Ammonia, Anhydrous

Safety Data Sheet E-4562

according to the Hazardous Products Regulation (February 11, 2015)

Date of issue: 10-15-1979 Revision date: 08-03-2016 Supersedes: 10-15-2013

SECTION 1: Identification

1.1. Product identifier

Product form	:	Substance
Name	:	Ammonia, Anhydrous
CAS No	:	7664-41-7
Formula	:	NH3
Other means of identification	:	Ammonia gas, ammonia, anhydrous
Product group	:	Core Products

1.2. Recommended use and restrictions on use

Recommended uses and restrictions	:	Industrial use

1.3. Supplier

Praxair Canada inc.
1200 – 1 City Centre Drive
Mississauga - Canada L5B 1M2
T 1-905-803-1600 - F 1-905-803-1682
www.praxair.ca

1.4. Emergency telephone number

Emergency number	:	1-800-363-0042 Call emergency number 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS-CA classification

Flam. Gas 2	H221
Liquefied gas	H280
Acute Tox. 4 (Inhalation:gas)	H332
Skin Corr. 1B	H314
Eye Dam. 1	H318

2.2. GHS Label elements, including precautionary statements

GHS-CA labelling

Hazard pictograms :

GHS04 GHS05 GHS07

Signal word : DANGER

Hazard statements : FLAMMABLE GAS
CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED
CAUSES SEVERE SKIN BURNS AND EYE DAMAGE
TOXIC IF INHALED
VERY TOXIC TO AQUATIC LIFE
CORROSIVE TO THE RESPIRATORY TRACT

Precautionary statements : Do not handle until all safety precautions have been read and understood
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Do not breathe gas

Do not get in eyes, on skin, or on clothing
Use and store only outdoors or in a well-ventilated place
Avoid release to the environment
Wear protective gloves, protective clothing, face protection, eye protection
Leaking gas fire: Do not extinguish, unless leak can be stopped safely
In case of leakage, eliminate all ignition sources
Dispose of contents/container in accordance with container Supplier/owner instructions
Use a back flow preventive device in the piping
Use only with equipment of compatible materials of construction and rated for cylinder pressure
Do not open valve until connected to equipment prepared for use
Close valve after each use and when empty
Protect from sunlight when ambient temperature exceeds 52°C (125°F)

2.3. Other hazards

Other hazards not contributing to the classification : Contact with liquid may cause cold burns/frostbite.

2.4. Unknown acute toxicity (GHS-CA)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : Ammonia, Anhydrous
CAS No : 7664-41-7
EC no : 231-635-3
EC index no : 007-001-00-5

Name	CAS No.	% (Vol.)	Common Name (synonyms)
Ammonia	(CAS No) 7664-41-7	99.5 - 100	Ammonia gas / Ammonia, anhydrous / Ammonia (anhydrous) / Free ammonia / Anhydrous, ammonia / Anhydrous ammonia / Ammonia anhydrous / Gaseous ammonia / AMMONIA / Ammonium

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First-aid measures after skin contact : In case of contact, immediately flush affected areas with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse. Discard contaminated shoes.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.. Get immediate medical attention.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/injuries after inhalation : Low vapor concentrations will irritate the nose, throat, and chest, causing discomfort or pain with coughing, excess sputum, runny nose, and difficulty with breathing. Higher concentrations may result in the inhalation of harmful and possibly lethal, amounts of material. The nasal passages, larynx, and lungs may be injured.

Symptoms/injuries after skin contact : Contact with rapidly expanding gas may cause frostbite.

Symptoms/injuries after eye contact : May cause severe irritation. Serious damage to eyes.

4.3. Immediate medical attention and special treatment, if necessary

Other medical advice or treatment : Treat with corticosteroid spray as soon as possible after inhalation. Obtain medical assistance.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Suitable extinguishing media : Carbon dioxide, Dry chemical, Water spray or fog.

5.2. Unsuitable extinguishing media

No additional information available

5.3. Specific hazards arising from the hazardous product

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.

5.4. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Take care not to extinguish flames. If flames are accidentally extinguished, explosive re-ignition may occur. Allow fire to burn out

Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with their provincial and local fire code regulations.

Protection during firefighting : Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.

Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus. Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Other information : Heat of fire can build pressure in cylinder and cause it to rupture. No part of a cylinder should be subjected to a temperature higher than 125ºF (52ºC). Cylinders are equipped with a pressure-relief device. (Exceptions may exist where authorized by TC, in this case where cylinders contain less than 165 pounds of product.) If leaking or spilled product catches fire, do not extinguish flames. Flammable and toxic vapors may spread from leak and could explode if reignited. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering area, especially confined areas, check atmosphere with an appropriate device. Reverse flow into cylinder may cause rupture. To protect persons from cylinder fragments and toxic fumes if a rupture occurs, totally evacuate the area if the fire cannot be brought under immediate control.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate personnel to a safe area. Appropriate self-contained breathing apparatus may be required. Approach suspected leak area with caution. Remove all sources of ignition. if safe to do so. Reverse flow into cylinder may cause rupture. Reduce gas with fog or fine water spray. Stop flow of product if safe to do so. Ventilate area or move container to a well-ventilated area. Flammable gas may spread from leak. Before entering the area, especially a confined area, check the atmosphere with an appropriate device.

6.2. Methods and materials for containment and cleaning up

For containment : Prevent runoff from contaminating the surrounding environment.

6.3. Reference to other sections

For further information refer to section 8: Exposure controls/personal protection

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Do not breathe gas/vapour. Avoid all contact with skin, eyes, or clothing. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion-proof equipment

Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ammonia, Anhydrous (7664-41-7)		
USA - ACGIH	ACGIH TLV-TWA (ppm)	25 ppm
USA - ACGIH	ACGIH TLV-STEL (ppm)	35 ppm
USA - OSHA	OSHA PEL (TWA) (mg/m³)	35 mg/m³
USA - OSHA	OSHA PEL (TWA) (ppm)	50 ppm
Canada (Quebec)	VECD (mg/m³)	24 mg/m³
Canada (Quebec)	VECD (ppm)	35 ppm
Canada (Quebec)	VEMP (mg/m³)	17 mg/m³
Canada (Quebec)	VEMP (ppm)	25 ppm
Alberta	OEL STEL (mg/m³)	24 mg/m³
Alberta	OEL STEL (ppm)	35 ppm
Alberta	OEL TWA (mg/m³)	17 mg/m³
Alberta	OEL TWA (ppm)	25 ppm
British Columbia	OEL STEL (ppm)	35 ppm
British Columbia	OEL TWA (ppm)	25 ppm
Manitoba	OEL STEL (ppm)	35 ppm
Manitoba	OEL TWA (ppm)	25 ppm
New Brunswick	OEL STEL (mg/m³)	24 mg/m³

Ammonia, Anhydrous (7664-41-7)		
New Brunswick	OEL STEL (ppm)	35 ppm
New Brunswick	OEL TWA (mg/m³)	17 mg/m³
New Brunswick	OEL TWA (ppm)	25 ppm
New Foundland & Labrador	OEL STEL (ppm)	35 ppm
New Foundland & Labrador	OEL TWA (ppm)	25 ppm
Nova Scotia	OEL STEL (ppm)	35 ppm
Nova Scotia	OEL TWA (ppm)	25 ppm
Nunavut	OEL STEL (mg/m³)	24 mg/m³
Nunavut	OEL STEL (ppm)	35 ppm
Nunavut	OEL TWA (mg/m³)	17 mg/m³
Nunavut	OEL TWA (ppm)	25 ppm
Northwest Territories	OEL STEL (ppm)	35 ppm
Northwest Territories	OEL TWA (ppm)	25 ppm
Ontario	OEL STEL (ppm)	35 ppm
Ontario	OEL TWA (ppm)	25 ppm
Prince Edward Island	OEL STEL (ppm)	35 ppm
Prince Edward Island	OEL TWA (ppm)	25 ppm
Québec	VECD (mg/m³)	24 mg/m³
Québec	VECD (ppm)	35 ppm
Québec	VEMP (mg/m³)	17 mg/m³
Québec	VEMP (ppm)	25 ppm
Saskatchewan	OEL STEL (ppm)	35 ppm
Saskatchewan	OEL TWA (ppm)	25 ppm
Yukon	OEL STEL (mg/m³)	30 mg/m³
Yukon	OEL STEL (ppm)	40 ppm
Yukon	OEL TWA (mg/m³)	18 mg/m³
Yukon	OEL TWA (ppm)	25 ppm

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Nova Scotia	OEL TWA (ppm)	25 ppm
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Northwest Territories	OEL TWA (ppm)	25 ppm
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Ontario	OEL TWA (ppm)	25 ppm
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Québec	VECD (ppm)	35 ppm
Québec	VEMP (mg/m³)	17 mg/m³
Québec	VEMP (ppm)	25 ppm
Saskatchewan	OEL STEL (ppm)	35 ppm
Saskatchewan	OEL TWA (ppm)	25 ppm
Yukon	OEL STEL (mg/m³)	30 mg/m³
Yukon	OEL STEL (ppm)	40 ppm
Yukon	OEL TWA (mg/m³)	18 mg/m³
Yukon	OEL TWA (ppm)	25 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls : Use a local exhaust system, if necessary, to prevent oxygen deficiency and to keep hazardous fumes and gases below all applicable limits in the worker's breathing zone. MECHANICAL ENGINEERING CONTROLS: Not recommended as a primary ventilation system to control worker's exposure. USE ONLY IN A CLOSED SYSTEM. An explosion-proof, corrosion-resistant, forced-draft fume hood is preferred.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment : Face shield. Safety glasses. Gloves.

Hand protection : Wear work gloves when handling containers. Wear heavy rubber gloves where contact with product may occur.

Eye protection : Wear goggles and a face shield when transfilling or breaking transfer connections. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

Respiratory protection : **Respiratory protection:** Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with provincial regulations, local bylaws or guidelines. Selection should be based on the current CSA standard Z94.4, "Selection, Care, and Use of Respirators." Respirators should also be approved by NIOSH and MSHA. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Thermal hazard protection	:	Wear cold insulating gloves when transfilling or breaking transfer connections.
Environmental exposure controls	:	Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.
Other information	:	**Other protection :** Safety shoes for general handling at customer sites. Metatarsal shoes and cuffless trousers for cylinder handling at packaging and filling plants. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines. For working with flammable and oxidizing materials, consider the use of flame resistant anti-static safety clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Gas
Appearance	:	Colorless gas. Liquid under pressure.
Molecular mass	:	17 g/mol
Colour	:	Colourless.
Odour	:	Ammoniacal.
Odour threshold	:	5 ppm
pH	:	Not applicable.
pH solution	:	No data available
Relative evaporation rate (butylacetate=1)	:	No data available
Relative evaporation rate (ether=1)	:	Not applicable.
Melting point	:	-77.7 °C
Freezing point	:	-77.7 °C
Boiling point	:	-33.4 °C
Flash point	:	No data available
Critical temperature	:	132.4 °C
Auto-ignition temperature	:	650 °C
Decomposition temperature	:	No data available
Vapour pressure	:	860 kPa
Vapour pressure at 50 °C	:	No data available
Critical pressure	:	11350 kPa
Relative vapour density at 20 °C	:	No data available
Relative density	:	0.7
Relative density of saturated gas/air mixture	:	No data available
Density	:	0.682 g/cm³ (at -33 °C)
Relative gas density	:	0.6
Solubility	:	Water: 517000 mg/l
Log Pow	:	Not applicable.
Log Kow	:	Not applicable.
Viscosity, kinematic	:	Not applicable.
Viscosity, dynamic	:	Not applicable.
Viscosity, kinematic (calculated value) (40 °C)	:	No data available
Explosive properties	:	Not applicable.
Oxidizing properties	:	None.
Flammability (solid, gas)	:	≥ 16 vol % 25

9.2. Other information

Minimum ignition energy	:	<
Gas group	:	Liquefied gas
Additional information	:	None

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Hazardous reactions may occur on contact with certain chemicals. (Refer to the list of incompatible materials section 10: "Stability-Reactivity").

Conditions to avoid : Avoid moisture in installation systems.

Incompatible materials : Gold, silver, mercury, Oxidizing agents, Halogens, Halogenated compounds, Acids, Copper, Zinc, Copper/Zinc alloys (Brass), Chlorates.

Hazardous decomposition products : The normal products of combustion are nitrogen and water. Hydrogen may be formed at temperatures above 1,544°F (840°C).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Inhalation:gas: HARMFUL IF INHALED.

Ammonia, Anhydrous (\f)7664-41-7	
LC50 inhalation rat (ppm)	7338 ppm/1h
ATE CA (gases)	3669.00000000 ppmv/4h

Ammonia (7664-41-7)	
LC50 inhalation rat (ppm)	7338 ppm/1h

Skin corrosion/irritation : CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.
CAUSES SEVERE SKIN BURNS AND EYE DAMAGE
pH: Not applicable.

Serious eye damage/irritation : CAUSES SERIOUS EYE DAMAGE.
pH: Not applicable.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : VERY TOXIC TO AQUATIC LIFE. No ecological damage caused by this product.

Ammonia, Anhydrous (7664-41-7)	
LC50 fish 1	0.44 mg/l (Exposure time: 96 h - Species: Cyprinus carpio)
LC50 fish 2	2.43 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus)
EC50 Daphnia 1	25.4 mg/l (Exposure time: 48 h - Species: Daphnia magna)

Ammonia (7664-41-7)	
LC50 fish 1	0.44 mg/l (Exposure time: 96 h - Species: Cyprinus carpio)
LC50 fish 2	2.43 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus)
EC50 Daphnia 1	25.4 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

Ammonia, Anhydrous (7664-41-7)	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.

Ammonia (7664-41-7)	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.

12.3. Bioaccumulative potential

Ammonia, Anhydrous (7664-41-7)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

Ammonia (7664-41-7)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

12.4. Mobility in soil

Ammonia, Anhydrous (7664-41-7)	
Mobility in soil	No data available.
Log Pow	Not applicable.
Log Kow	Not applicable.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

Ammonia (7664-41-7)	
Mobility in soil	No data available.
Log Pow	Not applicable.
Log Kow	Not applicable.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Other adverse effects

Other adverse effects : May cause pH changes in aqueous ecological systems.

Effect on the ozone layer : None

Effect on global warming : No known effects from this product

SECTION 13: Disposal considerations

13.1. Disposal methods

Regional legislation (waste) : Disposal must be done according to official regulations.

Waste treatment methods : Do not attempt to dispose of residual or unused quantities. Return container to supplier.

Waste disposal recommendations : Do not attempt to dispose of residual or unused quantities. Return container to supplier.

SECTION 14: Transport information

14.1. Basic shipping description

In accordance with TDG

TDG

UN-No. (TDG) : UN1005

TDG Primary Hazard Classes : 2.3 - Class 2.3 - Toxic Gas.

TDG Subsidiary Classes : 8

Proper shipping name : ANHYDROUS AMMONIA

ERAP Index : 3 000

Explosive Limit and Limited Quantity Index : 0

Passenger Carrying Ship Index : Forbidden

Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index : Forbidden

Marine pollutant : Yes (IMDG only)

14.3. Air and sea transport

IMDG

UN-No. (IMDG) : 1005
Proper Shipping Name (IMDG) : AMMONIA, ANHYDROUS
Class (IMDG) : 2 - Gases
MFAG-No : 125

IATA

UN-No. (IATA) : 1005
Proper Shipping Name (IATA) : Ammonia, anhydrous
Class (IATA) : 2

SECTION 15: Regulatory information

15.1. National regulations

Ammonia, Anhydrous (7664-41-7)
Listed on the Canadian DSL (Domestic Substances List)

Ammonia (7664-41-7)
Listed on the Canadian DSL (Domestic Substances List)

15.2. International regulations

Ammonia, Anhydrous (7664-41-7)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Japanese Poisonous and Deleterious Substances Control Law
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

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Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
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Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Japanese Poisonous and Deleterious Substances Control Law
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

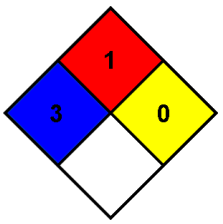
SECTION 16: Other information

Date of issue : 15/10/1979
Revision date : 03/08/2016
Supersedes : 15/10/2013

Indication of changes:
Training advice : Users of breathing apparatus must be trained.

Other information	:	When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair Canada Inc, it is the user's obligation to determine the conditions of safe use of the product. Praxair Canada Inc, SDSs are furnished on sale or delivery by Praxair Canada Inc, or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Praxair sales representative, local distributor, or supplier, or download from www.praxair.ca. If you have questions regarding Praxair SDSs, would like the document number and date of the latest SDS, or would like the names of the Praxair suppliers in your area, phone or write Praxair Canada Inc, (Phone: 1-888-257-5149; Address: Praxair Canada Inc, 1 City Centre Drive, Suite 1200, Mississauga, Ontario, L5B 1M2). PRAXAIR and the Flowing Airstream design are trademarks or registered trademarks of Praxair Technology, Inc. in the United States and/or other countries.

NFPA health hazard	:	3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.
NFPA fire hazard	:	1 - Must be preheated before ignition can occur.
NFPA reactivity	:	0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health	:	3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
Flammability	:	1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)
Physical	:	2 Moderate Hazard - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

SDS Canada (GHS) - Praxair

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.