

Hydrogen Cyanide in Nitrogen 1.0 PPM to 25 PPM

SDS Number: 2420

Revision Date: 5/28/2015

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1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

Norlab - A Division of Norco, Inc.
898 W. Gowen Rd.
Boise, ID 83705

Contact: Quality Department
Phone: (208) 336-1643
Web: www.norlab-gas.com

Product Name: Hydrogen Cyanide in Nitrogen 1.0 PPM to 25 PPM
Revision Date: 5/28/2015
Version: 1
SDS Number: 2420
Common Name: None
CAS Number: MIXTURE
Chemical Family: Gas Mixture
Chemical Formula: HCN 1.0 PPM to 25 PPM in Nitrogen
Synonyms: None

Emergency Telephone Number: (800) 424-9300 (CHEMTREC)

2 HAZARDS IDENTIFICATION

Inhalation: Nitrogen acts as a simple asphyxiate displacing the oxygen content in the air necessary for life. The following effects of asphyxiation are representative and it is possible that none of these symptoms may occur: loss of balance or dizziness; tightness in the frontal area of the forehead; tingling of the tongue, fingertips, or toes; weakened speech leading to the inability to utter sounds; rapid reduction in the ability to perform movements; reduced consciousness of surroundings; loss of tactile sensations; and heightened mental activity.

Hydrogen cyanide may deaden the sense of smell, decreasing the possibility of detection prior to fatal concentrations. Symptoms of poisoning appear within seconds to minutes after breathing vapors. Massive doses may produce, without warning, sudden loss of consciousness and prompt death from respiratory arrest. With smaller but still lethal doses, the illness may be prolonged for one or more hours.

Skin Contact: Vapors or liquid may be fatal if absorbed through the skin. Contact with rapidly expanding gas near the point of release may cause frostbite with redness, skin color change to gray or white, and blistering.

Eye Contact: Vapors may irritate the eyes. Contact with rapidly expanding gas near the point of release may cause frostbite.

Ingestion: Accidental ingestion is unlikely as at ambient temperature and pressure (NTP) this product is a gas.

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NFPA:
HMIS III:

Health = 1, Fire = 0, Reactivity = 0
H1/F0/PH3



HMIS III	
HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARDS	3
PERSONAL PROTECTION G I Safety Glasses, Gloves, Vapor Respirator	

PERSONAL PROTECTION INDEX			
A	Goggles	G	Goggles + Gloves + Respirator
B	Goggles + Gloves	H	Goggles + Gloves + Vapor Resistant Clothing + Respirator
C	Goggles + Gloves + Vapor Resistant Clothing	I	Goggles + Gloves + Respirator + Full Body Protection
D	Goggles + Gloves + Vapor Resistant Clothing + Full Body Protection	J	Goggles + Gloves + Respirator + Full Body Protection + Airline Hood
E	Goggles + Gloves + Respirator	K	Goggles + Gloves + Respirator + Full Body Protection + Airline Hood
F	Goggles + Gloves + Respirator + Full Body Protection	X	Consult your supervisor or S.O.P. for "SPECIAL" handling directions
A	Safety Glasses	n	Splash Goggles
t	Dust Respirator	o	Face Shield & Eye Protection
u	Vapor Respirator	p	Gloves
w	Dust & Vapor Respirator	q	Boots
y	Full Face Respirator	r	Synthetic Airtex
z	Airtight Hood or Muffle	s	Full Suit
Additional Information			

GHS Signal Word:
WARNING

GHS Hazard Pictograms:



GHS Classifications:

Physical, Gases Under Pressure, Compressed Gas
Health, Acute toxicity, 5 Inhalation

GHS Phrases:

H280 - Contains gas under pressure; may explode if heated
H333 - May be harmful if inhaled

GHS Precautionary Statements:

P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P308+313 - IF exposed or concerned: Get medical advice/attention.
P403+233 - Store in a well ventilated place. Keep container tightly closed.
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52 °C (125 °F).
CGA-PG05 - Use a back flow preventive device in the piping
CGA-PG06 - Close Valve after each use and when empty.
CGA-PG10 - Use only with equipment rated for cylinder pressure.
CGA-PG20 - Use only equipment of compatible materials of constructions.

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Additional Hazard Statements (USA):

Simple Asphyxiate - May displace oxygen and cause rapid suffocation.

Non-flammable, colorless gas with faint odor of bitter almonds. Contains small amounts of hydrogen cyanide, which acts on the nervous system to paralyze the respiratory system. Contact with this product may irritate the eyes and skin. Toxic if absorbed through the skin. Nitrogen acts as a simple asphyxiate, displacing atmospheric oxygen and may cause asphyxiation if released in a confined area. Contents under pressure. Use and store below 125 °F (52 °C).

3**COMPOSITION/INFORMATION ON INGREDIENTS****Ingredients:**

CAS #	I	Percentage	I	Chemical Name
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7727-37-9	I	99.9975-99.9999%	I	Nitrogen
74-90-8	I	1 PPM to 25 PPM	I	Hydrogen cyanide

4**FIRST AID MEASURES**

Inhalation: PROMPT REMOVAL FROM THE CONTAMINATED AREA AND IMMEDIATE MEDICAL ATTENTION IS MANDATORY IN **ALL** CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE AWARE OF THE HEALTH HAZARDS ASSOCIATED WITH HYDROGEN CYANIDE.

Remove the victim from the contaminated area as soon as possible. If victim is not breathing, ensure that an airway is open and administer artificial resuscitation and supplemental oxygen.

A complete Cyanide Antidote Kit should be available near all areas of use. Personnel should be trained in the use of the kit to administer first aid in advance of medical assistance. Pertinent medical records shall be maintained for 5 years following the last exposure to hydrogen cyanide.

Skin Contact: Remove contaminated clothing and flush affected area with lukewarm water for at least 15 minutes. DO NOT USE HOT WATER. If irritation persists or cyanide exposure is suspected, seek immediate medical attention.

Eye Contact: Immediately flush eyes with large amounts of cool water for at least 15 minutes, opening and closing eyelids to ensure adequate rinsing. If irritation persists or cyanide exposure is suspected, seek immediate medical attention.

Ingestion: Unlikely; product is a gas. Contact local poison control center. A physician should see the patient promptly.

Most important symptoms and effects, both acute and delayed:

The most important known symptoms and effects are described in the labeling (see Section 2) and/or Section 11.

Indication of any immediate medical attention and special treatment needed:

No data available.

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5 FIRE FIGHTING MEASURES

Flammability: Not flammable
Flash Point: NA
Flash Point Method: NA
Burning Rate: Not determined
Autoignition Temp: Not determined
LEL: NA
UEL: NA

Extinguishing Media:

Use as appropriate for surrounding material.

Special Hazards Arising From the Substance or Mixture:

Carbon Oxides
Hydrogen Cyanide gas
Hydrogen gas (trace)
Nitrogen gas
Nitrogen Oxides (NO_x)

Advice for Firefighters:

Use water spray to cool unopened containers. Continue to cool heat or flame exposed containers until well after the flames are extinguished. Firefighters should wear a full-face piece, NIOSH/MSHA-approved self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout gear.

Further Information:

If incinerated, may release toxic fumes.
Use water spray to cool unopened containers.
Product is non-flammable.
Cylinders may rupture violently from pressure when involved in a fire situation.
See Section 7 for more information on safe handling.
See Section 8 for more information on personal protection equipment.
See Section 13 for disposal information.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures:

Isolate hazard area, evacuate personnel and deny entry to unauthorized/unprotected individuals. Use appropriate protective equipment including respiratory protection for high or unknown concentrations. Personnel should not re-enter hazard area until hydrogen cyanide is dispersed and adequate atmospheric oxygen is re-established. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/Norlab location.

Environmental Precautions:

Prevent further release (leakage/spillage) if safe to do so.

Methods and Materials for Containments and Cleaning Up:

Contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/Norlab location.
Ensure adequate ventilation.

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Reference to Other Sections:

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for information on proper disposal.

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HANDLING AND STORAGE

Handling Precautions:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (< 3000 psig) piping systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous backflow into the cylinder.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid from in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

Storage Requirements:

Ensure adequate ventilation.

Protect cylinders from physical damage. Store in a cool, dry, well ventilated area of non-combustible construction away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125 °F (52 °C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

For additional recommendations, consult Compressed Gas Association Pamphlet P-1.

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EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use local exhaust at filling zones and where leakage and dust formation is probable. Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure Limits in Air below TLV & PEL limits. Maintain atmospheric Oxygen content at or above 19.5%

Personal Protective Equip:

Eye/face protection:

When using material use safety goggles, gloves, apron and vapor respirator according to HMIS PP, H. Use of a face shield according to HMIS PP, O is also highly recommended. All safety equipment should be tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin protection:

Handle with protective gloves made from Neoprene or rubber at all times when handling hydrogen cyanide. Gloves must be inspected prior to use. Dispose of contaminated gloves according to applicable laws and workplace practices.

Body Protection:

Chemically resistant gloves, safety goggles, apron and face shield are recommended. Type of protective equipment should be selected based on concentration amount and conditions of use of this material. Use safety shoes.

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Respiratory protection:

Use a vapor respiratory when working with hydrogen cyanide. Breathing apparatus alone is not considered complete protection in atmospheres containing over 1000 ppm hydrogen cyanide as toxic amounts can be absorbed through the skin. A vapor respirator may be required as backup to engineering controls when proper engineering controls are not in place to keep TLV and PEL limits below defined thresholds. A NIOSH/MSHA-approved full-face piece SCBA operated in positive mode and/or any supplied air respirator with a full-face piece and operated in a positive pressure mode in combination with an auxiliary self contained breathing apparatus operated in positive pressure mode should be used for high or unknown concentrations. Respirators should be stored in an area not likely to be contaminated.

Control of environmental exposure:

Prevent leakage or spillage if safe to do so.

Components with workplace control parameters:

Component(s): Nitrogen; Hydrogen Cyanide

CAS No(s): 7727-37-9; 74-90-8

USA NIOSH (STEL/REL): 4.7 ppm, 5 mg/m³ (skin) USA

ACGIH (TWA/TLV): Simple asphyxiate (Nitrogen) USA

ACGIH (STEL/TLV): 4.7 ppm, 5 mg/m³ (skin)

USA OSHA Table Z-1 Limits for Air Contaminants 1910.1000 (TWA): 10 ppm, 11 mg/m³ (skin)

Biological occupational exposure limits:

Contains no substances with biological occupational exposure limit values.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colorless gas	Odor:	Bitter-sweet almond
Physical State:	Gas	Molecular Formula:	MIXTURE
Odor Threshold:	2 - 5 ppm (as HCN)	Solubility:	Very slight
Particle Size:	Not determined	Softening Point:	Not determined
Spec Grav./Density:	No data available	Percent Volatile:	100%
Viscosity:	Not determined	Heat Value:	Not determined
Sat. Vap. Conc.:	Not determined	Freezing/Melting Pt.:	-209.9 °C (-345.9 °F)
Boiling Point:	-195.8 °C (-320.0 °F)	Flash Point:	Not determined
Flammability:	(solid, gas): Not flammable	Octanol:	Not determined
Partition Coefficient:	Not determined	Vapor Density:	(air = 1): 0.97
Vapor Pressure:	Not determined	VOC:	Not determined
pH:	Not determined	Bulk Density:	NA
Evap. Rate:	Not determined	Auto-Ignition Temp:	Not determined
Molecular weight:	MIXTURE	UFL/LFL:	NA
Decomp Temp:	Not determined		

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Incompatibilities, flames, ignition sources.
Materials to Avoid:	Strong oxidizing agents, strong acids, strong bases, amines and combustible materials.

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Hazardous Decomposition: Carbon Oxides and Nitrogen Oxides (NOx).

Hazardous Polymerization: Will not occur.

11 TOXICOLOGICAL INFORMATION

Component(s): Nitrogen; Hydrogen Cyanide

CAS No(s): 7727-37-9; 74-90-8

Acute Toxicity:

LD50 Oral - Rat: 4.21 mg/kg

LD50 Dermal - Rabbit: 2.34 mg/kg

LC50 Inhalation - Rat: 140 ppm (1 h)

LC50 Inhalation - Rat: 120 mg/m³ (1 h)

Workers exposed for a period of seven years to hydrogen cyanide concentrations between 4 and 12 PPM showed increase in subjective symptoms such as headache, weakness, change in taste and smell, irritation of throat, vomiting, difficulty in breathing after exertion, lacrimation, abdominal colic, precordial pain and nervous instability.

Enlargement of the thyroid gland, attributed possibly to effects of thiocyanate, the chief metabolite of cyanide, was reported over a period of years to low concentrations in air.

A study was undertaken to assess the health status of workers exposed to cyanide fumes and aerosols in a factory. Cyanide levels were measured in the work environment and in blood and urine. Smokers had a higher concentration than non-smokers. The concentrations in the breathing zone and workroom atmospheres were 0.8 and 0.2 mg/m³ respectively. The workers complained of typical cyanide poisoning in spite of low concentrations.

Skin Corrosion/Irritation: Causes skin irritation. Hydrogen cyanide is acutely toxic when absorbed through the skin,

Serious Eye Damage/Eye Irritation: Causes eye irritation.

Respiratory or Skin Sensitation: No data available.

Germ Cell Mutagenicity: No data available.

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive Toxicity: Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

Specific Target Organ Toxicity · Single Exposure: Hydrogen cyanide blocks respiration at the cellular level. Acute poisoning results in weakness, headache, confusion, nausea, and vomiting.

Specific Target Organ Toxicity · Repeated Exposure: Chronic exposure to hydrogen cyanide may cause fatigue and weakness. Long term effects include neurasthenia with autonomic nervous system involvement, psychic alterations,

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precordial pains, breathlessness on exercise, bradycardia, arterial hypotomia, polycythemia, dyspepsia, hepatic impairment, and thyroidal hypofunction. May cause liver, kidney, cardiovascular, or central nervous system disorders.

Aspiration Hazard: No data available.

Additional Information:

Component: Nitrogen; RTECS: QW9700000

Component: Hydrogen Cyanide; RTECS: MW6825000

12 ECOLOGICAL INFORMATION

Component(s): Nitrogen; Hydrogen Cyanide

CAS No(s): 7727-37-9; 74-90-8

Toxicity:

Toxicity to fish:

Flow-Through Test LC50 - Pimephales promelas (Fathead Minnow): 0.082 - 0.137 mg/l (96 h)

Flow-Through Test LC50 - Oncorhynchus mykiss (Rainbow Trout): 0.024 - 0.035 mg/l (96 h)

Flow-Through Test LC50 - Lepomis macrochirus (Bluegill Sunfish): 0.232 - 0.365 mg/l (96 h)

Toxicity to daphnia and other aquatic invertebrates:

EC50 - Daphnia magna (Water Flea): 1.8 mg/l (48 h)

Persistence and Degradability:

No data available.

Bioaccumulative potential:

No data available.

Mobility in Soil:

No data available.

Results of PBT and vPvB assessment:

Not required/conducted.

Other Adverse Effects:

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life. Product does not contain Class I or Class II ozone depleting substances.

13 DISPOSAL CONSIDERATIONS

Product and Contaminated Packaging: Do not attempt to dispose of residual waste or unused quantities in returnable containers. Return in the shipping container, properly labeled, with any valve outlet plugs or caps secure and valve protection cap in place to Norlab for proper disposal. Non-refillable containers should be vented in a well-ventilated area then disposed of in compliance with local regulations, or returned to Norlab.

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14 TRANSPORT INFORMATION

DOT Class: Non-Flammable Gas (2.2) #2.2

UN #: UN 1956, Class: 2, Proper Shipping Name: Compressed gas, n.o.s. (Hydrogen Cyanide, Nitrogen)

DOT (US)

UN Number: 1956

Class: 2.2

ERG #: 126

Proper Shipping Name: Compressed gas, n.o.s. (Hydrogen Cyanide, Nitrogen)

IMDG

UN Number: 1956

Class: 2.2

EMS-No: F-C, S-V

Proper Shipping Name: Compressed gas, n.o.s. (Hydrogen Cyanide, Nitrogen)

IATA

UN Number: 1956

Class: 2.2

Proper Shipping Name: Compressed gas, n.o.s. (Hydrogen Cyanide, Nitrogen)

Canada TDG

UN Number: 1956

Class: 2.2

Proper Shipping Name: Compressed gas, n.o.s. (Hydrogen Cyanide, Nitrogen)



15 REGULATORY INFORMATION

COMPONENT / (CAS/PERC) / CODES

*Nitrogen (7727379 99.9975-99.9999%) MASS, NJHS, PA, TSCA

*Hydrogen cyanide (74908 1 PPM to 25 PPM) ACUTERCRA, CERCLA, CSWHS, EHS302, EPCRAWPC, MASS, NJEHS, NJHS, OSHAPSM, OSHAWAC, PA, SARA311/312, SARA313, TSCA, TXAIR, TXHWL, TXRESPEST

Hydrogen cyanide is listed under the accident prevention provisions of section 112R of the Clean Air Act (CAA) with a threshold quantity (TQ) of 2,500 pounds.

Hydrogen Cyanide is listed as a RCRA hazardous waste P063 (40 CFR 261.33) and D003 (40 CFR 261.23).

The presence of hydrogen cyanide in quantities in excess of the threshold planning quantity (TQP) of 100 pounds requires certain emergency planning activities to be conducted.

Releases of hydrogen cyanide in quantities equal to or greater than the reportable quantity (RQ) of 10 pounds are subject to reporting to the National Response Center under CERCLA, Section 304 SARA Title III.

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REGULATORY KEY DESCRIPTIONS

ACUTERCRA = RCRA Acute Hazardous Wastes (P-List)
CERCLA = Superfund clean up substance
CSWHS = Clean Water Act Hazardous substances
EHS302 = Extremely Hazardous Substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJEHS = NJ Extraordinarily Hazardous Substances
NJHS = NJ Right-to-Know Hazardous Substances
OSHAPSM = OSHA Chemicals Requiring process safety management
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
SARA311/312 = SARA 311/312 Toxic Chemicals
SARA313 = SARA 313 Title III Toxic Chemicals
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
TXHWL = TX Hazardous Waste List
TXRESPEST = TX Restricted Use Pesticides

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OTHER INFORMATION

Disclaimer:

The data in this Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material in any process. The information set forth herein is furnished free of charge and is based on technical data that Norlab believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside of Norlab's control, Norlab makes no warranties, expressed or implied, and assumes no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under, or a recommendation to infringe upon, any patents.