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.
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)

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.
Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7727-37-9</td>
<td>Nitrogen</td>
<td>&gt;99</td>
</tr>
<tr>
<td>10102-43-9</td>
<td>Nitric oxide</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>10102-44-0</td>
<td>Nitrogen dioxide</td>
<td>&lt;0.5</td>
</tr>
</tbody>
</table>

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.
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.

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### 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

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>7727-37-9</td>
</tr>
<tr>
<td>ACGIH:</td>
<td>(See Appendix F: Minimal Oxygen Content)</td>
</tr>
<tr>
<td>Nitric oxide</td>
<td>10102-43-9</td>
</tr>
<tr>
<td>ACGIH:</td>
<td>25 ppm TWA</td>
</tr>
<tr>
<td>NIOSH:</td>
<td>25 ppm TWA ; 30 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td>100 ppm IDLH</td>
</tr>
<tr>
<td>Europe:</td>
<td>25 ppm TWA (deleted with effect from August 21, 2018); 30 mg/m3 TWA (deleted with effect from August 21, 2018)</td>
</tr>
<tr>
<td>OSHA (US):</td>
<td>25 ppm TWA ; 30 mg/m3 TWA</td>
</tr>
<tr>
<td>Mexico:</td>
<td>25 ppm TWA VLE-PPT ; 30 mg/m3 TWA VLE-PPT</td>
</tr>
</tbody>
</table>
**Nitrogen Dioxide**

<table>
<thead>
<tr>
<th>ACGIH</th>
<th>0.2 ppm TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIOSH</td>
<td>1 ppm STEL ; 1.8 mg/m3 STEL</td>
</tr>
<tr>
<td>13 ppm IDLH</td>
<td></td>
</tr>
<tr>
<td>OSHA (US):</td>
<td>5 ppm Ceiling ; 9 mg/m3 Ceiling</td>
</tr>
<tr>
<td>Mexico:</td>
<td>3 ppm TWA VLE-PPT ; 6 mg/m3 TWA VLE-PPT</td>
</tr>
<tr>
<td></td>
<td>5 ppm STEL [PPT-CT ]; 10 mg/m3 STEL [PPT-CT ]</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th><strong>Appearance</strong></th>
<th>colorless gas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Odor</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Odor Threshold</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Melting Point</strong></td>
<td>-210 °C (Nitrogen )</td>
</tr>
<tr>
<td><strong>Boiling Point Range</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Physical State</strong></td>
<td>gas</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>colorless</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Freezing point</strong></td>
<td>Not available</td>
</tr>
</tbody>
</table>

| **Boiling Point** | -196 °C (Nitrogen ) |
Safety Data Sheet

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

---

### 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/m3 4 h

**Nitrogen dioxide (10102-44-0)**
Inhalation LC50 Rat 88 ppm 4 h

### Product Toxicity Data

#### Acute Toxicity Estimate

<table>
<thead>
<tr>
<th>Immediate Effects</th>
<th>&gt; 20000 ppm</th>
</tr>
</thead>
</table>

**Immediate Effects**
- 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**

<table>
<thead>
<tr>
<th>Nitrogen dioxide</th>
<th>10102-44-0</th>
</tr>
</thead>
</table>

**ACGIH:**
A4 - Not Classifiable as a Human Carcinogen

**DFG:**
Category 3B (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 Lولي 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.
Safety Data Sheet

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

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)
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.

<table>
<thead>
<tr>
<th>Nitric oxide</th>
<th>10102-43-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>SARA 302:</td>
<td>100 lb TPQ</td>
</tr>
<tr>
<td>CERCLA:</td>
<td>10 lb final RQ (releases to the air in amounts &lt;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 &lt;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)</td>
</tr>
<tr>
<td>OSHA (safety):</td>
<td>250 lb TQ</td>
</tr>
<tr>
<td>SARA 304:</td>
<td>10 lb EPCRA RQ Releases to the air in amounts &lt;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</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>10102-44-0</td>
</tr>
</tbody>
</table>
Safety Data Sheet

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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>7727-37-9</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nitric oxide</td>
<td>10102-43-9</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>10102-44-0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Not listed under California Proposition 65

Canada Regulations

Canadian WHMIS Ingredient Disclosure List (IDL)
Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitric oxide</td>
<td>10102-43-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>10102-44-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Component Analysis - Inventory
Nitrogen (7727-37-9)
## Safety Data Sheet

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

**SDS ID:** 00244907

### Section 16 - OTHER INFORMATION

#### NFPA Ratings

- **Health:** 1 Fire: 0 Reactivity: 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;  
- 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);  
- LD50/LC50 - Lethal Dose/ Lethal Concentration;  
- 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;  
- Ne - Non-...
Safety Data Sheet

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

SDS ID: 00244907

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