



Safety Data Sheet

Material Name: Ammonia, Hydrogen, Methane, Argon, Nitrogen Gas Mix

SDS ID: 00244934

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

Ammonia, Hydrogen, Methane, Argon, Nitrogen Gas Mix

Product Description

Classification determined in accordance with Compressed Gas Association standards.

Product Use

Industrial and Specialty Gas Applications

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Flammable Gases - Category 1

Gases Under Pressure - Compressed gas

Acute Toxicity - Inhalation - Gas - Category 4

Skin Corrosion/Irritation - Category 1

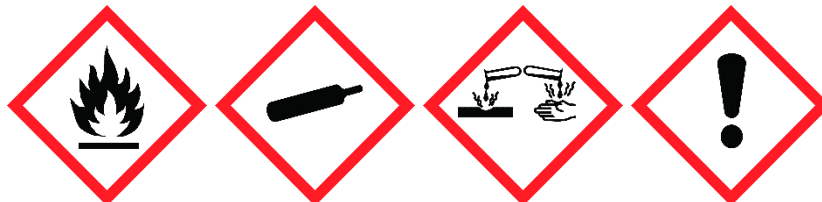
Serious Eye Damage/Eye Irritation - Category 1

Specific Target Organ Toxicity - Single Exposure - Category 3

Simple Asphyxiant

GHS Label Elements

Symbol(s)



Signal Word

Danger

Hazard Statement(s)

Extremely flammable gas.

Contains gas under pressure; may explode if heated.

Harmful if inhaled.

Causes severe skin burns and eye damage.

May cause respiratory irritation.

May displace oxygen and cause rapid suffocation.

Precautionary Statement(s)

Prevention

Keep away from heat/sparks/open flame/hot surfaces - No smoking.

Use only outdoors or in a well-ventilated area.



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Wear protective gloves/protective clothing/eye protection/face protection.

Wash thoroughly after handling.

Do not breathe dusts or mists.

Response

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Eliminate all ignition sources if safe to do so.

Immediately call a POISON CENTER or doctor.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

Wash contaminated clothing before reuse.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage

Store in a well-ventilated place. Keep container tightly closed.

Protect from sunlight.

Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards

Rapid release of compressed gas may cause frostbite.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| CAS | Component Name | Percent |
|-----------|----------------|---------|
| 7664-41-7 | Ammonia | 0-100 |
| 74-82-8 | Methane | 0-100 |
| 1333-74-0 | Hydrogen | 0-100 |
| 7440-37-1 | Argon | 0-100 |
| 7727-37-9 | Nitrogen | 0-100 |

Section 4 - FIRST AID MEASURES

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115°F; 41-46°C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes

Flush eyes immediately with large amounts of water. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion

If swallowed, do not induce vomiting. Rinse mouth. Get immediate medical attention.

Most Important Symptoms/Effects



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frostbite, suffocation, respiratory tract burns, skin burns, eye damage

Delayed

No information on significant adverse effects.

Indication of any immediate medical attention and special treatment needed

For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES**Extinguishing Media****Suitable Extinguishing Media**

regular dry chemical, carbon dioxide; Large fires: water spray or fog, alcohol-resistant foam

Unsuitable Extinguishing Media

Do not direct water at source of leak or safety devices; icing may occur.

Special Hazards Arising from the Chemical

Severe fire hazard. Severe explosion hazard. Containers may rupture or explode if exposed to heat. Vapor/air mixtures are explosive above flash point. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.

Hazardous Combustion Products

oxides of carbon, ammonia, oxides of nitrogen

Fire Fighting Measures

Move container from fire area if it can be done without risk. Damaged cylinders should be handled only by specialists. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with water spray until well after the fire is out. Do not get water inside container. Stay away from the ends of tanks. Flood with fine water spray. Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, Evacuation radius: 1600 meters (1 mile). Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. ALWAYS stay away from tanks engulfed in fire. For smaller tanks or cylinders, extinguish and isolate from other flammables. Stop flow of gas. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES**Personal Precautions, Protective Equipment and Emergency Procedures**

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not touch or walk through spilled material. Stop leak if possible without personal risk. Eliminate all ignition sources if safe to do so. All equipment used when handling the product must be grounded. If possible, turn leaking containers so that gas escapes rather than liquid. Do not direct water at spill or source of leak. Use water spray to reduce vapors or divert vapor cloud drift. Isolate area until gas has dispersed. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Ventilate closed spaces before entering.

Environmental Precautions

Avoid release to the environment. Collect spillage.

Section 7 - HANDLING AND STORAGE**Precautions for Safe Handling**

Keep away from heat, sparks, open flame, and hot surfaces - No smoking. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe gas. Use only outdoors or in a



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well-ventilated area. In case of inadequate ventilation wear respiratory protection. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wear protective gloves/clothing and eye/face protection. Wash hands thoroughly after handling. Avoid release to the environment.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place. Keep container tightly closed.

Protect from sunlight.

Store locked up.

Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Protect from physical damage. Keep separated from incompatible substances. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30).

Incompatible Materials

halogens, oxidizing materials, combustible materials, acids, metals, metal salts, amines, reducing agents, cyanides, bases

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

| | |
|-----------------|---|
| Ammonia | 7664-41-7 |
| ACGIH: | 25 ppm TWA |
| | 35 ppm STEL |
| NIOSH: | 25 ppm TWA ; 18 mg/m3 TWA |
| | 35 ppm STEL ; 27 mg/m3 STEL |
| | 300 ppm IDLH |
| Europe: | 20 ppm TWA ; 14 mg/m3 TWA |
| | 50 ppm STEL ; 36 mg/m3 STEL |
| OSHA (US): | 50 ppm TWA ; 35 mg/m3 TWA |
| Mexico: | 25 ppm TWA VLE-PPT ; 18 mg/m3 TWA VLE-PPT |
| | 35 ppm STEL [PPT-CT] ; 27 mg/m3 STEL [PPT-CT] |
| Methane | 74-82-8 |
| ACGIH: | (See Appendix F: Minimal Oxygen Content) |
| Hydrogen | 1333-74-0 |
| ACGIH: | (See Appendix F: Minimal Oxygen Content, explosion hazard) |
| Argon | 7440-37-1 |



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| | |
|-----------------|---|
| ACGIH: | (See Appendix F: Minimal Oxygen Content) |
| Nitrogen | 7727-37-9 |
| ACGIH: | (See Appendix F: Minimal Oxygen Content) |

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment**Eye/face protection**

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations

Wear chemical resistant, insulated gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------------------|---------------|-----------------------------------|---------------|
| Appearance | colorless gas | Physical State | gas |
| Odor | Not available | Color | colorless |
| Odor Threshold | Not available | pH | Not available |
| Melting Point | Not available | Boiling Point | Not available |
| Boiling Point Range | Not available | Freezing point | Not available |
| Evaporation Rate | Not available | Flammability (solid, gas) | Flammable gas |
| Autoignition Temperature | Not available | Flash Point | Not available |
| Lower Explosive Limit | Not available | Decomposition temperature | Not available |
| Upper Explosive Limit | Not available | Vapor Pressure | Not available |
| Vapor Density (air=1) | Not available | Specific Gravity (water=1) | Not available |



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| | | | |
|---------------------------|----------------|---|---------------|
| Water Solubility | Not available | Partition coefficient: n-octanol/water | Not available |
| Viscosity | Not available | Kinematic viscosity | Not available |
| Solubility (Other) | Not available | Density | Not available |
| Physical Form | Compressed Gas | Molecular Weight | Not available |

Other Information

No additional information is available.

Section 10 - STABILITY AND REACTIVITY**Reactivity**

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Protect from physical damage. Containers may rupture or explode if exposed to heat. Minimize contact with material. Avoid contact with incompatible materials.

Incompatible Materials

halogens, oxidizing materials, combustible materials, acids, metals, metal salts, amines, reducing agents, cyanides, bases

Hazardous decomposition products

oxides of carbon, ammonia, oxides of nitrogen

Section 11 - TOXICOLOGICAL INFORMATION**Information on Likely Routes of Exposure****Inhalation**

burns, nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, fatigue, dizziness, disorientation, mood swings, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma, mutagenic effects, respiratory system damage, lung damage

Skin Contact

frostbite, burns

Eye Contact

frostbite, eye damage

Ingestion

burns

Acute and Chronic Toxicity**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Ammonia (7664-41-7)

Oral LD50 Rat 350 mg/kg (test substance administered in an aqueous solution)

Inhalation LC50 Rat 2000 ppm 4 h

Hydrogen (1333-74-0)

Inhalation LC50 Rat >15000 ppm 1 h

Product Toxicity Data**Acute Toxicity Estimate**



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No data available.

Immediate Effects

frostbite, suffocation, respiratory tract burns, skin burns, eye damage

Delayed Effects

No information on significant adverse effects.

Irritation/Corrosivity Data

respiratory tract burns, skin burns, eye burns

Respiratory Sensitization

No information available for the product.

Dermal Sensitization

No information available for the product.

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA.

Germ Cell Mutagenicity

No information available for the product.

Tumorigenic Data

No information available for the product.

Reproductive Toxicity

No information available for the product.

Specific Target Organ Toxicity - Single Exposure

respiratory tract

Specific Target Organ Toxicity - Repeated Exposure

No target organs identified.

Aspiration hazard

Not applicable.

Medical Conditions Aggravated by Exposure

No data available.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

| | |
|----------------|---|
| Ammonia | 7664-41-7 |
| Fish: | LC50 96 h Cyprinus carpio 0.44 mg/L; LC50 96 h Lepomis macrochirus 0.26 - 4.6 mg/L; LC50 96 h Lepomis macrochirus 1.17 mg/L [flow-through]; LC50 96 h Pimephales promelas 0.73 - 2.35 mg/L; LC50 96 h Pimephales promelas 5.9 mg/L [static]; LC50 96 h Poecilia reticulata >1.5 mg/L; LC50 96 h Poecilia reticulata 1.19 mg/L [static] |
| Invertebrate: | LC50 48 h Daphnia magna 25.4 mg/L IUCLID |

Persistence and Degradability

No data available for the mixture.

Bioaccumulative Potential

No data available for the mixture.

Mobility

No data available for the mixture.

Other Toxicity

No additional information is available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods



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Dispose in accordance with all applicable regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

Section 14 - TRANSPORT INFORMATION

US DOT Information:

Shipping Name: COMPRESSED GAS, FLAMMABLE, N.O.S. , (Contains: Ammonia , Hydrogen)

Hazard Class: 2.1

UN/NA #: UN1954

Required Label(s): 2.1

IMDG Information:

Shipping Name: COMPRESSED GAS, FLAMMABLE, N.O.S. , (Contains: Ammonia , Hydrogen)

Hazard Class: 2.1

UN#: UN1954

Required Label(s): 2.1

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

| | |
|----------------|---|
| Ammonia | 7664-41-7 |
| SARA 302: | 500 lb TPQ |
| SARA 313: | 1 % de minimis concentration (includes anhydrous Ammonia and aqueous Ammonia from water dissociable Ammonium salts and other sources, 10% of total aqueous Ammonia is reportable under this listing) |
| CERCLA: | 100 lb final RQ ; 45.4 kg final RQ |
| OSHA (safety): | 10000 lb TQ (anhydrous) ; 15000 lb TQ (solution ,>44% Ammonia by weight) |
| SARA 304: | 100 lb EPCRA RQ |

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories

Flammable; Gas Under Pressure; Acute toxicity; Skin Corrosion/Irritation; Serious Eye Damage/Eye Irritation; Specific Target Organ Toxicity; Simple Asphyxiant

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

| Component | CAS | CA | MA | MN | NJ | PA |
|----------------|------------------|-----|-----|-----|-----|-----|
| Ammonia | 7664-41-7 | Yes | Yes | Yes | Yes | Yes |



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| | | | | | | |
|-----------------|------------------|-----|-----|-----|-----|-----|
| Methane | 74-82-8 | No | Yes | Yes | Yes | Yes |
| Hydrogen | 1333-74-0 | Yes | Yes | Yes | Yes | Yes |
| Argon | 7440-37-1 | No | Yes | Yes | Yes | Yes |
| Nitrogen | 7727-37-9 | No | Yes | Yes | Yes | Yes |

Not listed under California Proposition 65

Canada Regulations

Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

| | |
|----------------|------------------|
| Ammonia | 7664-41-7 |
| | 1 % |

Component Analysis - Inventory

Ammonia (7664-41-7)

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----------|-----------|-------------------|-------------------|----------------|-----|-----|-----|-----|------------|
| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes |

Methane (74-82-8)

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----------|-----------|-------------------|-------------------|----------------|-----|-----|-----|-----|------------|
| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
| Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

Hydrogen (1333-74-0)

| | | | | | | | | | | | | | | |
|----|----|----|----|----|-----------|-----------|-------------------|-------------------|----------------|----|----|----|----|------------|
| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
|----|----|----|----|----|-----------|-----------|-------------------|-------------------|----------------|----|----|----|----|------------|



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| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|----|----|-----|----|----|-----|-----|-----|-----|-----|
| Yes | DSL | EIN | Yes | Yes | No | No | Yes | No | No | Yes | Yes | Yes | Yes | Yes |
|-----|-----|-----|-----|-----|----|----|-----|----|----|-----|-----|-----|-----|-----|

Argon (7440-37-1)

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----------|-----------|-------------------|-------------------|----------------|-----|-----|-----|-----|------------|
| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
| Yes | DSL | EIN | Yes | Yes | No | No | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

Nitrogen (7727-37-9)

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----------|-----------|-------------------|-------------------|----------------|-----|-----|-----|-----|------------|
| US | CA | EU | AU | PH | JP - ENCS | JP - ISHL | KR KECI - Annex 1 | KR KECI - Annex 2 | KR - REACH CCA | CN | NZ | MX | TW | VN (Draft) |
| Yes | DSL | EIN | Yes | Yes | No | No | Yes | No | No | Yes | Yes | Yes | Yes | Yes |

Section 16 - OTHER INFORMATION**NFPA Ratings**

Health: 3 Fire: 4 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

New SDS: 07/17/2017

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea



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Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL – Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

Disclaimer:

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