

## Safety Data Sheet

Material Name: NITROUS OXIDE

SDS ID: MAT16790

### \*\*\* Section 1 - PRODUCT AND COMPANY IDENTIFICATION \*\*\*

**Material Name:** NITROUS OXIDE

#### Manufacturer Information

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

#### Chemical Family

inorganic, gas

#### Synonyms

MTG MSDS 70; DINITROGEN MONOXIDE; FACTITIOUS AIR; LAUGHING GAS; HYPONITROUS ACID ANHYDRIDE; NITROGEN (I) OXIDE; NITROGEN OXIDE; UN 1070; NITROGEN OXIDE (N<sub>2</sub>O); DINITROGEN OXIDE; NITROUS OXIDE, COMPRESSED; N<sub>2</sub>O; RTECS: QX1350000

#### Product Use

industrial

#### Usage Restrictions

none known

### \*\*\* Section 2 - HAZARDS IDENTIFICATION \*\*\*

#### EMERGENCY OVERVIEW

**Color:** colorless

**Physical Form:** gas

**Odor:** sweet odor

**Health Hazards:** potentially fatal if inhaled, central nervous system depression, difficulty breathing

**Physical Hazards:** Containers may rupture or explode if exposed to heat. Oxidizer.

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## POTENTIAL HEALTH EFFECTS

### Inhalation

**Short Term:** central nervous system effects, nausea, vomiting, headache, drowsiness, dizziness, loss of coordination, hyperactivity or drowsiness, hearing loss, suffocation

**Long Term:** tingling sensation, impotence, liver effects, kidney effects, reproductive effects, blood disorders

### Skin

**Short Term:** blisters, frostbite

**Long Term:** no information is available

### Eye

**Short Term:** frostbite, blurred vision

**Long Term:** no information is available

### Ingestion

**Short Term:** frostbite

**Long Term:** no information is available

## \*\*\* Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS \*\*\*

CAS	Component	Percent
10024-97-2	NITROUS OXIDE	100

## \*\*\* Section 4 - FIRST AID MEASURES \*\*\*

### Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

### Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

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## Eyes

Flush eyes with plenty of water.

## Ingestion

If a large amount is swallowed, get medical attention.

## Note to Physicians

For inhalation, consider oxygen.

<b>* * * Section 5 - FIRE FIGHTING MEASURES * * *</b>
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See Section 9 for Flammability Properties

**NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

## Flammable Properties

Oxidizer. May ignite or explode on contact with combustible materials. Gas/air mixtures are explosive.

## Extinguishing Media

carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

## Unsuitable Extinguishing Media

None known.

## Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

## Fire Fighting Measures

Flood with water. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 800 meters (1/2 mile). Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn.

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## Thermal Decomposition Products

Combustion: oxides of nitrogen

### \*\*\* Section 6 - ACCIDENTAL RELEASE MEASURES \*\*\*

#### Water Release

Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

#### Occupational spill/release

Stop leak if possible without personal risk. Avoid contact with combustible materials. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.

### \*\*\* Section 7 - HANDLING AND STORAGE \*\*\*

#### Handling Procedures

Explosive when mixed with combustible material.

#### Storage Procedures

Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.105. Keep separated from incompatible substances. Store in a well-ventilated area. Protect from sunlight.

### \*\*\* Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION \*\*\*

#### Component Analysis

##### NITROUS OXIDE (10024-97-2)

ACGIH: 50 ppm TWA

NIOSH: 25 ppm TWA (over the time exposed to waste anesthetic gas); 46 mg/m<sup>3</sup> TWA (over the time exposed to waste anesthetic gas)

#### Component Biological Limit Values

There are no biological limit values for any of this product's components.

#### Ventilation

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

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## PERSONAL PROTECTIVE EQUIPMENT

### Eyes/Face

For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

### Protective Clothing

For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

### Glove Recommendations

Wear insulated gloves.

### Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

#### **For Unknown Concentrations or Immediately Dangerous to Life or Health -**

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

<b>*** Section 9 - PHYSICAL AND CHEMICAL PROPERTIES ***</b>
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<b>Physical State:</b>	Gas	<b>Appearance:</b>	Not available
<b>Color:</b>	colorless	<b>Physical Form:</b>	gas
<b>Odor:</b>	sweet odor	<b>Odor Threshold:</b>	Not available
<b>Taste:</b>	sweet taste	<b>Melting/Freezing Point:</b>	-91 °C
<b>Boiling Point:</b>	-89 °C	<b>Flash Point:</b>	Not available
<b>Decomposition:</b>	Not available	<b>LEL:</b>	Not available
<b>UEL:</b>	Not available	<b>Vapor Pressure:</b>	760 mmHg @ -88 °C
<b>Vapor Density (air = 1):</b>	1.530	<b>Density:</b>	1.8122 g/L @ 25 °C
<b>Water Solubility:</b>	59 % @ 25 °C	<b>Log KOW:</b>	0.36
<b>Auto Ignition:</b>	Not available	<b>Viscosity:</b>	0.0145 cP @ 25 °C
<b>Molecular Weight:</b>	44.01	<b>Molecular Formula:</b>	N <sub>2</sub> O

## Solvent Solubility

**Soluble:** sulfuric acid, alcohol, alkali solutions, ether, oils

## \* \* \* Section 10 - STABILITY AND REACTIVITY \* \* \*

## Chemical Stability

Stable at normal temperatures and pressure.

## Conditions to Avoid

Avoid contact with combustible materials. Protect from physical damage and heat. Containers may rupture or explode if exposed to heat. May ignite or explode on contact with combustible materials.

## Materials to Avoid

combustible materials, metals, bases, reducing agents, peroxides, metal salts, metal oxides

**Combustion:** oxides of nitrogen

## Possibility of Hazardous Reactions

Will not polymerize.

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## \*\*\* Section 11 - TOXICOLOGICAL INFORMATION \*\*\*

### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

#### NITROUS OXIDE (10024-97-2)

Inhalation LC50 Rat >250 ppm 4 h

### Component Carcinogenicity

#### NITROUS OXIDE (10024-97-2)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

### Irritation

No animal testing data available for skin or eyes.

### Target Organs

#### NITROUS OXIDE (10024-97-2)

central nervous system.

### Medical Conditions Aggravated by Exposure

central nervous system disorders, reproductive disorders, kidney disorders, liver disorders, blood system disorders

### Tumorigenic

No data available.

## \*\*\* Section 12 - ECOLOGICAL INFORMATION \*\*\*

### Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

## \*\*\* Section 13 - DISPOSAL CONSIDERATIONS \*\*\*

### Disposal Methods

Dispose in accordance with all applicable regulations.

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## Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

### \*\*\* Section 14 - TRANSPORT INFORMATION \*\*\*

#### US DOT Information

**Shipping Name:** Nitrous oxide

**UN/NA #:** UN1070 **Hazard Class:** 2.2

**Required Label(s):** 2.2, 5.1

#### TDG Information

**Shipping Name:** Nitrous oxide

**UN #:** UN1070 **Hazard Class:** 2.2

**Required Label(s):** 2.2, (5.1)

### \*\*\* Section 15 - REGULATORY INFORMATION \*\*\*

#### U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

#### SARA 311/312

**Acute Health:** Yes **Chronic Health:** Yes **Fire:** Yes **Pressure:** Yes **Reactive:** No

#### U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
NITROUS OXIDE	10024-97-2	Yes	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):



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WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

## Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

**NITROUS OXIDE (10024-97-2)**

0.1 %

## Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
NITROUS OXIDE	10024-97-2	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

## \* \* \* Section 16 - OTHER INFORMATION \* \* \*

### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

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## Other Information

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End of Sheet MAT16790