

SAFETY DATA SHEET

Conforms with OSHA Hazard Communication Standard (CFR 29 1910.1200) HazCom 2012



Product: CryoSolutions Nitrous Oxide Cartridge

Revision Date: 11/03/2015

SECTION 1 - IDENTIFICATION

Product Identifier

Product Name: CryoSolutions Nitrous Oxide Cartridge
(Compressed, content not exceeding 50ml)

Product Code: 33516, 33517, 33518

Recommended Use of the Chemical and Restrictions on Use

Recommended Use: Special Nitrous Oxide gas cartridges (23.5gr.) for the use on CryoSolutions system with corresponding mounting support only.

Restrictions on Use: Use only as directed.

Details of the Supplier

Manufactured for: Integra York PA, Inc.
589 Davies Dr.
York, PA 17402 USA
1-866-854-8300

Emergency Phone Number

24-Hour Number: 1-800-535-5053

International: 1-352-323-3500

SECTION 2 – HAZARDS IDENTIFICATION

Classification

Hazard Class	Category
Gases under pressure	Liquefied gas
Oxidizing gases	1

Label Elements

Hazard Symbols(s):



Signal Word(s): Danger

Hazard Statement(s):

Contains gas under pressure; may explode if heated.
May cause or intensify fire; oxidizer.
Heating may cause an explosion
Harmful if inhaled

SAFETY DATA SHEET

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Product: CryoSolutions Nitrous Oxide Cartridge

Revision Date: 11/03/2015

Precautionary Statements:

Keep out of reach of children.
Keep away from combustible materials.
Keep valves and fittings free from oil and grease.
In case of fire: Stop leak if safe to do so.
Store in a well-ventilated place.
Protect from direct sunlight.

Other Hazards

May cause asphyxiation in high concentrations.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Wt. %
Dinitrogen oxide (Nitrous Oxide)	10024-97-2	100

Does not contain any other components or impurities which could affect the classification of this product.

SECTION 4 – FIRST AID MEASURES

First Aid Measures

Inhalation:

High concentrations can cause asphyxiation. Symptoms can include loss of mobility and consciousness. The victim does not notice the asphyxiation. In low concentrations can cause narcotic effects. Symptoms can include dizziness, headache, nausea and coordination problems. Immediately remove victim to uncontaminated area. The victim should be made to wear appropriate NIOSH approved respiratory equipment. Keep victim warm and rested. Consult a doctor. Attempt artificial respiration if the victim stops breathing.

Eye Contact: Immediately flush eyes thoroughly with water for at least 15 minutes.

Ingestion: Ingestion is not seen as a possible method of exposure.

Skin: Contact with liquid can cause cold burns/frost bite. Spray any cold burns immediately with water for at least 15 minutes. Cover with a sterile dressing. Consult a doctor.

Most Important Symptoms and Effects (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 and dizziness.

Skin Contact: No known significant effects or critical hazards.

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

SAFETY DATA SHEET

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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.

SECTION 5 – FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable: All known extinguishants can be used.

Unsuitable: None identified.

Specific Hazards Arising from Chemical

- Supports combustion. Non-flammable.
- Exposure to fire may cause cylinder to burst/explode.
- If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: nitric oxide, nitrogen dioxide.

Protective Equipment and Precautions for Firefighters

- Use self-contained breathing apparatus and chemically protective clothing.
- Move away from the container and cool with water from a safe position.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

SAFETY DATA SHEET

Conforms with OSHA Hazard Communication Standard (CFR 29 1910.1200) HazCom 2012



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Revision Date: 11/03/2015

Personal Precautions: Ensure adequate ventilation. Remove ignition sources.

Environmental Precautions: Attempt to stop gas release. Prevent from entering sewer systems, basements, work pits or any other areas where accumulation could be hazardous.

Methods and Material for Containment and Cleaning Up

Ventilate the area.

SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling

Handling:

- Only use equipment suitable for this product and the pressure and temperature specified.
- Keep away from ignition sources (including electrostatic discharges).
- Do not puncture or heat over 50°C.
- Protect from physical damage.
- Never use direct flame or electrical heating devices to raise the pressure of a cylinder.
- Never attempt to refill an empty cylinder.
- Emerging gas will cause the cylinder to freeze.
- Do not touch a discharging or recently discharged cylinder with bare hands.
- Never attempt to transfer gases from one cylinder to another.
- Do not use the cylinder as a roller or support, or for any other purpose than to contain the gas as supplied.
- Do not subject cylinder to mechanical shocks which may cause damage to their integrity.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions:

- Keep out of reach of children.
- Store the containers in a well-ventilated place at less than 50°C.
- Store cylinder in a location free from risk of fire and away from sources of heat and ignition.
- Periodically check cylinder for general conditions and leakage.
- Do not store containers in conditions likely to encourage corrosion.

Incompatible Materials: None identified.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Control Parameters

Exposure Guidelines:

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH REL
Nitrous Oxide	50 ppm 8hr TWA	Not available	25 ppm (TWA)

Appropriate Engineering Controls

SAFETY DATA SHEET

Conforms with OSHA Hazard Communication Standard (CFR 29 1910.1200) HazCom 2012



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Revision Date: 11/03/2015

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne 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

Respiratory Protection: Ensure adequate ventilation.

Skin and Body Protection: Wearing of appropriate chemical resistant gloves is recommended.

Eye/Face Protection: Protect eyes, skin, and face from liquid splashes.

General Work/Hygienic Practices: Do not smoke while handling the product.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless compressed gas

Odor: Slightly sweet odor

Odor threshold: Not determined

Molecular Weight: 44

pH: Not determined.

Melting point: -90.81°C/-131.8°F

Initial boiling point and boiling range: -88.5°C/-127.3°F; range not determined

Critical Temperature: 36.4°C/97.5°F

Flash point: Oxidation agent.

Evaporation rate: Not determined

Flammability (solid, gas): Extremely flammable in the presence of the following materials or conditions: reducing materials and combustible materials.

Upper/lower flammability or explosive limits: Not determined

Vapor pressure (20°C): 50.8 bar/736 psig at 20°C/68°F

Vapor density: Not determined

SAFETY DATA SHEET

Conforms with OSHA Hazard Communication Standard (CFR 29 1910.1200) HazCom 2012



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Revision Date: 11/03/2015

Relative density, gas (air = 1): 1.5

Solubility in water (mg/l): 2.2

Partition coefficient (n-octanol/water): Not determined

Auto-ignition temperature: Not applicable.

Decomposition temperature: Not determined

Viscosity: 0.0145 cP@25C

Other information: Gas/vapors are heavier than air. They can accumulate in confined spaces, especially at floor level or in lower-level areas

SECTION 10 – STABILITY AND REACTIVITY

Reactivity: No additional information.

Chemical stability: The decomposition of nitrous oxide is exothermic and irreversible, leading to considerable increase in pressure.

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:

At temperatures of over 575°C, at atmospheric pressure, nitrous oxide breaks down into nitrogen and oxygen. Heat.

Under pressure nitrous oxide can also decompose into nitrogen and oxygen at temperatures above 300°C. Heat.

Incompatible materials:

- Can violently react with combustible materials.
- Can violently react with reducing agents.
- Violently oxidizes organic materials.

Hazardous decomposition products:

Thermal decomposition yields toxic products which can be corrosive in the presence of moisture. In the presence of catalysts (e.g. halogen compounds, mercury, nickel, platinum), decomposition increases and decomposition can occur at even lower temperatures.

SECTION 11 – TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

There is no scientific consensus as to possible toxic effects, but some studies indicate that nitrous oxide may cause damage to the reproduction system, the upper respiratory tract, or the central nervous system.

SAFETY DATA SHEET

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SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity:

Global Warming Potential [CO₂=1]: 298

Persistence and degradability: No additional information.

Bioaccumulative potential: No additional information.

Mobility in soil: No additional information.

Other adverse effects: No additional information.

SECTION 13 – DISPOSAL CONSIDERATIONS

General:

Release into the atmosphere in a well ventilated place.
Avoid releasing large quantities into the atmosphere.
Do not discharge into any place where its accumulation could be dangerous.

Disposal Methods:

Dispose of emptied cylinders only.
Cylinders are made of recyclable steel and hence a valuable resource. Emptied cylinders should therefore always be recycled.
Adhere to local waste regulations when disposing of emptied cylinders. Never dispose of cylinders in an uncontrolled manner (e.g. dumping at sea).

SECTION 14 – TRANSPORT INFORMATION

Ground or sea transport

U.S. DOT 49 CFR 172.101 : ORM-D Consumer Commodity

Air shipment

PROPER SHIPPING NAME : Nitrous oxide

ID NUMBER : UN1070

HAZARD CLASS OR DIVISION : 2.2

LABELING REQUIREMENTS : 2.2; 5.1

SECTION 15 – REGULATORY INFORMATION

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OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es): Compressed Gas; Oxidizer.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification: Sudden Release of Pressure Hazard; Fire Hazard.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65) WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

SECTION 16 – OTHER INFORMATION

Can cause asphyxiation in high concentrations.
The risk of asphyxiation is often overlooked and must be made clear when training employees.
Contact with liquid can cause cold burns/frost bite.

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