Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
CARBON MONOXIDE IN NITROGEN, 1 PPM TO 20%

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
Reproductive Toxicity - Category 1A
Specific target organ toxicity - Repeated exposure - Category 1 (central nervous system)
Simple Asphyxiant

GHS Label Elements

Symbol(s)

Signal Word
Danger

Hazard Statement(s)
Contains gas under pressure; may explode if heated.
May damage fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure.
May displace oxygen and cause rapid suffocation.

Precautionary Statement(s)
Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/protective clothing/eye protection/face protection.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.

Response
Safety Data Sheet

Material Name: CARBON MONOXIDE IN NITROGEN, 1 PPM TO 20%

IF exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell.

Storage
Store locked up. 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>80 - &gt;99</td>
</tr>
<tr>
<td>630-08-0</td>
<td>Carbon monoxide</td>
<td>0.0001 - 20</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

Inhalation
If adverse effects occur, get immediate medical attention. 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. Get medical advice/attention.

Ingestion
If swallowed, get medical attention.

Most Important Symptoms/Effects
Acute
frostbite, suffocation

Delayed
reproductive effects, central nervous system damage

Indication of any immediate medical attention and special treatment needed
For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media
carbon dioxide, regular dry chemical. 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.

Hazardous Combustion Products
Oxides of carbon, oxides of nitrogen

Fire Fighting Measures
Safety Data Sheet

Material Name: CARBON MONOXIDE IN NITROGEN, 1 PPM TO 20%

Move container from fire area if it can be done without risk. Damaged cylinders should be handled only by specialists. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with water spray until well after the fire is out. Do not get water directly on material. 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. Reduce vapors with water spray. Do not get water inside container. Stay away from the ends of tanks. Stay upwind and keep out of low areas. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Use extinguishing agents appropriate for surrounding fire. Apply water from a protected location or from a safe distance.

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

Environmental Precautions
Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing gas. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/clothing and eye/face protection. Wash hands thoroughly after handling.

Conditions for Safe Storage, Including any Incompatibilities
Store locked up.
Protect from sunlight. Store in a well-ventilated place.
Store and handle in accordance with all current regulations and standards. Protect from physical damage. Keep container tightly closed. See original container for storage recommendations. Cylinders should be stored upright (with valve protection cap in place). Keep separated from incompatible substances. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.

Incompatible Materials
metals, oxidizing materials, halogens, metal oxides, combustible materials, lithium

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>Exposure 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>Carbon monoxide</td>
<td>630-08-0</td>
</tr>
<tr>
<td>ACGIH:</td>
<td>25 ppm TWA</td>
</tr>
</tbody>
</table>
Safety Data Sheet

Material Name: CARBON MONOXIDE IN NITROGEN, 1 PPM TO 20%

NIOSH: 35 ppm TWA ; 40 mg/m3 TWA
200 ppm Ceiling ; 229 mg/m3 Ceiling
1200 ppm IDLH

OSHA (US): 50 ppm TWA ; 55 mg/m3 TWA

Mexico: 50 ppm TWA VLE-PPT ; 55 mg/m3 TWA VLE-PPT
400 ppm STEL [PPT-CT ]; 400 mg/m3 STEL [PPT-CT ]

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)
Carbon monoxide (630-08-0)
3.5 % of hemoglobin Medium: blood Time: end of shift Parameter: Carboxyhemoglobin (background, nonspecific ); 20 ppm Medium: end-exhaled air Time: end of shift Parameter: Carbon monoxide (background, nonspecific )

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
Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection
For the gas: Wear appropriate chemical resistant clothing. 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 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
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>odorless</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>Not available</td>
<td>Boiling Point</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point Range</td>
<td>Not available</td>
<td>Freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
<td>Flammability (solid, gas)</td>
<td>Not flammable</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>Not available</td>
<td>Flash Point</td>
<td>(Not flammable )</td>
</tr>
</tbody>
</table>
Material Name: CARBON MONOXIDE IN NITROGEN, 1 PPM TO 20%

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**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
Minimize contact with material. Avoid inhalation of material or combustion by-products. Containers may rupture or explode if exposed to heat.

Incompatible Materials
metals, oxidizing materials, halogens, metal oxides, combustible materials, lithium

Hazardous decomposition products
Oxides of carbon, oxides of nitrogen

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**Section 11 - TOXICOLOGICAL INFORMATION**

Information on Likely Routes of Exposure

**Inhalation**
nausea, vomiting, headache, drowsiness, dizziness, disorientation, loss of coordination, loss of appetite, suffocation, convulsions, coma, death, changes in body temperature, changes in blood pressure, chest pain, difficulty breathing, irregular heartbeat, hallucinations, pain in extremities, tremors, hearing loss, visual disturbances, eye damage, blood disorders, heart damage, nerve damage, birth defects, Reproductive Effects, brain damage, cardiovascular system damage

**Skin Contact**
frostbite

**Eye Contact**
irritation, frostbite

**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:

**Carbon monoxide (630-08-0)**
Inhalation LC50 Rat 1807 ppm 4 h
Safety Data Sheet

Material Name: CARBON MONOXIDE IN NITROGEN, 1 PPM TO 20%

Product Toxicity Data
Acute Toxicity Estimate
No data available.
Immediate Effects
frostbite, suffocation
Delayed Effects
reproductive effects, central nervous system damage
Irritation/Corrosivity Data
No information available for the product.
Respiratory Sensitization
No information available for the product.
Dermal Sensitization
No information available for the product.
Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA.
Germ Cell Mutagenicity
No data available for the mixture.
Tumorigenic Data
No data available for the mixture.
Reproductive Toxicity
Available data characterizes components of this product as reproductive hazards.
Specific Target Organ Toxicity - Single Exposure
No target organs identified.
Specific Target Organ Toxicity - Repeated Exposure
central nervous system
Aspiration hazard
Not applicable.
Medical Conditions Aggravated by Exposure
No data available.
Additional Data
Alcohol may enhance the toxic effects. May cross the placenta. Smoking may enhance the toxic effects.

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.
Other Toxicity
No additional information is available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose in accordance with all applicable 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, CARBON MONOXIDE)
Hazard Class: 2.2
UN/NA #: UN1956
Required Label(s): 2.2

IMDG Information:
Shipping Name: COMPRESSED GAS, N.O.S., (Contains: NITROGEN, CARBON MONOXIDE)
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
None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories
Gas Under Pressure; Reproductive Toxicity; Specific Target Organ Toxicity; Simple Asphyxiant

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>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>Carbon monoxide</td>
<td>630-08-0</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

Carbon monoxide 630-08-0
Repro/Dev. Tox developmental toxicity, 7/1/1989

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>
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<tbody>
<tr>
<td>Carbon monoxide</td>
<td>630-08-0</td>
</tr>
<tr>
<td></td>
<td>0.1 %</td>
</tr>
</tbody>
</table>

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

**Material Name:** CARBON MONOXIDE IN NITROGEN, 1 PPM TO 20%

**SDS ID:** MATNE505

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<tr>
<td>Yes</td>
<td>DS L</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tbody>
</table>

**Carbon monoxide (630-08-0)**

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<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Section 16 - OTHER INFORMATION

**NFPA Ratings**
- Health: 2
- Fire: 0
- Reactivity: 0

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

**Summary of Changes**
- Updated: 03/04/2016

**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
- CCR - 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
- Kow - Octanol/water partition coefficient
- KECI - Korea Existing Chemicals Inventory
- LD50/LC50 - Lethal Dose/Lethal Concentration
- 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
- Non-quantitative
- NSL - Non-Domestic Substance List (Canada)
Safety Data Sheet

Material Name: CARBON MONOXIDE IN NITROGEN, 1 PPM TO 20%

SDS ID: MATNE505

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; 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

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