)	1000mg/m ³	
Phosphorus Pentasulfide 1314-80-3	Phosphorous persulfide, Phosphorous sulfide, sulfur phosphide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1mg/m ³ (o)(t); 3mg/m ³ (s)(t)	250mg/m ³	
Phosphorous Trichloride 7719-12-2	Phosphorus chloride	FF-AG	9001/2/3+ 7200	0.2ppm(t) 0.5ppm(s)(t) 0.5ppm(o)	25 ppm	

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Phthalic Anhydride 85-44-9	Phosphoric Sulfide	OV/N	7100+8910 8100+8910	2ppm (o) .0003ppm (t)* .0009ppm (s)(t)* DSEN RSEN -skin-	10ppm	t-A4; *Measured as inhalable fraction and vapor
m-Phthalodinitrile 626-17-5	Isophthalodinitrile; IPN; m-Dicyanobenzene	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (t)*	N.D.	*Measured as inhalable fraction and vapor
Picric Acid 88-89-1	Phenol trinitrate; 2,4,6-Trinitrophenol	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.1mg/m ³ (o)(t); -skin-	75mg/m ³	
Pindone 83-26-1	Tert-Butylvalone, mist 1,3-Dioxo-2-Pivaloyl-Lindane; Pival; Pivalyl; 2 Pivalyl-1-3-inandione	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.1mg/m ³ (o)(t)	100mg/m ³	
Platinum Metal, Dusts and Mists 7440-06-4	Platinum black, Platinum metal, Platinum sponge	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1mg/m ³ (t) {water-based}	N.D.	
Platinum Soluble Salts 7440-06-4	Synonyms vary depending upon the specific soluble platinum salt	FF-N95	9001/2/3+ 7940/7990	.002mg/m ³ (o)(t)	4mg/m ³ (as Pt)	
Portland Cement 65997-15-1	Hydraulic Cement; Cement; Portland Cement Silicate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 15mg/m ³ (o) or 50mppcf (o); Respirable fraction 5mg/m ³ (o); 1mg/m ³ (t)*	5,000mg/m ³	*Measured as respirable fraction of the aerosol; t-A4
Potassium Hydroxide 1310-58-3	Caustic Potash; Lye; Potassium Hydrate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	2mg/m ³ (c)(t)	N.D.	
Propargyl Alcohol 107-19-7	1-Propyn-3-ol; 2-Propyn-1-ol; 2-Propynyl alcohol	OV	7100 8100	1ppm (t) -skin-	N.D.	
Propionic Acid 79-09-4	Carboxyethane, Ethanecarboxylic acid, Ethylformic acid, Metacetic acid, Methyl acetic acid, Propanoic acid	FF-OV	9001/2/3+ 7100	10ppm (t)	N.D.	
n-Propyl Acetate 109-60-4	Propylacetate, n-Propyl ester of acetic acid	FF-OV	9001/2/3+ 7100	200ppm (o)(t) 250ppm (s)(t)	1700ppm	
n-Propyl Alcohol 71-23-8	1-propanol, n-propanol, propanol, Ethyl carbinol	FF-OV	9001/2/3+ 7100	100ppm (t) 200ppm (o)	800ppm	Add particulate prefilter if particulate is present t-A4
Propylene Dichloride 78-87-5	Dichloro-1,2-propane; 1,2-Dichloropropane	OV	7100 8100	10ppm (t); 75ppm (O) -DSEN-	400ppm	t-A4
Propylene Glycol Dinitrate 6423-43-4	PGDN; Propylene glycol-1,2-dinitrate; 1,2 Propylene glycol dinitrate	FF-OV	9001/2/3+ 7100	0.05ppm -skin-	N.D.	Substance for which an ACGIH BEI exists
Propylene Imine 75-55-8	2-Methylaziridine; 2-Methylethyleneimine; Propyleneimine (inhibited); Propylenimine	FF-OV	9001/2/3+ 7100 -skin-	0.2ppm (t), 0.4ppm (s)(t), 2ppm(o)	100ppm	t-A3;
n-Propyl Nitrate 627-13-4	Propyl ester of nitric acid	OV	7100/8100	25ppm(t) 40ppm(s)(t) 25ppm(o)	500 ppm	Substance for which ACGIH BEI exists
Propylene Glycol Monomethyl Ether 107-98-2	Dowtherm® 209, 1-Methoxy-2-hydroxypropane, 1-Methoxy-2-propanol, 2-Methoxy-1-methylethanol, Propylene glycol methyl ether	OV	7100 8100	50ppm (t); 100ppm (s)(t)	N.D.	
Pyrethrum 8003-34-7	Cinerin I or II; Jasmolin I or II; Pyrethrin I or II; Pyrethrum I or II [Pyrethrum is a variable mixture of Cenerin, Jasmolin and Pythrin]	OV/P100	7100/7940 8100/8940	5mg/m ³ (o)(t)	5,000mg/m ³	t-A4
Pyridine 110-86-1	Azabenzene; Azine	OV	7100 8100	5ppm (o) 1ppm (t)	1,000ppm	t-A3

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
-Q-						
Quartz	(See Silica, Crystalline)					
Quinone 106-51-4	Benzoquinone, 1,4-Benzoquinone; p-Benzoquinone, 1,4-Cyclohexadiene dioxide, p-Quinone	FF-OV/N95	9001/2/3+ 7100/8910	0.1ppm (o)(t)	22ppm	
-R-						
Resorcinol 108-46-3	1,3-Benzenediol; m-Benzenediol; 1,3-Dihydroxybenzene; m-Dihydroxybenzene; 3-Hydroxyphenol; m-Hydroxyphenol	OV/N	7100/8910 8100/8910	10ppm (t); 20ppm (s)(t)	N.D.	t-A4
Rhodium, Metal* and Insoluble Compounds, Dusts and Mists (as Rh) *7440-16-6		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.1mg/m ³ (o); 1mg/m ³ (t) {water-based}	100mg/m ³ (as Rh)	t-A4
Rhodium, Metal Fume (as Rh) 7440-16-6		N	2310/2315N99 2400/2800N95 4800N95	0.1mg/m ³ (o) 1mg/m ³ (t)	100mg/m ³ (as Rh)	t-A4
Rhodium, Soluble Compounds (as Rh)		NRP100	2730N100 2360P100 4400P100 4700N100 7940/7990 8940/8990	0.001mg/m ³ (o); 0.01mg/m ³ (t)	2mg/m ³ (as Rh)	t-A4
Ronnel 299-84-3	O,O-Dimethyl O-(2,4,5-trichlorophenyl) phosphorothioate; Fenchlorophos	OV/NRP100	7100+7940 8100+8940	5mg/m ³ (t)* 15mg/m ³ (o)	300mg/m ³	Substance for which ACGIH BEI exists, t-A4. *Measured as inhalable fraction and vapor
Rotenone 83-79-4	1,2,12,12a-Tetrahydro-8,9-dimethoxy-2-(1-methylethenyl)-[1]benzopyrano[3,4-b]furo[2,3-h][1]benzopyran-6(6aH)-one	OV/NRP100	7100+7940 8100+8940	5mg/m ³ (o)(t)	2,500mg/m ³	t-A4
Rouge 1309-37-1	Iron(III)oxide, Iron oxide red, Red iron oxide, Red oxide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
-S-						
Selenium Metal 7782-49-2		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.2mg/m ³ (t)	1mg/m ³ (as Se)	
Silica-Amorphous, Diatomaceous Earth (Uncalcined) 61790-53-2		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	20mppcf (o) or 80mg/m ³ (o) %SiO ₂	3000mg/m ³	
Silica-Crystalline **14464-46-1 14808-60-7 ^15468-32-3 ^^1317-95-9	Cristobalite,** Quartz,* Tridymite,Δ TripoliΔΔ	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Respirable dust 0.05mg/m ³ (o); 0.025mg/m ³ (t)***	50mg/m ³ (Crystalline quartz, tripoli) 25mg/m ³ (cristobalite, tridymite)	*,**t-A2; ***Measured as respirable fraction of aerosol for quartz and cristobalite
Silicon 7440-21-3	Elemental silicon	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	15mg/m ³ (o); total dust Respirable fraction 5mg/m ³ (o)		
Silicon Carbide 409-21-2	Carbon Silicide; Carborundum; Silicon Monocarbide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Fibrous Dust 0.1mg/m ³ (t) including whiskers*** 15mg/m ³ (t) total dust 5mg/m ³ (o) respirable dust Non-Fibrous Dust 10mg/m ³ *,Δ 3mg/m ³ **,Δ		t-A2 *Inhalable fraction of the aerosol **Respirable fraction of the aerosol ***Respirable fibers length >5μ; aspect ratio ≥3:1, as determined by the membrane filter method at 400-450x magnification (4-mm objective), using phase-contrast illumination. ΔParticulate matter containing no abestos and <1% crystalline silica

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Silver, Metal; Dust 7440-22-4		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.01mg/m ³ (o); 0.1mg/m ³ (t)	10mg/m ³ (as Ag)	
Silver, Soluble Compounds (as Ag) 7440-22-4		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.01mg/m ³ (o)(t) {water-based}	10mg/m ³ (as Ag)	
Soapstone	Massive Talc; Steatite; Soapstone Silicate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total dust 20mppcf (o);	3,000mg/m ³	Total dust containing no Asbestos and <1% Crystalline Silica
Sodium Aluminum Fluoride 15096-52-3	Cryocide, Cryodust, Cryolite; Sodium Hexafluoroaluminate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	2.5mg/m ³ (o)	250mg/m ³ (as F)	
Sodium Bisulfite 7631-90-5	Monosodium salt of sulfurous acid, Sodium acid bisulfite, Sodium bisulphite, Sodium hydrogen sulfite	AG/N	7200+8910 8200+8910	5mg/m ³ (t)		t-A4
Sodium Fluoroacetate 62-74-8	SFA, Sodium monofluoroacetate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.05mg/m ³ (o)(t); -skin-	2.5mg/m ³	
Sodium Fluoride 7681-49-4	Floridine, Sodium Monofluoride	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	2.5mg/m ³ (o)(t)*	250mg/m ³	t-A4; substance for which an ACGIH BEI exists *(as F)
Sodium Hydroxide 1310-73-2	Caustic soda, Lye, Soda lye, Sodium hydrate	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	2mg/m ³ (o); 2mg/m ³ (c)(t)	10mg/m ³	
Sodium Metabisulfite 7681-57-4	Sodium Pyrosulfite	AG/N	8200+8910 7200+8910	5mg/m ³ (t)	N.D.	t-A4
Starch 9005-25-8	Corn starch, Rice starch, Sorghum gum, -Starch, Starch gum, Tapioca starch	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m ³ (t)*; 15mg/m ³ (o)*; Respirable fraction 5mg/m ³ (o)	N.D.	t-A4; *Total dust
Stoddard Solvent 8052-41-3	Dry cleaning safety solvent, Mineral spirits, Petroleum solvent, Spotting naphtha	OV	7100 8100	100ppm (t) 500ppm (o)	20,000mg/m ³	
Strychnine 57-24-9	Nux vomica, Strychnos	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.15mg/m ³ (o)(t)	3mg/m ³	
Styrene, Monomer 100-42-5	Ethenyl benzene, Phenylethylene, Styrene monomer, Styrol, Vinyl benzene	OV	7100 8100	20ppm (t)*; 100ppm -(o); - 40ppm (s)(t) 200ppm (c)(o) [600ppm (c)(o); 5 min peak/any 3 hrs]	700ppm	*Substance for which an ACGIH BEI exists; t-A4
Sucrose 57-50-1	Beet sugar, Cane sugar, Confectioner's sugar, Granulated sugar, Rock candy, Saccarose, Sugar, Table sugar	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m ³ (t)*; 15mg/m ³ (o)*; Respirable fraction 5mg/m ³ (o)		t-A4; *Total dust
Sulfur Dioxide 7446-09-5	Sulfurous acid anhydride, Sulfurous oxide, Sulfur oxide	AG	7200 8200	5ppm (o); 0.25ppm (s)(t)	100ppm	t-A4
Sulfur Pentafluoride 5714-22-7	Disulfur decafluoride, Sulfur decafluoride	AG	7200/8200	0.1ppm (c)(t) 0.025ppm (s)(o)	1 ppm	
Sulfur Tetrafluoride 7783-60-0	Tetrafluorosulfurane	AG	7200/8200	0.1ppm (c)(t)	N.D.	
Sulfur Monochloride 10025-67-9	Sulfur chloride, Sulfur subchloride, Thiosulfurous dichloride	FF-AG	9001/2/3 w 7200/7300/ 7600	1ppm (c)(t) 1ppm (o)	5ppm	
Sulfuric Acid 7664-93-9	Battery acid, Hydrogen sulfate, Oil of vitriol, Sulfuric acid (aqueous)	AG/N	7200+8910 8200+8910	1mg/m ³ (o) 0.2mg/m ³ (t)*	15mg/m ³	Must use appropriate eye protection, t-A2 for Sulfuric Acids contained in strong inorganic acid mists *Measured as Thoracic fraction of the aerosol

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
-T-						
2,4,5-T 93-76-5	2,4,5-Trichlorophenoxy Acetic Acid	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m ³ (o)(t)	250mg/m ³	t-A4
Talc; (Containing no Asbestos Fibers) 14807-96-6	Non-Asbestiform Talc; Hydrous Magnesium Silicate; Steatite Talc; Non-Fibrous Falc	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Respirable dust* 2mg/m ³ (t); 20mppcf (o)	1,000mg/m ³	*Particulate containing no Asbestos and <1%; t-A4
Talc (Containing Asbestos Fibers)	(Use Asbestos recs. and see 29CFR1910.1001)					Containing Crystalline Silica, <1% quartz
Tantalum, Metal & Oxide Dusts (as Ta) 7440-25-7 (metal) 1314-61-0 (oxide dusts)	Tantalum-181	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (o)	2,500mg/m ³ (as Ta)	
Tellurium* & Compounds, Dusts & Mists (Except Hexafluoride) (as Te) *13494-80-9		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.1mg/m ³ (o)(t)* {water-based mists}	25mg/m ³	*Except Hydrogen Telluride
Terphenyls 26140-60-3 84-15-1 92-06-8 92-94-4	o-Terphenyl; m-Terphenyl; p-Terphenyl; Mixed Terphenyls; Diphenyl Benzenes	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (c)(t) 9mg/m ³ (c)(o)	500mg/m ³	OV+ particulate filter may be suggested if heat is involved
1,1,2,2-Tetrabromoethane 79-27-6	Acetylene tetrabromide, Muthmann's liquid, tetrabromoethane, Tetrabromoethylene		7100+7940 8100+8940	0.1ppm (t)* 1ppm (o)	8ppm	Measured as inhalable fraction and vapors Use 8940 or 7940 when particulate is present
1,1,2,2 Tetrachloroethane 79-34-5		OV	7100 8100	1ppm (t) 5ppm (o) -skin-	100ppm	t-A3
Tetrachloroethylene 127-18-4	perchloroethylene, perchloroethylene, perk	FF-OV	9001/2/3+ 7100	25ppm (t) 100ppm (s)(t) 100ppm (o) 200ppm (c)(o) 300ppm 5 min peak in any 3 hrs	150ppm	Substance for which ACGIH BEI exists; t-A3
Tetrachloronaphthelene 1335-88-2	Halowax®, Nibren wax, Seekay wax	OV/N	7100,8910 8100+8910	2mg/m ³ (o)(t) -skin-	50mg/m ³	
Tetraethyl Lead Pb 78-00-2	Lead tetraethyl, TEL, Tetraethylplumbane	OV	7100/8100	0.1mg/m ³ (t) 0.075mg/m ³ (o) -skin-	40 mg/m ³ (as Pb)	t-A4
Tetramethyl Lead 75-74-1	Lead tetramethyl, Tetramethylplumbane, TML	OV	7100/8100	0.15mg/m ³ (t) 0.075mg/m ³ (o) -skin-	40 mg/m ³ (as Pb)	
Tetrahydrofuran 109-99-9	Diethylene oxide; 1,4-Epoxybutane; Tetramethylene oxide; THF	OV	7100 8100	50ppm (t); 100ppm (s)(t) 200ppm (o)	2,000ppm (10% lower explosion limit)	t-A3
Tetranitromethane 509-14-8	Tetan, TNM	OV	7100/8100	0.005ppm(t) 1ppm(o)	4 ppm	t-A3
Tetryl 479-45-8	N-Methyl-N,2,4,6-tetranitroaniline; Nitramine; 2,4,6-Tetryl; 2,4,6-Trinitrophenyl-N-methylnitramine	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1.5mg/m ³ (o)(t); -skin-	750mg/m ³	
Thallium; Elemental and Soluble Compounds (as Ti) *7440-28-0		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.1mg/m ³ (o); 0.02mg/m ³ (t)* -skin-	15mg/m ³ (as Ti)	*Measured as inhalable fraction and vapors
4, 4'-Thiobis (6 Tert-Butyl-m-Cresol) 96-69-5	4,4' -Thiobis (3-Methyl-6-Tert-Butylphenol)	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1mg/m ³ (t)*; 15mg/m ³ (o) Total dust; Respirable fraction 5mg/m ³ (o)	N.D.	t-A4; *Measured as inhalable fraction of the aerosol
Thionyl Chloride 7719-09-7	Sulfinyl chloride, Sulfur chloride oxide, Sulfurous dichloride, Sulfurous oxychloride, Thionyl dichloride	FF-OV	9001/2/3+ 7100	0.2ppm(c)(t)	N.D.	
Thiram 137-26-8		OV/NRP100	7100+7940 8100+8940	5mg/m ³ (o); 0.05mg/m ³ (t)* DSEN	100mg/m ³	tA-4; *Measured as inhalable fraction and vapors
Tin, Inorganic Compounds (Except SnH₄) and Metal Oxides (as Sn), Dusts & Mists		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	2mg/m ³ (o)* 2mg/m ³ (t) {water-based mists}	100mg/m ³ (as Sn) except for Tin (II) and Tin (IV)	*Inorganic compound except oxides

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Tin, Organic Compounds (as Sn) 7440-31-5		OV/N	7100+8910 8100+8910	0.1mg/m ³ (o)(t); 0.2mg/m ³ (s)(t); -skin-	25mg/m ³	t-A4
Titanium Dioxide 13463-67-7	Rutile, Titanium oxide, Titanium peroxide	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m ³ (t) 15mg/m ³ (o)*	5000mg/m ³	*Total dust, t-A4;
Toluene 108-88-3	Methyl benzene, Methyl benzol, Phenyl methane, Toluol	OV	7100 8100	20ppm (t); 200ppm (o); 300ppm (c)(o); [500ppm 10 min peak per 8 hr shift (c)(o)]	500ppm	t-A4 substance for which an ACGIH BEI exists
m-Toluidine 108-44-1	3-Amino-1-Methylbenzene, 3-Methylaniline, 3-Methylbenzenamine, 3-Toluidine, Meta-Toluidine, 1-Aminophenyl Methane; m-Aminotoluene; m-Tolylamine	FF-OV	9001/2/3+ 7100	2ppm(t) -skin-	N.D.	t-A4 Substance for which ACGIH BEI exists
o-Toluidine 95-53-4	o-Aminotoluene, 2-Aminotoluene, 1-Methyl-2-aminobenzene, o-Methylaniline, 2-Methylaniline, ortho-Toluidine, o-Tolylamine	FF-OV	9001/2/3+ 7100	2ppm (t) 5ppm (o) -skin-	50 ppm	t-A3 Substance for which ACGIH BEI exists
p-Toluidine 106-49-0	4-Aminotoluene, 4-Methylaniline, 4-Methylbenzenamine, 4-Toluidine, para-Toluidine, p-Tolylamine	FF-OV	9001/2/3+ 7100	2ppm (t) -skin-	N.D.	t-A3 Substance for which ACGIH BEI exists
Tributyl Phosphate 126-73-8	Butyl phosphate, TBP, Tributyl ester of phosphoric acid, Tri-n-butyl phosphate	OV/RP	7100+ 8970/7940 8100+ 8970/8940	5mg/m ³ (o)(t)*	30ppm	*Measured as respirable fraction and vapor; Substance for which an ACGIH (Acetylcholinesterase Inhibiting Pesticide) BEI exists; t-A3
Trichloroacetic Acid 76-03-9	TCA, Trichloroethanoic acid	OV/AG	7300 8300	0.5ppm (t)	N.D.	t-A3
1,2,4-Trichlorobenzene 120-82-1	unsym-Trichlorobenzene; 1,2,4-Trichlorobenzol	OV	7100 8100	5ppm (c)(t)	N.D.	
1,1,2-Trichloroethane 79-00-5	Ethane trichloride, b-Trichloride, Vinyl trichloride	FF-OV	9001/2/3+ 7100	10ppm(t) 10ppm (o) -skin-	100 ppm	t-A3
Trichloroethylene 79-01-6	Ethylene trichloride, TCE, Trichloroethene, Trilene	OV	7100 8100	10ppm (t); 100ppm (o); 200ppm (c)(o) [300ppm 5 min peak in any 2 hrs] 25ppm (c)(t)	1000ppm	substance for which an ACGIH BEI exists; t-A2
Trichloronaphthalene 1321-65-9	Hallowax; Seekay Wax; Nibren Wax	OV/N	7100+8910 8100+8910	5mg/m ³ (o)(t); -skin-	20mg/m ³	Use 8940 when particulate is present
1,2,3-Trichloropropane 96-18-4	Allyl trichloride, Glycerol trichlorohydrin, Glyceryl trichlorohydrin, Trichlorohydrin	FF-OV	9001/2/3+ 7100	.005ppm (t) 50ppm (o)	100ppm	t-A2
Tridymite	(See Silica Crystalline)					
Triethylamine 121-44-8	TEA	FF-OV	9001/2/3+ 7100	0.5ppm (t) 1ppm (s)(t) 25ppm (o) -skin-	200ppm	t-4A
Trimellitic Anhydride 552-30-7	TMA	OV/N	7100+8910 8100+8910	0.0005mg/m ³ (t)* 0.002mg/m ³ (c)(t)* -skin- -DSEN- -RSEN-		*Measured as inhalable fraction and vapors
Trimethylamine 75-50-3	N,N-Dimethylmethanamine; TMA [Note: May be used in an aqueous solution (typically 25%, 30%, or 40% TMA.)]	FF-AM	9001/2/3+ 7400/7600	5ppm (t) 15ppm (c)(t)	N.D.	
Trimethyl Benzene* 95-63-6; 108-67-8; 526-73-8	Mesitylene; Pseudocumene; Hemimellitene	OV/P100	7100+7940 8100+8940	25*ppm (t)		*All isomers and mixed isomers

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
Trimethylphosphite 121-45-9	Methyl phosphite, Trimethoxyphosphine, Trimethyl ester of phosphorous acid	FF-OV	9001/2/3+ 7100	2ppm (t)	N.D.	
2,4,6-Trinitrophenol 88-89-1	(See Picric Acid)					
2,4,6-Trinitrophenylmethyl-Nitramine 479-45-8	(See Tetryl)					
2,4,6-Trinitrotoluene 118-96-7	1-Methyl-2,4,6-trinitrobenzene; TNT; Trinitrotoluene; sym-Trinitrotoluene; Trinitrotoluol	OV/N	7100+8910 8100+8910	0.1mg/m ³ (t); 1.5mg/m ³ (o) -skin-	500mg/m ³	Substance for which an ACGIH BEI (Methemoglobin inducer) exists
Triorthocresyl Phosphate 78-30-8	o-Tritolyl Phosphate; TCP; TOCP; Tricresylphosphate	R/P	2740R95 7940/7990 4400P100 8970/8940 8990	0.1mg/m ³ (o); 0.013ppm(t)* -skin-	40mg/m ³	Substance for which as ACGIH BEI exists (Acetylcholinesterase Inhibiting Pesticide). *Measured as inhalable fraction and vapor
Triphenyl Phosphate 115-86-6	Phenyl phosphate; TPP; Triphenyl ester of phosphoric acid	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	3mg/m ³	1,000mg/m ³	t-A4, use 8100, or 7100 and 8910 if heat is involved
Tripoli	(See Silica-Crystalline)					
Tungsten* In the absence of cobalt *7440-33-7	Tungsten metal, Wolfram	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	3mg/m ³ (t);*	N.D.	*Measured as the respirable fraction and the aerosol
Turpentine 8006-64-2	Gumspirits, Gum turpentine, Spirits of turpentine, Steam distilled turpentine, Sulfate wood turpentine, Turps, Wood turpentine	FF-OV	9001/2/3+ 7100	100ppm (o) 20ppm (t) -DSEN-	800ppm	t-A4, add particulate prefilter if particulate is present
-U-						
Uranium (natural)*, insoluble compounds (as U) *7440-61-1		NRP100	2730N100 2360P100 4400P100 8940/8990	0.25mg/m ³ (o) 0.2mg/m ³ (t); 0.6mg/m ³ (s)(t)	10mg/m ³ (as U)	t-A1, Refer to 10CFR20 Subpart H
Uranium (Natural)*, Soluble Compounds (as U) 7440-61-1		AG/P100	7200+7940 8200+8940	0.05mg/m ³ (o); 0.2mg/m ³ (t); 0.6mg/m ³ (s)(t)	10mg/m ³ (as U) {water soluble}	t-A1, Refer to 10CFR20 Subpart H. Use 8200+8940 or 7200+7940 when halides are present
-V-						
n-Valeraldehyde 110-62-3	Amyl aldehyde, Pentanal, Valeral, Valeraldehyde, Valeric Aldehyde	FF-OV	9001/2/3+ 7100	50ppm (t)	N.D.	
Vanadium Pentoxide Dust (as V₂O₅) 1314-62-1		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.05mg/m ³ (t) inhalable fraction; 0.5mg/m ³ (c)(o)	35mg/m ³ (as V)	t-A3
Vanadium Pentoxide Fume (as V₂O₅) 1314-62-1		N	2310/2315N99 2400/2800N95	0.05mg/m ³ (t) inhalable fraction; 0.1mg/m ³ (c)(o)	35mg/m ³ (as V)	t-A3
Vegetable Oil, Mists		RP	2740R95/ 4400P100/8970 7940/7990 8940/8990	Total particulates 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o)	N.D.	
Vinyl Acetate 108-05-4	1-Acetoxyethylene, Ethenyl acetate, Ethenyl ethanoate, VAC, Vinyl acetate monomer, Vinyl ethanoate	FF-OV	9001/2/3+ 7100	10ppm (t) 15ppm (s)(t)	N.D.	t-A3; Add particulate prefilter if particulate is present
Vinyl Benzene 100-42-5	(See Styrene, Monomer)					
Vinyl Cyanide 107-13-1	(See Acrylonitrile)					
Vinyl Toluene 25013-15-4	Ethenylmethylbenzene, Methylstyrene, Tolyethylene	FF-OV	9001/2/3+ 7100	50ppm (t) 100ppm (s)(t) 100ppm (o)	400ppm	t-A4 *Add particulate prefilter if particulate is present

Chemical – CAS#	Synonyms	Filter Type	Moldex Suggested	TLV(t) PEL(o)	IDLH	Comments
-W-						
Warfarin 81-81-2	3-(Acetyl)-benzyl-4-hydroxycoumarin; 4-Hydroxy-3-(3-oxo-1-phenyl butyl)- 2H-1-benzopyran-2-one; WARF	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.01mg/m ³ (o)(t)* -skin-	100mg/m ³	*Measured as inhalable fraction of the aerosol
Welding Fumes (Not Otherwise Classified)	(See specific compounds)	N	2310/2315N99 2400/2800N95			
Wood Dust, All Varieties Except Western Red Cedar		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1mg/m ³ (t)*		*Inhalable fraction, t-A1 Beech, Oak; t-A2 Birch, Mahogany, Teak, Walnut; t-A4 all other species.
Wood Dust, Western Red Cedar		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	0.5mg/m ³ (t)* -DSEN- -RSEN-	N.D.	Inhalable fraction, t-A4
-X-						
Xylenes (o-, m-, & p-Isomers) 108-38-3, 106-42-3 95-47-6	1,3-bis(Aminomethyl)benzene; 1,3-Benzenedimethanamine; MXDA; m-Phenylenebis(methylamine); m-Xylylenediamine	OV	7100 8100	100ppm (o)(t); 150ppm (s)(t)	900ppm	Substance for which an ACGIH BEI exists, t-A4
m-Xylene a,a-Diamine 1477-55-0	MXDA	OV/N	7100+8910 8100+8910	0.1mg/m ³ (c)(t); -skin-		
Xylidine (Mixed Isomers) 1300-73-8	Aminodimethylbenzene, Aminoxylene, Dimethylaminobenzene, Dimethylaniline, Xylidine isomers (e.g., 2,4-Dimethylaniline)	OV/N	7100/8910 8100/8910	5ppm (o); 0.5ppm (t);* -skin-	50ppm	Substance for which ACGIH BEI (Methemoglobin inducer) exists, t-A3; *inhalable vapor and aerosol
-Y-						
Yttrium*, Metal & cpds; Dusts & Metals (as Y) *7440-65-5	Specific Compounds	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	1mg/m ³ (o)(t)	500mg/m ³	
-Z-						
Zinc Chloride, Fume 7646-85-7	Zinc dichloride fume	N	2310/2315N99 2400/2800N95	1mg/m ³ (o)(t); 2mg/m ³ (s)(t)	50mg/m ³	
Zinc Oxide, Dust 1314-13-2	Calamine; Chinese White; Zinc White	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	Total particulates 15mg/m ³ (o); Respirable fraction 5mg/m ³ (o) 10mg/m ³ (s)(t)* 2mg/m ³ (t)*	500mg/m ³	*Measured as respirable fraction of the aerosol.
Zinc oxide, fume 1314-13-2		N	2310/2315N99 2400/2800N95	5mg/m ³ (o)	500mg/m ³	
Zinc stearate 557-05-1	Synpro stearate; Zinc distearate; Dermatone	N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	10mg/m ³ (t)*, 15mg/m ³ (o)*; Respirable fraction 5mg/m ³ (o)	N.D.	*Total dust
Zirconium* compounds dusts and mists (as Zr) *7440-67-7		N	EZ22/EZ23N95 2200/2300N95 2600/2700N95	5mg/m ³ (o)(t); 10mg/m ³ (s)(t) {water-based mists}	50mg/m ³	t-A4

CHANGEOUT SCHEDULES

OSHA 1910.134(d) requires that the employer implement a change schedule for cartridges based on objective information or data that will ensure cartridges are changed before the end of their service life (see OSHA1910.134 for complete text). A cartridge's useful service life is how long it provides adequate protection from harmful chemicals in the air. The service life of a cartridge depends on many factors, including environmental conditions, breathing rate, cartridge filtering capacity and the amount of contaminants in the air.

If you know what the chemical is and how much of it you are exposed to, then you are ready to estimate how long your respirator cartridges will work and apply the safety factor.

You must use some type of objective data to develop a changeout schedule. Options for determining a cartridge's service life include:

1. Conducting experimental tests.
2. Using a mathematical model like the "Advisor Genius" or "Breakthrough Software."

OSHA has on its website other means of calculating breakthrough times for various chemicals. You may also wish to consider use of this website in developing your changeout schedules. Be advised that actual service life can vary considerably from those calculated using these models. These models only provide rough estimates. Some of the data you will need specific to the Moldex cartridges in order to use the models on the OSHA website are:

- 8100 has an average of 36.7 grams Organic Vapor Carbon, its height is 1.91 cm, inside diameter is 7.76 cm.
- 8600 has an adsorbing equivalent of 28 grams Organic Vapor Carbon, its height is 2.08 cm, inside diameter is 7.76 cm.
- A change out schedule worksheet is provided.
- 7100 has an average of 42.5 grams Organic Vapor Carbon, its height is 2.18 cm, inside diameter is 7.78 cm.
- 7600 has an absorbing equivalent of 36.0 grams Organic Vapor Carbon, its height is 2.18 cm, inside diameter is 7.78 cm.

CARTRIDGE DETAILS READ THIS WARNING

These weights were estimated by Assay Technology using methods based on their tests. It is suggested that you use default values provided by OSHA for the other cartridge specific parameters. Lastly, in order for the OSHA models to be used you may have to provide other pertinent data on the challenge agent which may be found on the MSDS or from the chemical manufacturer. These models can be found at http://www.osha.gov/SLTC/etools/respiratory/change_schedule.html. They are called "Respirator Change Schedules."

Moldex suggests that you use the OSHA models, or other means provided by OSHA. Moldex always recommends that you utilize the most conservative (shortest) breakthrough times. Moldex recommends that you use any of the methods only for the contaminants contained in this guide.

For more detailed information on these methods, refer to OSHA's website at:

https://www.osha.gov/SLTC/etools/respiratory/advisor_genius_nrdl/work_categories.html

https://www.osha.gov/SLTC/etools/respiratory/change_schedule_mathmodel.html

For more information on NIOSH multi-vapor program, refer to website at:

<http://www.cdc.gov/niosh/npptl/multivapor/multivapor.html>

If you have any questions please feel free to call Moldex Technical Services at +1 (800) 421-0668 and +1 (310) 837-6500, ext. 512/550.



8000 CARTRIDGE CHANGE SCHEDULE WORKSHEET

Duties / Job Classification: _____

Location: _____

Chemical Information (from MSDS or Manufacturer)

Chemical: _____

Exposure Limit: _____

Maximum Concentration: _____

Boiling Point: _____

Molecular Weight: _____

Liquid Density: _____

Vapor Pressure: _____

Molecular Polarization: _____

Refractive Index: _____

Worksite Conditions

Maximum Expected Temperature (°C): _____

Expected Relative Humidity (%): _____*

Work Rate: Light Moderate Heavy

Number of Shifts/Week: _____

Hours Cartridge Used/Shift: _____

8000 Cartridge Data

of Cartridges: _____ 2

8100 Absorbing Equivalent (grams): _____ 36.7

8100 Cartridge Bed Height (cm): _____ 1.91

8600 Absorbing Equivalent (grams): _____ 28.0

8600 Cartridge Bed Height (cm): _____ 2.08

8100 & 8600 Bed Diameter (cm): _____ 7.76

Service Life Estimate: _____

Basis Used: _____

Cartridge Change Schedule Every _____ Hours

After Each Shift: _____

Other: _____

This form may be used to assist you in developing a changeout schedule when using 8100 or 8600 cartridges for protection against organic vapors.

Be advised, this is simply a tool to help you collect some of the pertinent data in developing a changeout schedule. It is your responsibility to ensure the accuracy of the schedules that you develop for each operation and work site.

* Moldex suggests you use a range and use the lowest predicted breakthrough time.



7000/7800/9000 CARTRIDGE CHANGE SCHEDULE WORKSHEET

(For use with 7000 or 9000 Series Respirators)

Duties / Job Classification: _____

Location: _____

Chemical Information (from MSDS or Manufacturer)

Chemical: _____

Exposure Limit: _____

Maximum Concentration: _____

Boiling Point: _____

Molecular Weight: _____

Liquid Density: _____

Vapor Pressure: _____

Molecular Polarization: _____

Refractive Index: _____

Worksite Conditions

Maximum Expected Temperature (°C): _____

Expected Relative Humidity (%): * _____

Work Rate: Light Moderate Heavy

Number of Shifts/Week: _____

Hours Cartridge Used/Shift: _____

7000 Cartridge Data

of Cartridges: _____ 2

7100 Absorbing Equivalent (grams): _____ 42.5

7100 Cartridge Bed Height (cm): _____ 2.18

7600 Absorbing Equivalent (grams): _____ 36.0

7600 Cartridge Bed Height (cm): _____ 2.18

7100 & 7600 Bed Diameter (cm): _____ 7.78

Service Life Estimate: _____

Basis Used: _____

Cartridge Change Schedule Every _____ Hours

After Each Shift: _____

Other: _____

This form may be used to assist you in developing a changeout schedule when using 7100 or 7600 cartridges for protection against organic vapors. Be advised, this is simply a tool to help you collect some of the pertinent data in developing a changeout schedule. It is your responsibility to ensure the accuracy of the schedules that you develop for each operation and work site.
* Moldex suggests you use a range and use the lowest predicted breakthrough time.

DO NOT USE AGAINST

Moldex respirators may not be used to protect against the following list of chemicals *when concentrations are at or above the OSHA Permissible Exposure Limit (PEL)*. In the event that a PEL is exceeded, we suggest that you consult an Industrial Hygienist or other health and safety professional to determine the appropriate form of protection against any of these chemicals. This list is not all inclusive.

- A -	CAS #s	- D -	CAS #s
ACETONE CYANOHYDRIN	75-86-5	DDT (DICHLORODIPHENYL-TRICHLOROETHANE)	50-29-3
2-ACETYLAMINOFLUORENE	53-96-3	DECABORANE	17702-41-9
ADIPONITRILE	111-69-3	DEMETON	8065-48-3
ALDRIN	309-00-2	2,4 DIAMINOANISOLE AND SALTS	615-05-4
4-AMINODIPHENYL	92-67-1	2,4- DIAMINOTOLUENE	95-80-7
3-AMINO-1,2,4-TRIAZOLE	61-82-5	o-DIANSIDINE (3,3'-DIMETHOXYBENZIDENE)	
AMITROLE	61-82-5	& DYES METABOLIZED TO THIS COMPOUND	119-90-4
ANTIMONYHYDRIDE	7803-52-3	DIAZOMETHANE	34-88-3
ARSINE	7784-42-1	DIBORANE	19287-45-7
- B -		1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	96-12-8
BENZIDINE	92-87-5	2-N-DIBUTYLAMINOETHANOL	102-81-8
BROMOETHANE	74-96-4	DICHLOROACETYLENE	7572-29-4
BROMOTRIFLUOROMETHANE	75-63-8	3,3-DICHLOROBENZIDENE (AND ITS SALTS)	91-94-1
BUTANE (ALL ISOMERS)	75-28-5,106-97-8	DICHLORODIFLUOROMETHANE (FC-12)	75-71-8
n-BUTYL GLYCIDYL ETHER (BGE)	2426-08-6	DICHLORODIPHENYL-TRICHLOROETHANE	50-29-3
- C -		DICHLOROETHYNE	7572-29-4
CALCIUM CYANIDE	592-01-8	DICHLOROFUOROMETHANE (FC-21)	75-43-4
CAPTAFOL	2425-06-1	1,1-DICHLORO-FLUOROETHANE	1717-00-6
CARBARYL	63-25-2	DICHLOROMETHANE	75-09-2
CARBOFURAN	1563-66-2	2,2-DICHLOROPROPIONIC ACID SODIUM SALT	127-20-8
CARBON DIOXIDE	124-38-9	DICHLOROTETRAFLUROETHANE	
CARBON MONOXIDE	630-08-0	(1,2-DICHLORO-1,1,2,2-TETRAFLUROETHANE)	76-14-2
CARBON TETRABROMIDE	558-13-4	DICHLORVOS (DDVP)	62-73-7
CARBONYL CHLORIDE	75-44-5	DIELDRIN	60-57-1
CARBONYL FLUORIDE*	353-50-4	DIESEL EXHAUST	N/A
CARBONYL SULFIDE	463-58-1	DIETHYLENE OXIDE	754-12-1
CHLORDANE	57-74-9	1,1-DIFLUOROETHANE	75-37-6
CHLORDECONE	143-50-0	1,1-DIFLUOROETHYLENE	75-38-7
CHLORINATED CAMPHENE	8001-35-2	DIFLUOROMETHANE	75-10-5
CHLORINATED DIPHENYL OXIDE	55720-99-5	3-3'-DIMETHYLBENZIDENE	119-93-7
CHLORINE TRIFLUORIDE	7790-91-2	3-3'-DIMETHOXYBENZIDENE	119-90-4
O-CHLOROBENZYLIDENE MALONONITRILE	2698-41-1	DIMETHOXYMETHANE	109-87-5
1-CHLORO-1,1-DIFLUOROETHANE	75-68-3	DIMETHYLACETAMIDE	127-19-5
CHLORODIFLUOROMETHANE	75-45-6	N,N-DIMETHYLACETAMIDE	127-19-5
CHLOROETHANE	75-00-3	4-DIMETHYLAMINOAZOBENZENE	60-11-7
CHLOROETHYLENE	75-01-4	bis-(2-DIMETHYLAMINOETHYL) ETHER	3033-62-3
CHLOROFLUOROMETHANE (FC-31)	593-70-4	DIMETHYLAMINOPROPIONITRILE	1738-25-6
bis-CHLOROMETHYL ETHER	542-88-1	DIMETHYL CARBAMOYL CHLORIDE	79-44-7
CHLOROMETHYL METHYL ETHER	107-30-2	DIMETHYL ETHER	115-10-6
p-CHLORONITROBENZENE	100-00-5	DIMETHYLETHOXSILANE	14857-34-2
CHLOROPENTAFLUROETHANE	76-15-3	DIMETHYL FORMAMIDE	68-12-2
CHLOROPICRIN	76-06-2	N,N DIMETHYLNITROSOAMINE	62-75-9
o-CHLOROSTYRENE	2039-87-4	DIMETHYL SULFATE	77-78-1
2-CHLORO-1,1,1,2-TETRAFLUROETHANE	2387-89-0	4,4-DIPHENYLMETHANE DIISOCYANATE	101-68-8
CHLOROTRIFLUOROETHYLENE	79-38-9	DIPROPYLENE GLYCOL METHYL ETHER	34590-94-8
COBALT CARBONYL	10210-68-1	DIVINYL BENZENE	1321-74-0
COBALT HYDROCARBONYL	16842-03-8	- E -	
CYANIDES, as CN	420-04-2	ENFLURANE	13838-16-9
CYANOGEN	460-19-5	EPN	2104-64-5
CYANOGEN BROMIDE	506-68-83	ETHANE	74-84-0
CYANOGEN CHLORIDE	506-77-4	ETHYLAMINE	75-04-7
CYCLOPENTANE	287-92-3	ETHYL BROMIDE	74-96-4
		ETHYL CHLORIDE	75-00-3
		ETHYLENE	74-85-1
		ETHYLENE GLYCOL DINITRATE	628-96-6
		ETHYLENEIMINE	151-56-4
		ETHYLENE OXIDE	75-21-8
		ETHYLENE THIOUREA	96-45-7

DO NOT USE AGAINST (Continued)

	CAS #s		CAS #s
- F -		MEVINPHOS	7786-34-7
FLUORINE	7782-41-4	METHYLCHLORO METHYL ETHER	107-30-2
FLUOROETHENE	75-02-5	MONOFLUOROETHYLENE	75-02-5
FLUOROETHYLENE	75-02-5	MONOMETHYL ANILINE	100-61-8
FLUOROTRICHLOROMETHANE	75-69-4	N METHYLANILINE	100-61-8
FORMIC ACID, METHYL ESTER	107-31-3		
FORMIC ACID	64-18-6	- H -	
- G -		NAPHTHALENE DIISOCYANATE (NDI)	3173-72-6
GERMANIUM TETRAHYDRIDE	7782-65-2	1,5-NAPHTHALENE DIISOCYANATE	3173-72-6
GLYCOLONITRILE	107-16-4	NIAX CATALYST ESN	62765-93-9
GLYOXOL	107-22-2	NICKEL CARBONYL	13463-39-3
- H -		NITRIC ACID	7697-37-2
HEPTACHLOR	76-44-8	NITRIC OXIDE	10102-43-9
HEXAFLUOROACETONE	684-16-2	4-NITROBIPHENYL (4-NITRODIPHENYL)	92-93-3
HEXAFLUOROPROPANE	690-39-1	p-NITROCHLOROENZENE	100-00-5
HEXAFLUOROPROPYLENE	116-15-4	NITROGEN DIOXIDE	10102-44-0
HEXAMETHYLENE DIISOCYANATE	822-06-0	NITROGEN TRIFLUORIDE	7783-54-2
HEXAMETHYL PHOSPHORAMIDE	680-31-9	NITROGLYCERIN	55-63-0
1,1,1,3,3,3, - HEXAFLUORO -2- PROPANONE	684-16-2	2-NITRONAPHTHALENE	581-89-5
HYDROGEN CYANIDE	74-90-8	n-NITROSODIMETHYLAMINE	62-75-9
HYDROGEN PEROXIDE	7722-84-1	NITROUS OXIDE	10024-97-2
HYDROGEN SELENIDE	7783-07-5	o,m,p NITROTOLUENE	99-08-1
			88-72-2
			99-99-0
- I -		- O -	
IODINE	553-56-2	OSMIUM TETROXIDE	20816-12-0
IODOFORM	75-47-8	OXYGEN DIFLUORIDE	7783-41-7
IRON PENTACARBONYL	13463-40-6	OZONE	10028-15-6
ISOBUTANE	75-28-5		
ISOCYANATES	71000-82-3	- P -	
ISOPHORONE DIISOCYANATE	4098-71-9	PENTABORANE	19624-22-7
- K -		1,1,1,2,2-PENTAFLUOROETHANE	354-33-6
KEPONE	143-50-0	1,1,1,3,3-PENTAFLUOROPROPANE	460-73-1
KETENE	463-51-4	PERCHLORYL FLUORIDE	7616-94-6
		PERFLUOROISOBUTYLENE	382-21-8
- L -		PETROLEUM GAS	68476-85-7
L.P.G (LIQUIFIED PETROLEUM GAS)	68476-85-7	PHENYL GLYCIDYL ETHER	122-60-1
		PHENYLHYDRAZINE	100-63-0
- M -		N-PHENYL-B-NAPHTHYLAMINE	135-88-6
MALONALDEHYDE	542-78-9	PHOSDRIN	7786-34-7
MALONONITRILE	109-77-3	PHOSGENE	75-44-5
MANGANESE CYCLOPENTADIENYL TRICARBONYL	12079-65-1	PHOSPHINE	7803-51-2
MERCURY COMPOUNDS (AS HG)		PHOSPHOROUS (YELLOW)	7723-14-0
MERCURY VAPOR	7439-97-6	PHOSPHOROUS OXYCHLORIDE	10025-87-3
MERCURY METHANE	74-82-8	PHOSPHOROUS PENTACHLORIDE	10026-13-8
METHANOL	67-56-1	POTASSIUM CYANIDE	151-50-8
METHOXYACETIC ACID	625-45-6	PROPANE	74-98-6
METHOXYCHLOR	72-43-5	PROPANE SULTONE	1120-71-4
1-METHOXYPROPYL-2-ACETATE	108-65-6	b-PROPIOLACTONE	57-57-8
2-(METHOXYMETHYL ETHOXY)-PROPANOL	34590-94-8	PROPIONALDEHYDE	123-38-6
METHYL ACETYLENE	74-99-7	PROPYLALDEHYDE	123-38-6
METHYL ACETYLENE PROPADIENE MIXTURE (MAPP)	59355-75-8	PROPYLENE	115-07-1
METHYL ACRYLONITRILE	126-98-7	PROPYNE	74-99-7
METHYLAL	109-87-5	- S -	
METHYLACETALDEHYDE	123-38-6	SELENIUM HEXAFLUORIDE	7783-79-1
METHYL ALCOHOL	67-56-1	SILANE	7803-62-5
n-METHYL ANILINE	100-61-8	SEVIN	63-25-2
METHYL BROMIDE	74-83-9	SILICON TETRAHYDRIDE	7803-62-5
METHYL CHLORIDE	74-87-3	SODIUM AZIDE	26628-22-8
METHYLCYCLOHEXANOL	25639-42-3	SODIUM CYANIDE	143-33-9
METHYLCYCLOHEXANONE	583-60-8	STIBINE	7803-52-3
METHYLENE BISPHENYL ISOCYANATE	101-68-8	SUBTILISINS	1395-21-7
METHYLENE CHLORIDE	75-09-2	SUCCINONITRILE	110-61-2
4,4-METHYLENE bis (2-CHLOROANILINE)	101-14-4	SULFOTEP	3689-24-5
METHYLENE bis (4-CYCLOHEXYLISOCYANATE)	5124-30-1	SULFUR HEXAFLUORIDE	2551-62-4
METHYL FORMATE	107-31-3	SULFURYL FLUORIDE	2699-79-8
METHYL IODIDE	74-88-4	SYSTOX	8065-48-3
METHYL ISOCYANATE	624-83-9		
METHYL PROPANE	75-28-5		
2-METHYL PROPANE	75-28-5		
N METHYL-2-PYROLIDINE	872-50-4		
METHYL SILICATE	681-84-5		

DO NOT USE AGAINST (Continued)

	CAS #s	CAS #s
-I-		
TEDP	3689-24-5	
TELLURIUM HEXAFLUORIDE	7783-80-4	
TEPP	107-49-3	
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN (TCDD)	1746-01-6	
1,1,1,2-TETRACHLORO-2,2-DIFLUOROETHANE	76-11-9	
1,1,2,2-TETRACHLORO-1,2-DIFLUOROETHANE	76-12-0	
TETRAETHYL PYROPHOSPHATE (TEPP)	107-49-3	
1,1,1,2-TETRAFLUOROETHANE	811-97-2	
2,3,3,3-TETRAFLUOROPROPENE	754-12-1	
TETRAFLUOROETHYLENE	116-14-3	
TETRAMETHYLENE	754-12-1	
TETRAMETHYLSUCCINONITRILE	3333-52-6	
THIOGLYCOLIC ACID	68-11-1	
o-TOLIDINE	119-93-7	
o-TOLIDINE-BASED DYES		
TOLUENE 2,4-DIAMINE	25376-45-8, 95-80-7	
TOLUENE 2,4-DIISOCYANATE (TDI)	584-84-9	
TOLUENE 2,6-DIISOCYANATE	91-08-7	
TOXAPHENE	8001-35-2	
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	
TRICHLOROFLUOROMETHANE	75-69-4	
TRIETHOXSILANE	998-30-1	
1,1,1-TRIFLUORO-2,2-DICHLOROETHANE	306-83-2	
TRIETHANOLAMINE	102-71-6	
TRIFLUOROBROMOMETHANE	75-63-8	
1,1,1-TRIFLUOROETHANE	420-46-2	
2,2,2-TRIFLUOROETHANOL	75-89-8	
-V-		
VINYL BROMIDE	593-60-2	
VINYL CHLORIDE	75-01-4	
VINYLCYCLOHEXENE DIOXIDE	106-87-6	
VINYLFUORIDE	75-02-5	
VINYLDENE FLUORIDE	75-38-7	

NOTES

TECHNICAL HELP LINE

For information, technical assistance, and training materials call +1 (800) 421-0668 or +1 (310) 837-6500, ext. 512/550.

The information in the *2018 Moldex Chemical Selection Guide* is dated and was accurate to the best of Moldex's knowledge as of January 2018. This *2018 Guide* supercedes all previous *Guides*, including printed and electronic versions. If you have an electronic version other than the *2018 Guide* please delete it from your computer. The *2018 Guide* can be accessed online at www.moldex.com.

Before selecting Moldex respirators for use, it is important that you refer to the most recent *Guide* available. If you have any questions on how to use this guide or on the selection and use of any respiratory protection device, call the Moldex Technical Services Department at +1 (800) 421-0668, +1 (310) 837-6500, ext. 512/550 or tech@moldex.com. Products listed in this *Guide* are subject to this limited warranty.

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