

Revision Date 05-May-2026

Version 2.2

1. Identification

Product identifier

Product Name CARBON DIOXIDE, REFRIG LIQUID

Other means of identification

Product Code LIND-P024

UN/ID no. UN2187

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Industrial and professional use, Food and Beverage

Restrictions on use Consumer use.

Details of the supplier of the safety data sheet

Supplier Address

Messer North America, Inc. - Messer LLC - Messer Merchant Production LLC
200 Somerset Corporate Blvd, Suite 7000
Bridgewater, NJ 08807
Phone: 908-464-8100
www.messer-us.com

Messer Gas Puerto Rico, Inc.
Road 869, Km 1.8
Barrio Palmas, Catano, PR 00962
Phone: 787-641-7445

* May include subsidiaries or affiliate companies/divisions.

For additional product information contact your local customer service.

Emergency telephone number

Company Phone Number +1 800-232-4726 (Messer National Operations Center, US)
+1 905-501-0802 (Canada)

1.4 Emergency telephone number CHEMTREC: 1-800-424-9300 (North America) +1-703-527-3887 (International)

2. Hazard(s) identification

Classification of the substance or mixture

Gases under pressure	Refrigerated liquefied gas
Simple asphyxiants	Yes

Hazards not otherwise classified (HNOC)

Not applicable.

Label elements

Warning

Hazard statements

Contains refrigerated gas; may cause cryogenic burns or injury.

May displace oxygen and cause rapid suffocation.

May increase respiration and heart rate

Precautionary Statements - Prevention

Avoid breathing gas.

Always keep container in upright position.

Do NOT change or force fit connections.

Use a backflow preventive device in piping.

Use and store only outdoors or in a well ventilated place.

Use equipment purged with inert gas or evacuated prior to discharge from cylinder.

Wear cold insulating gloves and either face shield or eye protection.

Close valve after each use and when empty.

Precautionary Statements - Response

Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.

Get medical attention/advice.

Precautionary Statements - Storage

Store in a well-ventilated place.

Precautionary Statements - Disposal

Dispose of contents/containers in accordance with container supplier/owner instructions.

Hazards classified under paragraph (d)(1)(ii) of 1910.1200

Messer Canada Inc.

5860 Chedworth Way

Mississauga, Ontario L5R 0A2

Phone: 905-501-2500

Email: service@messer-ca.com

Website: www.messer-ca.com

Customer Service: 888-256-7359.

Other Information

No information available.

3. Composition/information on ingredients**Substance**

Chemical name	CAS No.	Weight-%	Trade secret
CARBON DIOXIDE	124-38-9	100	*

*The exact percentage (concentration) of composition has been withheld as a trade secret.

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. Remove to fresh air.
Eye contact	If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.
Skin contact	For dermal contact or suspected frostbite, remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if contact with the product has resulted in blistering of the dermal surface or in deep tissue freezing. In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
Ingestion	Not an expected route of exposure.
Self-protection of the first aider	RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Most important symptoms and effects, both acute and delayed

Symptoms	Depending on concentration and duration of exposure to carbon dioxide may cause increased respirations, headache, mild narcotic effects, increased blood pressure and pulse, and asphyxiation. Symptoms of overexposure become more apparent when atmospheric oxygen is decreased to 15-17%. Concentrations of 10% or more can produce unconsciousness and death. May cause asphyxiation in high concentrations. Direct contact with liquid can cause severe frostbite.
Effects of Exposure	No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. Fire-fighting measures

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	None. DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.
Specific extinguishing methods	Continue to cool fire exposed cylinders until flames are extinguished. Damaged cylinders should be handled only by specialists.
Specific hazards arising from the chemical	Cylinders may rupture under extreme heat. Damaged cylinders should be handled only by specialists. Containers may explode when heated. Ruptured cylinders may rocket.
Explosion data	
Sensitivity to mechanical impact	Yes.
Sensitivity to static discharge	None.

Special protective equipment and precautions for fire-fighters 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 Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Monitor concentration of released product. Monitor oxygen level. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Use personal protection recommended in Section 8. Contents under pressure. Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

Other information Liquid spill will vaporize and expand rapidly to a large volume of gas creating risk of oxygen deficient atmosphere. A fog cloud of condensed moisture in the air may obscure visibility. Gas/vapor is heavier than air. Prevent from entering sewers, basements and workpits, or any place where accumulation may be dangerous.

When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

Environmental precautions Prevent spreading of vapors through sewers, ventilation systems and confined areas.

Methods and material for containment and 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 Messer location. If system leak, close source valves and safely vent pressure before attempting any repairs.

Methods for cleaning up Return Portable Cryogenic Container to Messer or an authorized distributor.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cold fluids. The extremely cold metal will cause moist flesh to stick fast and tear when one attempts to withdraw from it. Do NOT change or force fit connections. For applications with moist Carbon Dioxide, 316, 309 and 310 stainless steels may be used as well as Hastelloy® A, B, & C and Monel®. Ferrous nickel alloys are slightly susceptible to corrosion. At normal temperatures carbon dioxide is compatible with most plastics and elastomers. 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. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Use only with adequate ventilation. Use a backflow preventive device in piping. Close valve after each use and when empty. 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 strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit. Never attempt to refill a compressed gas cylinder without the owner's written consent.

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

For additional recommendations, consult Compressed Gas Association's publications G-6, G-6.1, G-6.2, G-6.3, G-6.5, G-6.7, G-6.12., P-76 and NFPA 55. Contents under pressure. Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes, on skin, or on clothing.

Conditions for safe storage, including any incompatibilities

Storage Conditions Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling. Keep at temperatures below 52°C / 125°F. 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. Stored containers should be periodically checked for general condition and leakage. Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from sunlight.

Incompatible materials Certain reactive metals, hydrides, moist cesium monoxide, or lithium acetylene carbide diammino may ignite. Passing carbon dioxide over a mixture of sodium peroxide and aluminum or magnesium may explode. Carbon dioxide is incompatible with:

8. Exposure controls/personal protection

Control Parameters

Exposure Limits

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
CARBON DIOXIDE 124-38-9	STEL: 30000 ppm TWA: 5000 ppm	TWA: 5000 ppm TWA: 9000 mg/m ³ (vacated) TWA: 10000 ppm (vacated) TWA: 18000 mg/m ³ (vacated) STEL: 30000 ppm (vacated) STEL: 54000 mg/m ³	IDLH: 40000 ppm TWA: 5000 ppm TWA: 9000 mg/m ³ STEL: 30000 ppm STEL: 54000 mg/m ³

Note See section 16 for terms and abbreviations.

Other information on limit values Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Biological occupational exposure limits This product, as supplied, contains materials that do not have reportable biological exposure limits or are not subject to the reporting requirements of the local jurisdiction.

Appropriate engineering controls

Engineering controls Provide general ventilation, local exhaust ventilation, process enclosure or other engineering controls to maintain airborne levels below recommended exposure limits and to maintain oxygen levels above 19.5%. Consider installation of leak detection systems in areas of use and storage. Carbon dioxide detectors should be installed where there is potential for hazardous concentrations. Do not depend on oxygen monitors as carbon dioxide can be present at hazardous levels even when there is adequate oxygen level. Oxygen detectors should be used when asphyxiating gases may be released.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles). If there is potential for exposure to liquid, wear. Goggles, face-shield over either safety glasses with side shields or safety goggles. Wear safety glasses with side shields (or goggles).
Hand protection	Wear cold insulating gloves.
Skin and body protection	Work gloves and safety shoes are recommended when handling cylinders. Wear loose fitting, cold insulating gloves and suitable clothing to prevent skin contact with liquid, cold gas and cold equipment or piping.
Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations. Use positive pressure airline respirator with escape cylinder or self contained breathing apparatus for oxygen-deficient atmospheres (<19.5%).

9. Physical and chemical properties**Information on basic physical and chemical properties**

Appearance	Colorless
Physical state	No information available Refrigerated liquefied gas
Color	Not available
Odor (includes odor threshold)	Odorless

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Melting/freezing point	No data available	None known
Boiling point (or initial boiling point or boiling range)	-78.5 °C / -109.3 °F	
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability limit:	No data available	
Lower flammability limit:	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
SADT (°C)	No data available	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	Not available	None known
Solubility	Not available	None known
Water solubility	No data available Very soluble	
Partition coefficient n-octanol/water (log value)	Not available	None known
Vapor pressure (includes evaporation rate)	856&70	
Evaporation rate		None known
Density and/or relative density	No information available.	None known
Bulk density	Not available	
Density	Not available	
Vapor density (air =1)	1.53	
Particle characteristics		None known
Particle Size	No data available	
Particle Size Distribution	No data available	
Other information		
Molecular weight	44.01	

Sensitivity to mechanical impact Yes

10. Stability and reactivity

Reactivity Not reactive under normal conditions.

Chemical stability Stable under normal conditions.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid Excessive heat.

Incompatible materials Certain reactive metals, hydrides, moist cesium monoxide, or lithium acetylene carbide diammino may ignite. Passing carbon dioxide over a mixture of sodium peroxide and aluminum or magnesium may explode. Carbon dioxide is incompatible with:

Hazardous decomposition products Oxygen. Carbon monoxide.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Acidosis, adrenal cortical exhaustion, and other metabolic stresses have resulted from prolonged continuous exposure to 1-2% carbon dioxide (10,000 ppm-20,000 ppm). The ACGIH TLV of 5,000 ppm is expected to provide a good margin of safety from asphyxiation and undue metabolic stress provided sufficient oxygen levels are maintained in the air. Increased physical activity, duration of exposure, and decreased oxygen content can affect systemic and respiratory effects resulting from exposure to carbon dioxide.
Eye contact	Direct contact with extremely cold liquid will cause severe and immediate burns to unprotected eyes. Contact with evaporating liquid may cause cold burns/frostbite.
Skin contact	Direct contact with extremely cold liquid will cause severe and immediate burns to unprotected skin. Contact with evaporating liquid may cause cold burns/frostbite. Dispose of contents/containers in accordance with container supplier/owner instructions.
Ingestion	Not an expected route of exposure.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Depending on concentration and duration of exposure to carbon dioxide may cause increased respirations, headache, mild narcotic effects, increased blood pressure and pulse, and asphyxiation. Symptoms of overexposure become more apparent when atmospheric oxygen is decreased to 15-17%.

Acute toxicity No information available.

Numerical measures of toxicity

Dermal LD50 No information available
Inhalation LC50 No information available

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
CARBON DIOXIDE CAS: 124-38-9	-	-	47,000 ppm (Rat)

ID: CO2 100 %			
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	No information available.
Serious eye damage/eye irritation	No information available.
Respiratory or skin sensitization	No information available.
Germ cell mutagenicity	No information available.
Carcinogenicity	No information available.
Reproductive toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Aspiration hazard	No information available.
Other adverse effects	Not available.
Interactive effects	Messer Canada Inc. 5860 Chedworth Way Mississauga, Ontario L5R 0A2 Phone: 905-501-2500 Email: service@messer-ca.com Website: www.messer-ca.com Customer Service: 888-256-7359.

12. Ecological information

<u>Ecotoxicity</u>	No information available.
<u>Persistence and degradability</u>	Not available.
<u>Bioaccumulative potential</u>	No information available.
<u>Mobility in soil</u>	No information available.
<u>Other adverse effects</u>	No information available.

13. Disposal considerations**Waste treatment methods**

Waste from residues/unused products	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 Messer for proper disposal.
Contaminated packaging	Do not reuse empty containers.

14. Transport information

DOT

UN/ID no.	UN2187
Proper shipping name	Carbon dioxide, refrigerated liquid
Hazard Class	2.2
Special Provisions	T75, TP5
DOT Marine Pollutant	NP
Description	UN2187, Carbon dioxide, refrigerated liquid, 2.2
Emergency Response Guide Number	120

TDG

Notes	Forbidden for transport by passenger vessel.
UN/ID no.	UN2187
Proper shipping name	Carbon dioxide, refrigerated liquid
Hazard Class	2.2
Description	UN2187, Carbon dioxide, refrigerated liquid, 2.2

MEX

UN/ID no.	UN2187
Proper shipping name	Carbon dioxide, refrigerated liquid
Hazard Class	2.2
Description	UN2187, Carbon dioxide, refrigerated liquid, 2.2

ICAO (air)

UN/ID no.	UN2187
Proper shipping name	Carbon dioxide, refrigerated liquid
Hazard Class	2.2
Description	UN2187, Carbon dioxide, refrigerated liquid, 2.2

IATA

UN number or ID number	UN2187
Proper shipping name	Carbon dioxide, refrigerated liquid
Transport hazard class(es)	2.2
Environmental hazard	No
ERG Code	2L
Description	UN2187, Carbon dioxide, refrigerated liquid, 2.2

IMDG

UN number or ID number	UN2187
Proper shipping name	Carbon dioxide, refrigerated liquid
Hazard Class	2.2
Marine pollutant indicator	NP
EmS-No.	F-C, S-V
Description	UN2187, Carbon dioxide, refrigerated liquid, 2.2

15. Regulatory information

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

INTERNATIONAL INVENTORIES

DSL/NDSL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
IECSC	-.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AICS	Contact supplier for inventory compliance status.
NZIoC	Contact supplier for inventory compliance status.
TCSI	Contact supplier for inventory compliance status.

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

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

TCSI - Taiwan Chemical Substance Inventory

US FEDERAL REGULATIONS

SARA 313

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

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

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).

CAA (Clean Air Act)

This product does not contain any substances regulated as pollutants pursuant to Clean Air Act (CAA).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

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
CARBON DIOXIDE CAS: 124-38-9 ID: CO2 100 %	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	Health hazards 0	Flammability 0	Instability 0	Special hazards SA
HMIS	Health hazards 0	Flammability 0	Physical hazards 2	Personal protection -

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	American Conference of Governmental Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure
BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	U.S. Environmental Protection Agency
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health

n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NTP	National Toxicology Program (United States)
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
OSHA	Occupational Safety and Health Administration of the US Department of Labor
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic
PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure-activity relationship
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheet
SL	Surface Limit
STEL	Short Term Exposure Limit
STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
TCSI	Taiwan Chemical Substance Inventory
TDG	Transport of Dangerous Goods (Canada)
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitizer
RS	Respiratory Sensitizer
S	Sensitizer
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption
Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

Key literature references and sources for data used to compile the SDS

U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
 U.S. Environmental Protection Agency ChemView Database
 European Food Safety Authority (EFSA)
 U.S. Environmental Protection Agency
 Acute Exposure Guideline Level(s) (AEGL(s))
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
 U.S. Environmental Protection Agency High Production Volume Chemicals
 Food Research Journal
 Hazardous Substance Database
 International Uniform Chemical Information Database (IUCLID)
 Japan National Institute of Technology and Evaluation (NITE)

Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)

NIOSH (National Institute for Occupational Safety and Health)

National Library of Medicine's ChemID Plus (NLM CIP)

National Library of Medicine's PubMed database (NLM PUBMED)

U.S. National Toxicology Program (NTP)

New Zealand's Chemical Classification and Information Database (CCID)

International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications

International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program

International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set

United Nations World Health Organization (WHO)

Revision Date 05-May-2026

Revision Note SDS sections updated. Not applicable.

General Disclaimer

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