



**MATHESON**

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01/14/2021

## Safety Data Sheet

**Material Name:** <0.5% Nitric Oxide, <0.5% Nitrogen Dioxide in Nitrogen

**SDS ID:** 00244907

### Section 1 - PRODUCT AND COMPANY IDENTIFICATION

**Material Name**

<0.5% Nitric Oxide, <0.5% Nitrogen Dioxide in Nitrogen

**Product Description**

Classification determined in accordance with Compressed Gas Association standards

**Product Use**

Industrial and Specialty Gas Applications.

**Restrictions on Use**

None known.

**Details of the supplier of the safety data sheet**

MATHESON TRI-GAS, INC.

3 Mountainview Road

Warren, NJ 07059

General Information: 1-800-416-2505

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

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

### Section 2 - HAZARDS IDENTIFICATION

**Classification in accordance with paragraph (d) of 29 CFR 1910.1200.**

Gases Under Pressure - Compressed gas

Simple Asphyxiant

**GHS Label Elements**

**Symbol(s)**



**Signal Word**

Warning

**Hazard Statement(s)**

Contains gas under pressure; may explode if heated.

May displace oxygen and cause rapid suffocation.

**Precautionary Statement(s)**

**Prevention**

None needed according to classification criteria.

**Response**

None needed according to classification criteria.

**Storage**

Protect from sunlight. Store in a well-ventilated place.

**Disposal**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**Other Hazards**

Rapid release of compressed gas may cause frostbite.

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

CAS	Component Name	Percent
7727-37-9	Nitrogen	>99
10102-43-9	Nitric oxide	<0.5
10102-44-0	Nitrogen dioxide	<0.5

**Section 4 - FIRST AID MEASURES****Inhalation**

Remove to fresh air and keep at rest in a position comfortable for breathing. 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.

**Eyes**

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

**Ingestion**

If swallowed, get medical attention.

**Most Important Symptoms/Effects****Acute**

frostbite, suffocation

**Delayed**

No information on significant adverse effects.

**Indication of any immediate medical attention and special treatment needed**

For inhalation, consider oxygen.

**Section 5 - FIRE FIGHTING MEASURES****Extinguishing Media****Suitable Extinguishing Media**

regular dry chemical, carbon dioxide

**Unsuitable Extinguishing Media**

Do not direct water at source of leak or safety devices; icing may occur.

**Special Hazards Arising from the Chemical**

Negligible fire hazard. Containers may rupture or explode if exposed to heat.

**Hazardous Combustion Products**

oxides of nitrogen

**Fire Fighting Measures**

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Stay away from the ends of tanks. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Apply water from a protected location or from a safe distance. Reduce vapors with water spray. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out

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of low areas. Consider downwind evacuation if material is leaking. Damaged cylinders should be handled only by specialists. ALWAYS stay away from tanks engulfed in fire.

**Special Protective Equipment and Precautions for Firefighters**

Wear personal protective clothing and equipment such as self-contained breathing apparatus (SCBA) for protection against possible exposure.

### Section 6 - ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment and Emergency Procedures**

Wear personal protective clothing and equipment, see Section 8. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Use only with adequate ventilation.

**Methods and Materials for Containment and Cleaning Up**

Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. If possible, turn leaking containers so that gas escapes rather than liquid. Do not touch or walk through spilled material. Do not direct water at spill or source of leak. Use water spray to reduce vapors or divert vapor cloud drift. Stay upwind and keep out of low areas. Ventilate closed spaces before entering.

**Environmental Precautions**

Avoid release to the environment. Prevent entry into waterways, sewers, basements, or confined areas.

### Section 7 - HANDLING AND STORAGE

**Precautions for Safe Handling**

Use only outdoors or in a well-ventilated area. Avoid breathing gas. Wash thoroughly after handling. Protect from physical damage. Damaged cylinders should be handled only by specialists.

**Conditions for Safe Storage, Including any Incompatibilities**

Protect from sunlight. Store in a well-ventilated place.

Store and handle in accordance with all current regulations and standards. Protect from physical damage. See original container for storage recommendations. Keep separated from incompatible substances.

**Incompatible Materials**

metals, oxidizing materials

### Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

**Component Exposure Limits**

<b>Nitrogen</b>	<b>7727-37-9</b>
ACGIH:	(See Appendix F: Minimal Oxygen Content )
<b>Nitric oxide</b>	<b>10102-43-9</b>
ACGIH:	25 ppm TWA
NIOSH:	25 ppm TWA ; 30 mg/m3 TWA
	100 ppm IDLH
OSHA (US):	25 ppm TWA ; 30 mg/m3 TWA
Mexico:	25 ppm TWA [VLE-PPT ]
<b>Nitrogen dioxide</b>	<b>10102-44-0</b>
ACGIH:	0.2 ppm TWA





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NIOSH:	1 ppm STEL ; 1.8 mg/m3 STEL
	13 ppm IDLH
OSHA (US):	5 ppm Ceiling ; 9 mg/m3 Ceiling
Mexico:	0.2 ppm TWA [VLE-PPT ]

**ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)****Nitric oxide (10102-43-9)**

1.5 % of hemoglobin Medium: blood Time: during or end of shift Parameter: Methemoglobin (background, nonspecific, semi-quantitative )

**Engineering Controls**

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

**Individual Protection Measures, such as Personal Protective Equipment****Eye/face protection**

For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety glasses.

**Skin Protection**

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

**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. 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.

**Glove Recommendations**

For the gas: Protective gloves are not required. For the liquid: Wear insulated gloves.

**Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	colorless gas	<b>Physical State</b>	gas
<b>Odor</b>	Not available	<b>Color</b>	colorless
<b>Odor Threshold</b>	Not available	<b>pH</b>	Not available
<b>Melting Point</b>	-210 °C (Nitrogen )	<b>Boiling Point</b>	-196 °C (Nitrogen )
<b>Boiling Point Range</b>	Not available	<b>Freezing point</b>	Not available
<b>Evaporation Rate</b>	Not available	<b>Flammability (solid, gas)</b>	Not available
<b>Autoignition Temperature</b>	Not available	<b>Flash Point</b>	Not available
<b>Lower Explosive Limit</b>	Not available	<b>Decomposition temperature</b>	Not available
<b>Upper Explosive Limit</b>	Not available	<b>Vapor Pressure</b>	760 mmHg@ -196 °C (Nitrogen )

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<b>Vapor Density (air=1)</b>	Not available	<b>Specific Gravity (water=1)</b>	Not available
<b>Water Solubility</b>	1.6% @ 20 °C (Nitrogen )	<b>Partition coefficient: n-octanol/water</b>	Not available
<b>Viscosity</b>	Not available	<b>Kinematic viscosity</b>	Not available
<b>Solubility (Other)</b>	Not available	<b>Density</b>	Not available
<b>Physical Form</b>	Compressed Gas	<b>Molecular Weight</b>	Not available

### Section 10 - STABILITY AND REACTIVITY

**Reactivity**

No reactivity hazard is expected.

**Chemical Stability**

Stable at normal temperatures and pressure.

**Possibility of Hazardous Reactions**

Will not polymerize.

**Conditions to Avoid**

Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

**Incompatible Materials**

metals, oxidizing materials

**Hazardous decomposition products**

oxides of nitrogen

### Section 11 - TOXICOLOGICAL INFORMATION

**Information on Likely Routes of Exposure****Inhalation**

suffocation, nausea, vomiting, tingling sensation, convulsions, coma, headache, drowsiness, dizziness, loss of coordination, unconsciousness, mood swings, disorientation

**Skin Contact**

frostbite

**Eye Contact**

frostbite, irritation

**Ingestion**

Ingestion of a gas is unlikely.

**Acute and Chronic Toxicity****Component Analysis - LD50/LC50**

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

**Nitric oxide (10102-43-9)**

Inhalation LC50 Rat 1068 mg/m<sup>3</sup> 4 h

**Nitrogen dioxide (10102-44-0)**

Inhalation LC50 Rat 88 ppm 4 h

**Product Toxicity Data****Acute Toxicity Estimate**

Inhalation - Gas	> 20000 ppm
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**Immediate Effects**

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frostbite, suffocation

**Delayed Effects**

No information on significant adverse effects.

**Irritation/Corrosivity Data**

No data available.

**Respiratory Sensitization**

No data available.

**Dermal Sensitization**

No data available.

**Component Carcinogenicity**

<b>Nitrogen dioxide</b>	<b>10102-44-0</b>
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
DFG:	Category 3 (could be carcinogenic for man )

**Germ Cell Mutagenicity**

No data available.

**Tumorigenic Data**

No data available

**Reproductive Toxicity**

No data available.

**Specific Target Organ Toxicity - Single Exposure**

No data available.

**Specific Target Organ Toxicity - Repeated Exposure**

No data available.

**Aspiration hazard**

No data available.

**Medical Conditions Aggravated by Exposure**

No data available.

### Section 12 - ECOLOGICAL INFORMATION

**Component Analysis - Aquatic Toxicity**

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

**Persistence and Degradability**

No data available for the mixture.

**Bioaccumulative Potential**

No data available for the mixture.

**Mobility**

No data available for the mixture.

### Section 13 - DISPOSAL CONSIDERATIONS

**Disposal Methods**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**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:** COMPRESSED GAS, N.O.S. , ( Contains: Nitrogen , second highest concentration component )



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**Material Name:** <0.5% Nitric Oxide, <0.5% Nitrogen Dioxide in Nitrogen**SDS ID:** 00244907**Hazard Class:** 2.2**UN/NA #:** UN1956**Required Label(s):** 2.2**IMDG Information:****Shipping Name:** COMPRESSED GAS, N.O.S. , ( Contains: Nitrogen , second highest concentration component )**Hazard Class:** 2.2**UN#:** UN1956**Required Label(s):** 2.2**International Bulk Chemical Code**

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

### Section 15 - REGULATORY INFORMATION

**U.S. Federal Regulations**

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

<b>Nitric oxide</b>	<b>10102-43-9</b>
SARA 302:	100 lb TPQ
CERCLA:	10 lb final RQ (releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6 ); 4.54 kg final RQ (releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6 )
OSHA (safety):	250 lb TQ
SARA 304:	10 lb EPCRA RQ Releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 355.31 )
<b>Nitrogen dioxide</b>	<b>10102-44-0</b>
SARA 302:	100 lb TPQ
CERCLA:	10 lb final RQ (releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6 ); 4.54 kg final RQ (releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6 )
OSHA (safety):	250 lb TQ

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SARA 304:	10 lb EPCRA RQ Releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 355.31 )
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**SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories**

Gas Under Pressure; Simple Asphyxiant

**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
<b>Nitrogen</b>	<b>7727-37-9</b>	No	Yes	Yes	Yes	Yes
<b>Nitric oxide</b>	<b>10102-43-9</b>	Yes	Yes	Yes	Yes	Yes
<b>Nitrogen dioxide</b>	<b>10102-44-0</b>	Yes	Yes	Yes	Yes	Yes

**California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)**

Not listed under California Proposition 65.

**Component Analysis - Inventory****Nitrogen (7727-37-9)**

US	CA	AU	CN	EU	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2
Yes	DSL	Yes	Yes	EIN	Yes	No	Yes	No

KR - REACH CCA	MX	NZ	PH	TH-TECI	TW	VN (Draft)
No	Yes	Yes	Yes	Yes	Yes	Yes

**Nitric oxide (10102-43-9)**

US	CA	AU	CN	EU	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2
Yes	DSL	Yes	Yes	EIN	Yes	Yes	Yes	No

KR - REACH CCA	MX	NZ	PH	TH-TECI	TW	VN (Draft)
No	Yes	Yes	Yes	Yes	Yes	Yes

**Nitrogen dioxide (10102-44-0)**

US	CA	AU	CN	EU	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2
Yes	DSL	Yes	Yes	EIN	Yes	Yes	Yes	No



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KR - REACH CCA	MX	NZ	PH	TH-TECI	TW	VN (Draft)
No	Yes	Yes	Yes	Yes	Yes	Yes

### Section 16 - OTHER INFORMATION

**NFPA Ratings**

Health: 1 Fire: 0 Instability: 0

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

**Summary of Changes**

New SDS : 05/19/2017

**Key / Legend**

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania\*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); 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; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; KR REACH CCA - Korea Registration and Evaluation of Chemical Substances Chemical Control Act; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; Ne - Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL - Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TH-TECI - Thailand - FDA Existing Chemicals Inventory (TECI); TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

**Other Information****Disclaimer:**

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compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.