

# ACETYLENE Safety Data Sheet

# **1. IDENTIFICATION**

Product identifier Product Name	ACETYLENE
Other means of identification Safety data sheet number UN/ID no. Synonyms	LIND-P001 UN1001 Ethyne, Ethine, Dissolved Acetylene
Recommended use of the chemical and r Recommended Use Uses advised against	<u>estrictions on use</u> Industrial and professional use. Welding. Consumer use
Details of the supplier of the safety data Linde Gas North America LLC - Linde Merc 200 Somerset Corporate Blvd, Suite 7000 Bridgewater, NJ 08807 Phone: 908-464-8100 www.lindeus.com	<u>sheet</u> hant Production Inc Linde LLC
Linde Gas Puerto Rico, Inc. Road 869, Km 1.8 Barrio Palmas, Catano, PR 00962 Phone: 787-641-7445 www.pr.lindegas.com	
Linde Canada Limited 5860 Chedworth Way Mississauga, Ontario L5R 0A2 Phone: 905-501-2500/905-501-1700 www.lindecanada.com	
* May include subsidiaries or affiliate com	panies/divisions.

For additional product information contact your local customer service.

Emergency telephone number Company Phone Number +1 800-232-4726 (Linde National Operations Center, US) 905-501-0802 (Canada) CHEMTREC: 1-800-424-9300 (North America) +1-703-527-3887 (International)

# 2. HAZARDS IDENTIFICATION

### **Classification**

### **OSHA Regulatory Status**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Flammable gases	Category 1
Gases under pressure	Dissolved gas
Simple asphyxiants	Yes

Label elements



Signal word

Danger

Hazard Statements Extremely flammable gas May react explosively even in the absence of air at elevated pressure and/or temperature Contains gas under pressure; may explode if heated May displace oxygen and cause rapid suffocation May form explosive mixtures with air

Precautionary Statements - Prevention Do not handle until all safety precautions have been read and understood Keep away from heat, sparks, open flames, hot surfaces. — No smoking Use and store only outdoors or in a well ventilated place Use a backflow preventive device in piping Fusible plugs in top, bottom, or valve melt at 98 °C to 107 °C (208° F to 224° F). Do not discharge at pressures above 15 psi (103 kPa) Close valve after each use and when empty Never put cylinders into unventilated areas of passenger vehicles

Precautionary Statements - Response IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical attention/advice. Leaking gas fire: do not extinguish, unless leak can be stopped safely Eliminate all ignition sources if safe to do so

Precautionary Statements - Storage Protect from sunlight when ambient temperature exceeds 52°C/125°F

Precautionary Statements - Disposal Dispose of contents/containers in accordance with container supplier/owner instructions

Hazards not otherwise classified (HNOC) Not applicable

# 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Volume %	Chemical Formula
Acetylene	74-86-2	60 - 100	C 2 H 2
Acetone	67-64-1	5 - 10	C3H6O

For safety reasons, acetylene gas is dissolved in acetone in the gas cylinder.

# **4. FIRST AID MEASURES**

### Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance.
Inhalation	Remove to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get medical attention immediately.
Skin contact	Wash off immediately with soap and plenty of water. Contaminated clothing presents a fire hazard and should be removed immediately. Get medical attention if irritation develops and/or persists.
Eye contact	Consult a physician if direct contact with pressurized material occurs. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek immediate medical attention/advice.
Ingestion	Not an expected route of exposure.
Self-protection of the first aider	Remove all sources of ignition. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.
Most important symptoms and effects,	, both acute and delayed
Symptoms	Simple asphyxiant. May cause suffocation by displacing the oxygen in the air. Exposure to oxygen-deficient atmosphere (<19.5%) may cause dizziness, drowsiness, nausea, vomiting, excess salivation, diminished mental alertness, loss of consciousness and death. Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death. Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.
Indication of any immediate medical a	ttention and special treatment needed
Note to physicians	Treat symptomatically.

# **5. FIRE-FIGHTING MEASURES**

### Suitable extinguishing media

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED. Dry chemical. Water spray or fog.

### Specific extinguishing methods

If possible, stop the flow of gas. Do not extinguish the fire until supply is shut off as otherwise an explosive-ignition may occur. If the fire is extinguished and the flow of gas continues, GET AWAY!

Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not direct water at source of leak or safety devices; icing may occur. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Use water spray to cool surrounding containers. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Continue to cool fire exposed cylinders until flames are extinguished. Damaged cylinders should be handled only by specialists.

Specific hazards arising from the chemical

GASEOUS ACETYLENE IS SPONTANEOUSLY COMBUSTIBLE IN AIR AT PRESSURES ABOVE 15 PSI (270 kPa). Pure acetylene is shock sensitive. It requires a very low ignition energy so that fires which have been extinguished without stopping the flow of gas can easily re-ignite with possible explosive force.

Fires involving acetylene occur occasionally at fusible metal pressure relief plugs at the tops and bottoms of cylinders, commonly due to hot metal or slag dropped on the fusible plugs. When the fusible plug releases a large volume of acetylene creating a "roaring" sound. The flame may extend a foot or two away from the cylinder until the pressure is reduced. In most cases, the other end of the cylinder may develop a coating of frost.

If the flame is large, burning from a fusible plug, DO NOT try to put it out unless the cylinder is outdoors or in a very well ventilated area free from sources of ignition. Usually it is very difficult to exinguish large fires because the escaping acetylene may be re-ignited by adjacent ignition sources, thereby possibly creating confined space explosion. Keep containers cool with water spray.

Vapors may travel to source of ignition and flash back. Vapors from liquefied gas are initially heavier than air and spread along ground. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.). Cylinders may rupture under extreme heat.

Hazardous combustion products Carbon monoxide. Carbon dioxide (CO<sub>2</sub>).

### Protective equipment and precautions for firefighters

Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. If the fire is extinguished and the flow of gas continues, GET AWAY!

As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

# 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Consider the risk of potentially explosive atmospheres. Monitor oxygen level. All equipment used when handling the product must be grounded. Use non-sparking tools and equipment. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Do not touch or walk through spilled material.
Other Information	Gas/vapor is heavier than air. Prevent from entering sewers, basements and workpits, or any place where accumulation may be dangerous.
Environmental precautions	
Environmental precautions	Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Prevent spreading of vapors through sewers, ventilation systems and confined areas. See Section 12 for additional ecological information.
Methods and material for containment a	nd cleaning up
Methods for containment	Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. If leak is in container or container valve, contact the appropriate emergency telephone number in Section 1 or call your closest Linde location. DO NOT ATTEMPT TO REMOVE CYLINDERS THAT HAVE BEEN EXPOSED TO HEAT.
Methods for cleaning up	Return cylinder to Linde or an authorized distributor.
	7. HANDLING AND STORAGE
Precautions for safe handling	

Advice on safe handling

Never use copper piping for acetylene service. Only steel or wrought iron pipe should be used.

Open cylinder valve minimum amount required (no more than 1-1.5 turns) to deliver acceptable flow to enable the cylinder to be closed quickly in an emergency situation. Acetylene is shipped in a cylinder packed with a porous mass material, and a liquid solvent, commonly acetone. Acetylene is dissolved in the acetone solution and dispersed throughout the porous medium. When the valve of a charged acetylene cylinder is opened, the acetylene comes out of the solution and passes out in the gaseous form. IT IS CRUCIAL THAT FUSE PLUGS IN THE TOPS AND BOTTOMS OF ALL ACETYLENE CYLINDERS BE THOROUGHLY INSPECTED WHENEVER HANDLED. REMOVE AND QUARANTINE IN SAFE LOCATION ANY DEFECTIVE CYLINDER.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking and explosion proof. "NO SMOKING" signs should be posted in storage and use areas. Use equipment purged with inert gas or evacuated prior to discharge from cylinder. Avoid contact with pure copper, mercury, silver and brass with greater than 65% copper. Solvent (acetone) may accumulate in piping system. For maintenance use appropriate resistant gloves, eye goggles. Operating pressure should be limited to 15 psig (103 kPa) or less. Consider the use of flashback arrestors. Unless oxygen and acetylene are separated, there should be a non-combustible partition of at least 5 ft. high with a fire-resistance rating of one-half hour between cylinders. In the U.S. cylinders stored inside a building near user locations must be limited to total capacity of 2500 ft<sup>3</sup> of gas, exclusive of in-use or attached for use cylinders.

Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distance, use a cart designed to transport cylinders. Never attempt to lift a cylinder by its valve protection cap. Never insert an object (e.g. wrench, screwdriver, pry bar,etc.) into valve cap openings. Doing so may damage valve, causing leak to occur. Use an adjustable strap wrench to remove over-tight or rusted caps. Use only with adequate ventilation. Use a backflow preventive device in piping. Use only with equipment rated for cylinder pressure. Close valve after each use and when empty. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Ensure the complete gas system has been checked for leaks before use.

Never put cylinders into trunks of cars or unventilated areas of passenger vehicles. Never attempt to refill a compressed gas cylinder without the owner's written consent. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit.

Only experienced and properly instructed persons should handle gases under pressure. Always store and handle compressed gas cylinders in accordance with Compressed Gas Association, pamphlet CGA-P1, Safe Handling of Compressed Gases in Containers.

For additional information, consult the Compressed Gas Association's pamphlets P-1, G-1, G-1.1, AV-9, G-1.2, G-1.3, G-1.5, G-1.6, G-1.7, C-13, SB-4, NFPA #51, and OSHA 1910 Subpart H & Q.

#### Conditions for safe storage, including any incompatibilities

Storage Conditions	Outside or detached storage is preferred. Do not store cylinders on their side. This makes the acetylene less stable and less safe, and increases the likelihood of solvent loss resulting in decomposition. If rough handling or other occurrences should cause any fusible plug to leak, move the cylinder to an open space well away from an possible source of a sign on the cylinder warning of "Leaking Flammable Gas".
	Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Keep at temperatures below 52°C / 125°F. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling. Full and empty cylinders should be segregrated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Stored containers should be periodically checked for general condition and leakage.
Incompatible materials	Oxidizing agents. Halogenated compounds. Halogens. Copper. Silver. Mercury. Brasses containing >65% copper and brazing materials containing silver or copper.

# 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Acetylene	None	None	Ceiling: 2500 ppm
74-86-2			Ceiling: 2662 mg/m <sup>3</sup>
Acetone	STEL: 750 ppm	TWA: 1000 ppm	IDLH: 2500 ppm 10% LEL
67-64-1	TWA: 500 ppm	TWA: 2400 mg/m <sup>3</sup>	TWA: 250 ppm
		(vacated) TWA: 750 ppm	TWA: 590 mg/m <sup>3</sup>
		(vacated) TWA: 1800 mg/m <sup>3</sup>	
		(vacated) STEL: 2400 mg/m <sup>3</sup>	
GIH TLV: American Conference of	Governmental Industrial Hygier	ists - Threshold Limit Value, OSHA PEL:	Occupational Safety and Health
ministration Dormissible Exposu	ro Limite NIOSU IDI U: Immodiate	No Dangerous to Life or Health	

Other Information	Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).
Appropriate engineering controls	
Engineering Controls	Local exhaust ventilation to prevent accumulation of high concentrations and maintain air-oxygen levels at or above 19.5%. Explosion proof ventilation systems. Oxygen detectors should be used when asphyxiating gases may be released. Consider installation of leak detection systems in areas of use and storage. Systems under pressure should be regularly checked for leakages. Showers. Eyewash stations.
Individual protection measures, such as p	personal protective equipment
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin and body protection	Work gloves and safety shoes are recommended when handling cylinders. Wear fire/flame resistant/retardant clothing. Take precautionary measures against static discharge.
Respiratory protection	Use positive pressure airline respirator with escape cylinder or self contained breathing apparatus for oxygen-deficient atmospheres (<19.5%).
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes, on skin, or on clothing.

# 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Appearance Odor Odor threshold pH Melting point Evaporation rate Fire Hazard Lower flammability limit: Upper flammability limit:	Compressed gas Colorless. Slight garlic. No information available No data available -80.6 °C / -113 °F Not applicable Yes 2.5% 82%
Melting point	$-80.6 ^{\circ}\text{C}$ / $-113 ^{\circ}\text{F}$
Evaporation rate	Not applicable
Fire Hazard	Yes
Lower flammability limit:	2.5%
Upper flammability limit:	82%
Flash point	No information available
Autoignition temperature	296 °C / 565 °F
Decomposition temperature	No data available
Water solubility	Soluble in water.
Partition coefficient	No data available
Kinematic viscosity	Not applicable

Chemical Name	Molecular weight	Boiling point	Vapor Pressure	Vapor density (air	Gas Density	Critical
	_			=1)	kg/m <sup>3</sup> @20°C	Temperature
Acetylene	26.03	-75.2 °C	4378 kPa@ 21.1°C	0.90	1.72	36.0 °C

# **10. STABILITY AND REACTIVITY**

### Reactivity

Forms explosive acetylides with copper, silver and mercury. Do not use alloy containing more than 65% copper

### Chemical stability

Do not allow free gas (outside of cylinder) to exceed 15 psig. Do not expose cylinders to sudden shock or heat. Acetylene will decompose violently with cylinder failure. Do not discharge at pressures above 15 psi (103 kPa).

### Explosion data

Sensitivity to Mechanical Impact Sensitivity to Static Discharge Self-decomposition or self ignition may be triggered by heat, chemical reaction, friction or impact. Yes.

## Possibility of Hazardous Reactions

May react explosively even in absence of air at elevated pressure and/or temperature. May form explosive mixtures with air.

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Hazardous polymerization
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Temperatures as low as 250°F (121°C) at high pressure, or at low pressure in the presence of a catalyst are sufficient to initiate a polymerization reaction. The hazard is that the polymerization normally liberates heat and may lead to ignition and decomposition of acetylene if conditions permit.

<u>Conditions to avoid</u> Heat, flames and sparks.

Incompatible materials

Oxidizing agents. Halogenated compounds. Halogens. Copper. Silver. Mercury. Brasses containing >65% copper and brazing materials containing silver or copper.

### Hazardous Decomposition Products

Hydrogen gas. Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>).

# **11. TOXICOLOGICAL INFORMATION**

Information on likely routes of exposure

Inhalation	High concentrations (10-20% in air) cause symptoms similar to that of being intoxicated. As a narcotic gas or intoxicant, it causes hypercapnia (an excessive amount of carbon dioxide in the blood). Repeated exposures to tolerable levels has not shown deleterious effects. TCLo, human-inhalation of 20 pph inhaled has been shown to cause headaches and dyspnea.
Skin contact	May cause skin irritation and/or dermatitis.
Eye contact	May cause slight irritation.
Ingestion	Not an expected route of exposure.
Information on toxicological effects	
Symptoms	High concentrations may cause asphyxia from lack of oxygen or act as a narcotic causing central nervous system depression. Symptoms of overexposure are dizziness, headache, tiredness, nausea,

	unconsciousness, cessation of breathing.
Delayed and immediate effects as	well as chronic effects from short and long-term exposure
Irritation	May cause skin and eye irritation.
Sensitization	Not classified.
Germ cell mutagenicity	Not classified.
Carcinogenicity	This product does not contain any carcinogens or potential carcinogens listed by OSHA, IARC or NTP.
Reproductive toxicity	Not classified.
Developmental Toxicity	Not classified.
STOT - single exposure	Not classified.
STOT - repeated exposure	Not classified.
Chronic toxicity	None known.
Target Organ Effects	Central nervous system (CNS), Respiratory system.
Aspiration hazard	Not applicable.

### Numerical measures of toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50	Inhalation LC50 (CGA P-20)
Acetone	= 5800 mg/kg (Rat)	1700mg/kg (rabbit)	18892 mg/m <sup>3</sup>	-
67-64-1				
Product Information				
Oral LD50	No information available			
Dermal LD50	No information available			
Inhalation LC50	No information available			

The following values are calculated based on chapter 3.1 of the GHS document .

## **12. ECOLOGICAL INFORMATION**

<u>Ecotoxicity</u> No known acute aquatic toxicity.

# Persistence and degradability No information available.

# Bioaccumulation

Chemical Name	Partition coefficient
Acetylene 74-86-2	0.32
Acetone 67-64-1	-0.24

# 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

Disposal of wastes

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Linde for proper disposal. This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261).

# **14. TRANSPORT INFORMATION**

# DOT

### LIND-POO1 ACETYLENE

	UN/ID no. Proper shipping name Hazard Class Special Provisions Description Emergency Response Guide Number	UN1001 Acetylene, dissolved 2.1 N86, N88 UN1001, Acetylene, dissolved, 2.1 116
<u>TDG</u>	UN/ID no. Proper shipping name Hazard Class Description	UN1001 Acetylene, dissolved mixture 2.1 UN1001, Acetylene, dissolved mixture, 2.1
<u>MEX</u>	<u>v</u> UN/ID no. Proper shipping name Hazard Class Description	UN1001 Acetylene, dissolved mixture 2.1 UN1001, Acetylene, dissolved mixture, 2.1
<u>IAT</u>	UN/ID no. Proper shipping name Hazard Class ERG Code Special Provisions Description	UN1001 Acetylene, dissolved mixture 2.1 10L A1 UN1001, Acetylene, dissolved mixture, 2.1
<u>IMD</u>	<u>G</u> UN/ID no. Proper shipping name Hazard Class EmS-No. Description	UN1001 Acetylene, dissolved mixture 2.1 F-D, S-U UN1001, Acetylene, dissolved mixture, 2.1
<u>ADR</u>	UN/ID no. Proper shipping name Hazard Class Classification code Tunnel restriction code	UN1001 Acetylene, dissolved mixture 2.1 4F (B/D)

# 15. REGULATORY INFORMATION

UN1001, Acetylene, dissolved mixture, 2.1, (B/D)

International Inventories	
TSCA	
DSL/NDSL	
EINECS/ELINCS	

Description

# Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

Complies Complies Complies

# **US Federal Regulations**

## <u>SARA 313</u>

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

### SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden release of pressure hazard	Yes
Reactive Hazard	Yes

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Acetone	5000 lb	-	5000 lb
67-64-1			2270 kg

## <u>Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)</u> This product contains the following substances which are listed hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act:

Chemical Name	CAS No.	VOC Chemicals	Class 1	Class 2
Acetylene	74-86-2	Х	-	-

# CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

# Risk and Process Safety Management Programs

This material, as supplied, contains one or more regulated substances with specified thresholds under 40 CFR Part 68 or regulated as a highly hazardous chemical pursuant to the 29 CFR Part 1910.110 with specified thresholds:

Chemical Name	U.S CAA (Clean Air Act) -	U.S CAA (Clean Air Act) -	U.S OSHA - Process Safety
	Accidental Release Prevention	Accidental Release Prevention	Management - Highly
	- Toxic Substances	- Flammable Substances	Hazardous Chemicals
Acetylene		10000 lb	

## **US State Regulations**

California Proposition 65

This product does not contain any Proposition 65 chemicals

### U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Acetylene 74-86-2	Х	Х	Х
Acetone 67-64-1	Х	Х	Х

Chemical Name	Carcinogenicity	Exposure Limits
Acetone		Mexico: TWA= 1000 ppm
		Mexico: TWA= 2400 mg/m <sup>3</sup>
		Mexico: STEL= 1260 ppm
		Mexico: STEL= 3000 mg/m <sup>3</sup>

# **16. OTHER INFORMATION**

# NFPA Health hazards 0 Flammability 4 Instability 2 Physic

Physical and Chemical Properties -

Note: Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2009, CGA Recommended Hazard Ratings for Compressed Gases, 3rd Edition.

Issue Date	10-Mar-2015
Revision Date	12-Jul-2016
Revision Note	SDS sections updated; 1

### General Disclaimer

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between Linde LLC, Linde Merchant Production, Inc. or Linde Gas North America LLC (or any of their affiliates and subsidiaries) and the purchaser.

## DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

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End of Safety Data Sheet