SAFETY DATA SHEETS

This SDS packet was issued with item:

078948415

The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).

078948416

Nitrous Oxide Gas Cylinder for Use with the CryoLab Device

Safety Data Sheet

According to the Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations And According To The Hazardous Products Regulation (February 11, 2015).

Publication Date: 17 Oct 2024 015MS REV. 2.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Liquefied Gas

Product Name: Nitrous Oxide Gas Container for Use with the CryoLab Device

Synonyms: Nitrogen oxide; Nitrous oxide; Laughing gas; Hyponitrous acid anhydride; Dinitrogen monoxide; NITROGEN OXIDE (N2O); Nitrogen monoxide; Hyponitrous oxide

Intended Use of the Product

Cryosurgical treatment

Name, Address, and Telephone of the Responsible Party

Company
CryoConcepts LP
1100 Conroy Place
Easton, PA 18040 USA
Phone: 855-355-2796
www.cryoconcepts.com

Emergency Telephone Number

Emergency Number: INFOTRAC USA: +1-800-535-5053
INFOTRAC INTERNATIONAL: +1-352-323-3500

SECTION 2: HAZARDS IDENTIFICATION

OSHA/HCS Status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the Substance or Mixture: Oxidizing GASES – Category 1

GASES UNDER PRESSURE – Liquefied gas

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) – Category 3

GHS Label Elements

Hazard Pictograms:

Signal Word Danger

Hazard Statements May cause or intensity fire; oxidizer
Contains gas under pressure; may explode if heated.

May cause drowsiness or dizziness.

Precautionary Statements

General Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Open valve slowly. Use only with equipment cleaned for Oxygen service. Always keep container in upright position.

Prevention Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves, valves and fittings free from oil and grease. Use only outdoors or in a well-ventilated area. Avoid breathing gas.

Response In case of fire: Stop leak if safe to do so. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.

Storage Store locked up. Protect from sunlight. Store in a well-ventilated place.

Disposal Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified: In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Substance

Chemical Name: Nitrous Oxide

Other means of identification: Nitrogen oxide; Nitrous oxide; Laughing gas; Hyponitrous acid anhydride; Dinitrogen monoxide; NITROGEN OXIDE (N2O); Nitrogen monoxide; Hyponitrous oxide

Product Code 000-2730

CAS Number/ Other Identifiers

CAS number: 10024-97-2

Ingredient Name	%	CAS number
Nitrous Oxide	100	10024-97-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: FIRST AID MEASURES

Description of First-Aid Measures

Eye Contact: Immediately flush eyes with plenty of eater, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: As this product is a gas, refer to the inhalation section.

Most Important Symptoms and Effects Both Acute and Delayed:

Potential acute health effects:

Eye contact: No known significant effects or critical hazards.

Inhalation: Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact: No known significant effect or critical hazards.

Frostbite: Try to warm up the frozen tissues and seek medical attention.

Ingestion: Can cause central nervous system (CNS) depression. As this product is a gas, refer to the inhalation section.

Over-Exposure Signs/Symptoms

Eye contact: No specific data.

Inhalation: Adverse symptoms may include the following:, nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness

Skin contact: No specific data.

Ingestion: No specific data.

.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to Physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific Treatments: No specific treatment.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11).

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media Use an extinguishing agent suitable for the surrounding fire.

Unsuitable Extinguishing Media None known.

Specific hazards arising from the chemical: Contains gas under pressure. Oxidizing material. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products: Decomposition products may include the following materials: Nitrogen oxides

Special protective actions for fire-fighters:	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk.
Special protective equipment for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with full face-piece operated in positive pressure mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

For non-emergency personnel:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in “For non-emergency personnel”.
Environmental Precautions:	Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill:	Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.
Large spill:	Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Protective measures:	Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Use only with

adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves free from grease and oil.

Advice on general occupational hygiene: Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52°C (125°F). Store locked up. Separate from reducing agents and combustible materials. Store away from grease and oil. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits

Ingredient name	Exposure limits
Nitrous Oxide	**ACGIH TLV (United States, 3/2017).** TWA: 90 mg/m^3 8 hours. TWA: 50 ppm 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 46 mg/m^3 10 hours. TWA: 25 ppm 10 hours.

Appropriate Engineering Controls: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airbourne contaminants below any recommended or statutory limits.

Environmental Exposure Controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual Protection Measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/Face Protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin Protection

Hand Protection

Chemical-resistance, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the cases of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body Protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other Skin Protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory Protection

Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state: Gas. [Compressed gas.]

Color: Colorless.

Odor:	Characteristic.
Odor threshold:	Not available.
pH:	Not available.
Melting point:	-90.8°C (-131.4°F)
Boiling point:	-88.5°C (-127.3°F)
Critical temperature:	36.55°C (97.8°F)
Flash Point:	[Product does not sustain combustion.]
Evaporation Rate:	Not available.
Flammability (solid, gas):	Extremely flammable in the presence of the following materials or conditions: reducing materials and combustible materials.
Lower and Upper Explosive (flammable) limits:	Not available.
Vapor Pressure:	745 psig
Vapor Density:	1.53 (Air = 1) Liquid Density@BP: 76.8lb/ft^3 (1230 kg/m^3)
Specific Volume (ft^3/lb):	8.6957
Gas Density (lb/ft^3):	0.115
Relative Density:	Not applicable.
Solubility:	Not available.
Solubility in Water:	1.2g/l
Partition coefficient: n-octanol/water:	0.36
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not applicable.
Flow time (ISO 2431):	Not available.
Molecular Weight:	44.01g/mole

SECTION 10: STABILITY AND REACTIVITY

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical Stability: The product is stable.

Possibility of Hazardous Reactions: Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following:
Contact with combustible materials
Reactions may include the following:
Risk of causing fire

Conditions to Avoid: No specific data.

Incompatible Materials: Highly reactive or incompatible with the following materials:
Combustible materials
Reducing materials
Grease

Oil

Hazardous Decomposition Products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous Polymerization: Under normal conditions of storage and use, hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

Acute Toxicity: Not available.

Irritation/Corrosion: Not available.

Sensitization: Not available.

Mutagenicity: Not available.

Carcinogenicity: Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Nitrous Oxide	-	3	-

Reproductive toxicity: Not available.

Teratogenicity: Not available.

Specific target organ toxicity (single exposure):

Name	Category	Route of exposure	Target organs
Nitrous Oxide	Category 3	Not applicable.	Narcotic effects

Specific target organ toxicity (repeated exposure): Not available.

Aspiration hazard: Not available.

Information on the likely routes of exposure: Not available.

Potential Acute Health Effects:

Eye contact: No known significant effects or critical hazards.

Inhalation: Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin Contact: No known significant effects or critical hazards.

Ingestion: Can cause central nervous system (CNS) depression. As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact: No specific data.

Inhalation: Adverse symptoms may include the following:, nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness

Skin Contact: No specific data.

Ingestion: No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects: Not available.

Potential delayed effects: Not available.

Long term exposure

Potential immediate effects: Not available.

Potential delayed effects: Not available.

Potential chronic health effects

Not available.

General: No known significant effects or critical hazards.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Developmental effects: No known significant effects or critical hazards.

Fertility effects: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Nitrous Oxide	0.36	-	low

Mobility in Soil

Soil/water partition coefficient (K_{oc}): Not available.

Other adverse effects: No known significant effects or critical hazards.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

SECTION 14: TRANSPORAT INFORMATION

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN 1070	UN 1070	UN 1070	UN 1070	UN 1070
UN proper shipping name	NITROUS OXIDE	NITROUS OXIDE	NITROUS OXIDE	NITROUS OXIDE	NITROUS OXIDE
Transport hazard class(es)	2.2 (5.1) 	2.2 (5.1) 	2.2 (5.1) 	2.2 (5.1) 	2.2 (5.1) 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification:	**Limited quantity** Yes **Quantity limitation** Passenger aircraft/rail: 75kg. Cargo aircraft: 150kg.
TDG Classification:	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 5). **Explosive Limit and Limited Quantity Index** 0 **ERAP Index** 3000 **Passenger Carrying Ship Index** 450 **Passenger Carrying Road or Rail Index** 75
IATA:	**Quantity limitation** Passenger and Cargo Aircraft: 75kg. Cargo Aircraft Only: 150kg.
Special precautions for user:	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Transport in bulk according to Annex II of MARPOL and the IBC Code:	Not available.

SECTION 15: REGULATORY INFORMATION

U.S. Federal regulations: **TSCA 8(a) CDR Exempt/Partial exemption:** This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs): Not listed.

Clean Air Act Section 602: Class I Substances Not listed

Clean Air Act Section 602: Class II Substances Not listed

DEA List I Chemicals: (Precursor Chemicals) Not listed

DEA List II Chemicals: (Essential Chemicals) Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ: Not applicable.

SARA 311/312

Classification: Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State Regulations

Massachusetts: This material is listed.
New York: This material is not listed.
New Jersey: This material is listed.
Pennsylvania: This material is listed.

California Prop. 65

⚠ **WARNING**: This product can expose you to Nitrous oxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Nitrous oxide	-	-

International regulations

Chemical Weapon Convention List Schedules I, II, and II Chemicals
Not listed.

Montreal Protocol (Annexes A, B, C, E)
Not listed.

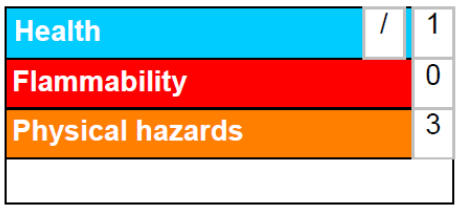
Stockholm Convention on Persistent Organic Pollutants
Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)
Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals
Not listed.

SECTION 16: OTHER INFORMATION INCLUDING DATE OF PREPARATION / LAST REVISION

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and a 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classification in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
OXIDIZING GASES – Category 1	Expert judgment
GASES UNDER PRESSURE – Liquefied gas	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY (Single EXPOSURE) (Narcotic effects) – Category 3	Expert judgment

History

Date of printing: 17 Oct 2024

Date of issue/Date of revision: 17 Oct 2024

Date of previous issue: 20 Mar 2020

Version: 2.0

Key to abbreviations: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. (“Marpol” = marine pollution)
UN = United Nations

References: Not Available

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumed any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards or should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.