Safety Data Sheet

Section 1: Identification

Product identifier

Product Name • **Hydrogen Cyanide (0.0001 - 0.0005%), Nitrogen (Balance)**

Product Code • MSDS No.: M-2050/E-1

Relevant identified uses of the substance or mixture and uses advised against

Recommended use • Calibration Gas

Details of the supplier of the safety data sheet

Manufacturer • Air Liquide

2700 Post Oak Blvd.
Houston, TX 77056
United States
www.us.airliquide.com

Telephone (Technical) • 713-896-2896

Telephone (Technical) • 800-819-1704

Emergency telephone number

Manufacturer • 800-424-9300 - CHEMTREC

Manufacturer • +1 703-527-3887 - Outside United States

Section 2: Hazard Identification

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 • Compressed Gas - H280
Simple Asphyxiant

Label elements

OSHA HCS 2012

WARNING

Hazard statements • Contains gas under pressure; may explode if heated - H280
May displace oxygen and cause rapid suffocation.

Precautionary statements

Storage/Disposal • Store in a well-ventilated place. - P403

Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

Classification of the substance or mixture

WHMIS

- Compressed Gas - A

Label elements

WHMIS

- Compressed Gas - A

Other hazards

WHMIS

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
  In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

Composition					
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**	**Comments**
Hydrocyanic acid	**CAS:**74-90-8	0.0001% TO 0.0005%	Eye-Rabbit LD50 • 1040 µg/kg Inhalation-Rat LC50 • 150 ppm 30 Minute(s)	**OSHA HCS 2012:** Flam. Liq. 1; Acute Tox 1 (Inhalation)	1 - 4.7 PPM
Nitrogen	**CAS:**7727-37-9	99.9995% TO 99.9999%	NDA	**OSHA HCS 2012:** Press. Gas - Comp., Simp. Asphyx.	NDA

Section 4: First-Aid Measures

Description of first aid measures

Inhalation

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

Skin

- After contact with skin, take off immediately all contaminated clothing and wash immediately with plenty of (to be specified by manufacturer). If irritation develops and persists, get medical attention.

Eye
- Get medical attention immediately if symptoms occur. Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye.

Ingestion
- If swallowed, rinse mouth with water (only if the person is conscious) Do NOT induce vomiting. Get medical attention immediately if symptoms occur.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Other information

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

Section 5: Fire-Fighting Measures

Extinguishing media

Suitable Extinguishing Media
- Use extinguishing agent suitable for type of surrounding fire.
  SMALL FIRES: Dry chemical or CO2.
  LARGE FIRES: Water spray or fog.

Unsuitable Extinguishing Media
- No data available

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Containers may explode when heated.
  Ruptured cylinders may rocket.

Hazardous Combustion Products
- No data available

Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
  Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
  Wear positive pressure self-contained breathing apparatus (SCBA).
  Move containers from fire area if you can do it without risk.
  FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.
  FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
  FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
  FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
  FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
  FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.

Emergency Procedures

- Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Do not direct water at spill or source of leak. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile)

Environmental precautions

- No data available

Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
  Do not direct water at spill or source of leak.
  Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
  If possible, turn leaking containers so that gas escapes rather than liquid.
  Isolate area until gas has dispersed.
  Ventilate the area.
  Allow substance to evaporate.

Section 7 - Handling and Storage

Precautions for safe handling

Handling

- Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked-over. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container.

Conditions for safe storage, including any incompatibilities

Storage

- Store in a cool, dry, well-ventilated place. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines						
	Result	**ACGIH**	**Canada Ontario**	**Canada Quebec**	**NIOSH**	**OSHA**
Hydrocyanic acid (74-90-8)	Ceilings	4.7 ppm Ceiling (as CN)	4.7 ppm Ceiling (as CN)	10 ppm Ceiling; 11 mg/m3 Ceiling	Not established	Not established
	TWAs	Not established	Not established	Not established	Not established	10 ppm TWA; 11 mg/m3 TWA
	STELs	Not established	Not established	Not established	4.7 ppm STEL; 5 mg/m3 STEL	Not established

Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof - electrical, ventilating and/or lighting equipment.

Personal Protective Equipment

Respiratory	• No data available
Eye/Face	• Wear safety glasses.
Skin/Body	• Wear leather gloves when handling cylinders.
Environmental Exposure Controls	• Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas with bitter almond odor.
Color	Colorless	Odor	Bitter almond.
Odor Threshold	None		
General Properties			
Boiling Point	-196 C(-320.8 F) Nitrogen	Melting Point	-210 C(-346 F) Nitrogen
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	0.967 Water=1 Nitrogen	Water Solubility	1.485
Viscosity	Data lacking		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	0.967 Air=1
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Not flammable.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- No data available

Conditions to avoid

- No data available

Incompatible materials

- No data available

Hazardous decomposition products

- No data available

Section 11 - Toxicological Information

Information on toxicological effects

Components		
Hydrocyanic acid (0.0001% TO 0.0005%)	74-90-8	**Acute Toxicity:** Inhalation-Rat LC50 • 150 ppm 30 Minute(s)

GHS Properties	Classification
Acute toxicity	**OSHA HCS 2012** • Classification criteria not met
Aspiration Hazard	**OSHA HCS 2012** • Classification criteria not met
Carcinogenicity	**OSHA HCS 2012** • Classification criteria not met
Germ Cell Mutagenicity	**OSHA HCS 2012** • Classification criteria not met
Skin corrosion/Irritation	**OSHA HCS 2012** • Classification criteria not met
Skin sensitization	**OSHA HCS 2012** • Classification criteria not met
STOT-RE	**OSHA HCS 2012** • Classification criteria not met
STOT-SE	**OSHA HCS 2012** • Classification criteria not met
Toxicity for Reproduction	**OSHA HCS 2012** • Classification criteria not met
Respiratory sensitization	**OSHA HCS 2012** • Classification criteria not met
Serious eye damage/Irritation	**OSHA HCS 2012** • Classification criteria not met

Potential Health Effects

Inhalation

Acute (Immediate)
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.

Chronic (Delayed)
- No data available

Skin

Acute (Immediate)
- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)
- No data available

Eye

Acute (Immediate)
- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)
- No data available

Ingestion

Acute (Immediate)
- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)
- No data available

Section 12 - Ecological Information

Toxicity

- No data available

Persistence and degradability

- No data available

Bioaccumulative potential

- No data available

Mobility in Soil

- No data available

Results of PBT and vPvB assessment

- PBT and vPvB assessment has not been conducted for this material.

Other adverse effects

Section 13 - Disposal Considerations

Waste treatment methods

Product waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	UN1956	Compressed gas, n.o.s (Nitrogen, Hydrogen Cyanide)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GAS, N.O.S. (Nitrogen, Hydrogen Cyanide)	2.2	NDA	NDA
IMO/IMDG	UN1956	COMPRESSED GAS, N.O.S (NITROGEN, Hydrogen Cyanide)	2.2	NDA	NDA

Special precautions for user
- Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- Not relevant.

Other information

DOT
- Hydrogen cyanide has a reportable quantity of 10 lbs (4.54 kg) as listed in Appendix A to 49 CFR 172.101.

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications
- Pressure(Sudden Release of)

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Hydrocyanic acid	74-90-8	Yes	Yes	Yes
Nitrogen	7727-37-9	Yes	Yes	Yes

Inventory				
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**TSCA**
Hydrocyanic acid	74-90-8	Yes	No	Yes
Nitrogen	7727-37-9	Yes	No	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Nitrogen	7727-37-9	A
• Hydrocyanic acid	74-90-8	B2, D1A, F

Canada - WHMIS - Ingredient Disclosure List

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	1 %

Environment

Canada - CEPA - Priority Substances List

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	1000 lb TQ (anhydrous)

U.S. - OSHA - Specifically Regulated Chemicals

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	10 lb final RQ; 4.54 kg final RQ

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	10 lb EPCRA RQ

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	100 lb TPQ

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	1.0 % de minimis concentration

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Included in waste streams: K011, K013

U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	waste number P063

U.S. - RCRA (Resource Conservation & Recovery Act) - P Series Wastes - Acutely Toxic Wastes

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	waste number P063

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Nitrogen	7727-37-9	Not Listed
• Hydrocyanic acid	74-90-8	Not Listed

Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date
- 07/October/2014

Preparation Date
- 07/October/2014

Disclaimer/Statement of Liability
- To the best of Air Liquide's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

Key to abbreviations

NDA = No Data Available