Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
Nitrous Oxide

Trade Names
Nitrace

Product Use
Racing Nitrous Oxide.

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.
Oxidizing Gases - Category 1
Gases Under Pressure - Compressed gas
Acute Toxicity - Inhalation - Gas - Category 2
Respiratory Sensitization - Category 1A
Reproductive Toxicity - Category 1A
Specific target organ toxicity - Single exposure - Category 3
Specific target organ toxicity - Repeated exposure - Category 1

GHS Label Elements

Symbol(s)

Signal Word
Danger
Hazard Statement(s)
May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.
May damage fertility or the unborn child.
May cause respiratory irritation.
May cause drowsiness and dizziness.
Causes damage to organs through prolonged or repeated exposure. (blood, kidneys, liver, nervous system)
May displace oxygen and cause rapid suffocation.

Precautionary Statement(s)

Prevention
Keep away from clothing and other combustible materials.
Keep reduction valves free from grease and oil.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe gas.
Use only outdoors or in a well-ventilated area.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.
Use Personal Protective equipment as required.

Response
In case of fire.
Stop leak if safe to do so.
IF exposed or concerned.
Get medical advice/attention.
IF INHALED.
Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.

Storage
Store in a well-ventilated place.
Protect from sunlight.
Keep container tightly closed.
Store locked up.

Disposal
Dispose in accordance with all applicable regulations.

Statement of Unknown Toxicity
100% of the mixture consists of ingredient(s) of unknown acute toxicity.

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>10024-97-2</td>
<td>Nitrous oxide</td>
<td>&gt;99</td>
</tr>
<tr>
<td>7446-09-5</td>
<td>Sulfur dioxide</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>

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.

Eyes
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion
If swallowed, get medical attention.

Most Important Symptoms/Effects
Acute
frostbite, suffocation, central nervous system depression, respiratory tract irritation
Delayed
Reproductive Effects, blood damage, kidney damage, liver damage, nervous system damage

Note to Physicians
For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media
regular dry chemical, carbon dioxide, Large fires: Use water spray, fog or regular foam.

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

Hazardous Combustion Products
oxides of nitrogen

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. Damaged cylinders should be handled only by specialists. 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. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Let the fire burn.

Special Protective Equipment and Precautions for Firefighters
Wear full protective fire fighting gear including 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.

Methods and Materials for Containment and Cleaning Up
Take any precaution to avoid mixing with combustibles. Do not touch or walk through spilled material. Stop leak if possible without personal risk. Do not direct water at spill or source of leak. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Eliminate all ignition sources if safe to do so. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Prevent entry into waterways, sewers, basements, or confined areas.

Environmental Precautions
Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Keep away from clothing and other combustible materials. Keep reduction valves free from grease and oil. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe gas. Use only outdoors or in a well-ventilated area. Do not eat, drink or smoke
Conditions for Safe Storage, Including any Incompatibilities
Store in a well-ventilated place.
Protect from sunlight.
Keep container tightly closed.
Store locked up.

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

---

### Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

#### Component Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH:</th>
<th>NIOSH:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrous oxide</td>
<td>50 ppm TWA</td>
<td>25 ppm TWA (over the time exposed to waste anesthetic gas); 46 mg/m3 TWA (over the time exposed to waste anesthetic gas)</td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>0.25 ppm STEL</td>
<td>2 ppm TWA; 5 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td>5 ppm STEL; 13 mg/m3 STEL</td>
<td>100 ppm IDLH</td>
</tr>
<tr>
<td>OSHA (US):</td>
<td>5 ppm TWA; 13 mg/m3 TWA</td>
<td>2 ppm TWA LMPE-PPT; 5 mg/m3 TWA LMPE-PPT</td>
</tr>
<tr>
<td>Mexico:</td>
<td>5 ppm STEL [LMPE-CT]; 10 mg/m3 STEL [LMPE-CT]</td>
<td></td>
</tr>
</tbody>
</table>
There are no biological limit values for any of this product’s components.

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)
There are no biological limit values for any of this product’s components.

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 goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

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. 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. 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, but recommended. For the liquid: Wear insulated gloves.

---

**Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Appearance</th>
<th>colorless gas</th>
<th>Physical State</th>
<th>gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>sweet odor</td>
<td>Color</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-91 °C (-132 °F Nitrous oxide)</td>
<td>Boiling Point</td>
<td>-89 °C (-128 °F Nitrous oxide)</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not available</td>
<td>Evaporation Rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point Range</td>
<td>Not available</td>
<td>Flammability (solid, gas)</td>
<td>Not available</td>
</tr>
</tbody>
</table>
Safety Data Sheet

Material Name: Nitrous Oxide

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoignition</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>1.53 (Nitrous oxide)</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>59 % (@ 25 °C Nitrous oxide)</td>
</tr>
<tr>
<td>Viscosity</td>
<td>0.0145 cp (Nitrous oxide)</td>
</tr>
<tr>
<td>Density</td>
<td>1.8122 g/L at 25 °C (Nitrous oxide)</td>
</tr>
<tr>
<td>Physical Form</td>
<td>gas</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>Not available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>(Not flammable)</td>
</tr>
<tr>
<td>Decomposition</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>760 mmHg at -88 °C (Nitrous oxide)</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
</tr>
<tr>
<td>Log KOW</td>
<td>0.36 (Nitrous oxide)</td>
</tr>
<tr>
<td>Taste</td>
<td>sweet taste</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>Not available</td>
</tr>
</tbody>
</table>

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
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.

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

Hazardous decomposition products
oxides of nitrogen

Section 11 - TOXICOLOGICAL INFORMATION
Safety Data Sheet

Material Name: Nitrous Oxide

Information on Likely Routes of Exposure

Inhalation
nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, Disorientation, emotional disturbances, loss of coordination, hearing loss, visual disturbances, suffocation, brain damage, Unconsciousness, tingling sensation, impotence, blood disorders, bone disorders, kidney damage, liver damage, nerve damage, Reproductive Effects

Skin Contact
blisters, frostbite

Eye Contact
frostbite, blurred vision

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:
Nitrous oxide (10024-97-2)
Inhalation LC50 Rat >250 ppm 4 h
Sulfur dioxide (7446-09-5)
Inhalation LC50 Rat 2500 ppm 1 h

Immediate Effects
frostbite, suffocation, central nervous system depression, respiratory tract irritation

Delayed Effects
Reproductive Effects, blood damage, kidney damage, liver damage, nervous system damage

Irritation/Corrosivity Data
respiratory tract irritation

Respiratory Sensitization
No data available.

Dermal Sensitization
No data available.

Component Carcinogenicity

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrous oxide</td>
<td>A4 - Not Classifiable as a Human Carcinogen</td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>A4 - Not Classifiable as a Human Carcinogen</td>
</tr>
</tbody>
</table>
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.

Bioaccumulative Potential
No data available.

Mobility
No data available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

Section 14 - TRANSPORT INFORMATION
US DOT Information:
Shipping Name: Compressed gas, oxidizing, n.o.s., (Contains: Nitrous oxide, Sulfur dioxide)
Hazard Class: 2.2
UN/NA #: UN3156
Required Label(s): 2.2 5.1

IMDG Information:
Shipping Name: Compressed gas, oxidizing, n.o.s., (Contains: Nitrous oxide, Sulfur dioxide)
Hazard Class: 2.2
UN#: UN3156
Required Label(s): 2.2 5.1

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>Chemical</th>
<th>CAS Number</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfur dioxide</td>
<td>7446-09-5</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SARA 302:</td>
<td>500 lb TPQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA (safety):</td>
<td>1000 lb TQ liquid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SARA 304:</td>
<td>500 lb EPCRA RQ</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**SARA Section 311/312 (40 CFR 370 Subparts B and C)**
Acute Health: Yes Chronic Health: Yes Fire: Yes Pressure: Yes Reactivity: No

**U.S. State Regulations**
The following components appear on one or more of the following state hazardous substances lists:

<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>Nitrous oxide</td>
<td>10024-97-2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>7446-09-5</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):
WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS</th>
<th>Repro/Dev. Tox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrous oxide</td>
<td>10024-97-2</td>
<td>developmental toxicity, 8/1/2008</td>
</tr>
</tbody>
</table>
Safety Data Sheet

Material Name: Nitrous Oxide

<table>
<thead>
<tr>
<th></th>
<th>10024-97-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrous oxide</td>
<td></td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>7446-09-5</td>
</tr>
<tr>
<td>Repro/Dev. Tox</td>
<td>developmental toxicity , 7/29/2011</td>
</tr>
</tbody>
</table>

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>10024-97-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrous oxide</td>
<td></td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>7446-09-5</td>
</tr>
<tr>
<td></td>
<td>0.1 %</td>
</tr>
<tr>
<td></td>
<td>1 %</td>
</tr>
</tbody>
</table>

WHMIS Classification
A,, C,, D2A.

Component Analysis - Inventory
Nitrous oxide (10024-97-2)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Sulfur dioxide (7446-09-5)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Section 16 - OTHER INFORMATION

NFPA Ratings
Health: 3 Fire: 0 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes
Updated: 05/01/2015

Key/Legend
Safety Data Sheet

Material Name: Nitrous Oxide

SDS ID: 00244525

Material Name: Nitrous Oxide

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; 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; 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; LLV - Level Limit Value; 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; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; 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.

Other Information

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