**SECTION 1. Product and company identification**

1.1. **Product identifier**

<table>
<thead>
<tr>
<th>Product form</th>
<th>Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>NI - Carbon monoxide 15.3% - 75.1%</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>Mixture of Carbon monoxide 15.3% to 75.1% in Nitrogen</td>
</tr>
</tbody>
</table>

1.2. **Relevant identified uses of the substance or mixture and uses advised against**

Use of the substance/mixture: Industrial use. Use as directed.

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

Praxair, Inc.
39 Old Ridgebury Road
Danbury, CT 06810-5113 - USA
T 1-800-772-9247 (1-800-PRAAXAIR) - F 1-716-879-2146
www.praxair.com

1.4. **Emergency telephone number**

Emergency number: Onsite Emergency: 1-800-645-4633

CHEMTREC, 24 hr/day 7 days/week
— Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887
(collect calls accepted, Contract 17729)

**SECTION 2: Hazard identification**

2.1. **Classification of the substance or mixture**

**GHS-US classification**

- Flam. Gas 1 H220
- Compressed gas H280
- Acute Tox. 4 (Inhalation-gas) H332
- Repr. 1A H360
- STOT RE 1 H372

2.2. **Label elements**

**GHS-US labelling**

- Hazard pictograms (GHS-US): ![GHS02](image) ![GHS04](image) ![GHS07](image) ![GHS08](image)

- Signal word (GHS-US): DANGER

- Hazard statements (GHS-US):
  - H220 - EXTREMELY FLAMMABLE GAS
  - H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED
  - H332 - HARMFUL IF INHALED
  - H360 - May damage fertility or the unborn child
  - H372 - CAUSES DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE
  - OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION
  - CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR
  - CGA-HG10 - ASPHYXIATING EVEN WITH ADEQUATE OXYGEN

- Precautionary statements (GHS-US):
  - P201 - Obtain special instructions before use
  - P202 - Do not handle until all safety precautions have been read and understood
  - P210 - Keep away from Heat, Hot surfaces, Open flames, Sparks. - No smoking
  - P260 - Do not breathe gas/vapours
  - P261 - Avoid breathing gas
  - P264 - Wash exposed skin thoroughly after handling
NI - Carbon monoxide 15.3% - 75.1%

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P270 - Do not eat, drink or smoke when using this product
P271+P403 - Use and store only outdoors or in a well-ventilated place
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P304+P313 - If exposed or concerned: Get medical advice/attention
P312 - Call a doctor if you feel unwell
P314 - Get medical advice/attention if you feel unwell
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381 - Eliminate all ignition sources if safe to do so
P405 - Store locked up
P501 - Dispose of contents/container in accordance with container Supplier/owner instructions

CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)

2.3. Other hazards

Other hazards not contributing to the classification: Chemical asphyxiant. Exposure to low concentrations for extended periods may result in dizziness or unconsciousness, and may lead to death.

Asphyxiant in high concentrations.

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>(CAS No) 7727-37-9</td>
<td>24.9 - 84.7</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>(CAS No) 630-08-0</td>
<td>15.3 - 75.1</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.

First-aid measures after eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Carbon dioxide, Dry chemical, Water spray or fog. Use extinguishing media appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard: EXTREMELY FLAMMABLE GAS.
Explosion hazard: EXTREMELY FLAMMABLE GAS. Forms explosive mixtures with air and oxidizing agents.
Reactivity: No reactivity hazard other than the effects described in sub-sections below.
5.3. Advice for firefighters

Firefighting instructions: Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Protection during firefighting: DANGER! FLAMMABLE, HIGH PRESSURE GAS.

Special protective equipment for fire fighters: Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Other information: Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by TC.).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: If venting or leaking gas catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering an area, especially a confined area, check the atmosphere with an appropriate device.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Try to stop release. Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

6.3. Methods and material for containment and cleaning up

No additional information available

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion-proof equipment.

Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.
7.2. Conditions for safe storage, including any incompatibilities

Storage conditions:
Store only where temperature will not exceed 125°F (52°C). Post “No Smoking” or “Open Flames” signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g., NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

7.3. Specific end use(s)
None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th></th>
<th>ACGIH</th>
<th>ACGIH TLV-TWA (ppm)</th>
<th>USA OSHA</th>
<th>OSHA PEL (TWA) (mg/m³)</th>
<th>USA OSHA</th>
<th>OSHA PEL (TWA) (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide (630-08-0)</td>
<td></td>
<td>25 ppm</td>
<td></td>
<td>55 mg/m³</td>
<td></td>
<td>50 ppm</td>
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<tr>
<td>Nitrogen (7727-37-9)</td>
<td>ACGIH</td>
<td>Not established</td>
<td>USA OSHA</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Appropriate engineering controls: Use an explosion-proof local exhaust system. Local exhaust and general ventilation must be adequate to meet exposure standards. MECHANICAL (GENERAL): Inadequate - Use only in a closed system. Use explosion proof equipment and lighting. Provide adequate general and local exhaust ventilation. Ensure exposure is below occupational exposure limits (where available).

Eye protection: Wear safety glasses with side shields.

Skin and body protection: Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible.

Respiratory protection: When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Thermal hazard protection: Wear cold insulating gloves when transferring or breaking transfer connections.
SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Gas

Colour: Colourless

Odour: No data available

Odour threshold: No data available

pH: Not applicable.

Relative evaporation rate (butylacetate=1): No data available

Relative evaporation rate (ether=1): Not applicable.

Melting point: No data available

Freezing point: No data available

Boiling point: No data available

Flash point: No data available

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Flammability (solid, gas): No data available

Vapour pressure: Not applicable.

Relative vapour density at 20 °C: No data available

Relative density: No data available

Solubility: Water: No data available

Log Pow: Not applicable.

Log Kow: Not applicable.

Viscosity, kinematic: Not applicable.

Viscosity, dynamic: Not applicable.

Explosive properties: Not applicable.

Oxidizing properties: None.

Explosive limits: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Inhalation:gas: HARMFUL IF INHALED.
**NI - Carbon monoxide 15.3% - 75.1%**

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**Supersedes:** 05/19/2015

<table>
<thead>
<tr>
<th>NI - Carbon monoxide 15.3% - 75.1%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (gases)</td>
<td>2503.329 ppmv/4h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carbon monoxide (630-08-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 inhalation rat (ppm)</td>
<td>3760 ppm/1h</td>
</tr>
<tr>
<td>ATE US (gases)</td>
<td>1880.000 ppmv/4h</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation:** Not classified

**pH:** Not applicable.

**Serious eye damage/irritation:** Not classified

**pH:** Not applicable.

**Respiratory or skin sensitisation:** Not classified

**Germ cell mutagenicity:** Not classified

**Carcinogenicity:** Not classified

**Reproductive toxicity**

May damage fertility or the unborn child.

**Specific target organ toxicity (single exposure):** Not classified

**Specific target organ toxicity (repeated exposure):**

CAUSES DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE.

**Aspiration hazard:** Not classified

### SECTION 12: Ecological information

#### 12.1. Toxicity

No additional information available

#### 12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>NI - Carbon monoxide 15.3% - 75.1%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>No ecological damage caused by this product.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrogen (7727-37-9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>No ecological damage caused by this product.</td>
</tr>
</tbody>
</table>

#### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>NI - Carbon monoxide 15.3% - 75.1%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Pow</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Log Kow</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
<td>No ecological damage caused by this product.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carbon monoxide (630-08-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Kow</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrogen (7727-37-9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Pow</td>
<td>Not applicable for inorganic gases.</td>
</tr>
<tr>
<td>Log Kow</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
<td>No ecological damage caused by this product.</td>
</tr>
</tbody>
</table>

#### 12.4. Mobility in soil

<table>
<thead>
<tr>
<th>NI - Carbon monoxide 15.3% - 75.1%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility in soil</td>
<td>No data available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carbon monoxide (630-08-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility in soil</td>
<td>No data available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrogen (7727-37-9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility in soil</td>
<td>No data available.</td>
</tr>
<tr>
<td>Ecology - soil</td>
<td>No ecological damage caused by this product.</td>
</tr>
</tbody>
</table>

#### 12.5. Other adverse effects

**Effect on the ozone layer:** None
SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1954 Compressed gas, flammable, n.o.s., 2.1
UN-No.(DOT) : UN1954
Proper Shipping Name (DOT) : Compressed gas, flammable, n.o.s.
Hazard labels (DOT) : 2.1 - Flammable gas

DOT Symbols

Additional information

Other information : No supplementary information available.
Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:
- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

Transport by sea

UN-No. (IMDG) : 1954
Proper Shipping Name (IMDG) : COMPRESSED GAS, FLAMMABLE, N.O.S.
Class (IMDG) : 2.1 - Flammable gases

Air transport

UN-No. (IATA) : 1954
Proper Shipping Name (IATA) : COMPRESSED GAS, FLAMMABLE, N.O.S.
Class (IATA) : 2

SECTION 15: Regulatory information

15.1. US Federal regulations

No additional information available

15.2. International regulations

CANADA

- Carbon monoxide (630-08-0)
  Listed on the Canadian DSL (Domestic Substances List)

- Nitrogen (7727-37-9)
  Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

15.2. National regulations

No additional information available
### 15.3. US State regulations

<table>
<thead>
<tr>
<th></th>
<th>U.S. - California - Proposition 65 - Carcinogens List</th>
<th>U.S. - California - Proposition 65 - Developmental Toxicity</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</th>
<th>Non-significant risk level (NSRL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide (630-08-0)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nitrogen (7727-37-9)</td>
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<td>No</td>
<td>No</td>
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<td>No</td>
</tr>
</tbody>
</table>

**SECTION 16: Other information**

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NI - Carbon monoxide 15.3% - 75.1%
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Other information
When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc, it is the user's obligation to determine the conditions of safe use of the product.

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SDS US (GHS HazCom 2012) - PDI
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.