

## 0.0001% to 0.0999% Carbon Monoxide, 0.0001% to 0.0999% Nitric Oxide in N2

### 1 PRODUCT AND COMPANY IDENTIFICATION

**Product Identifier:** 0.0001% to 0.0999% Carbon Monoxide, 0.0001% to 0.0999% Nitric Oxide in N2  
**Synonyms:** Calibration Gas, EPA Protocol  
**Common Name:** Carbon Monoxide, Nitric Oxide, in Nitrogen  
**SDS Number:** NLB 6030  
**Revision Date:** 7/26/2018  
**Version:** 2  
**CAS Number:** Not Available - Gas Mixture  
**EPA Number:** Not Available  
**RCRA Number:** Not Applicable  
**Chemical Family:** Gas Mixture  
**Chemical Formula:** CO, NO, in N2  
**Product Use:** Calibration of analytical instrumentation

**Supplier Details:** NorLab a division of Norco  
898 W. Gowen Rd.  
Boise, ID 83705

**Contact:** Quality Dept.  
**Phone:** 208-336-1643  
**Internet:** www.norlab-gas.com

For Transportation Emergency Contact CHEMTREC: 800-424-9300

### 2 HAZARDS IDENTIFICATION

#### Classification of Substance

**GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):**  
Physical, Gases Under Pressure, Compressed Gas  
Health, Acute toxicity, 5 Inhalation

#### GHS Label Elements, Including Precautionary Statements

**GHS Signal Word:** **WARNING**

**GHS Hazard Pictograms:**



#### GHS Hazard Statements:

H280 - Contains gas under pressure; may explode if heated  
H333 - May be harmful if inhaled  
OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.

#### GHS Precautionary Statements:

P202 - Do not handle until all safety precautions have been read and understood.  
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.  
P271 - Use only outdoors or in a well-ventilated area.  
P281 - Use personal protective equipment as required.  
P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P314 - Get Medical advice/attention if you feel unwell.  
P403+233 - Store in a well ventilated place. Keep container tightly closed.  
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52 °C (125 °F).  
CGA-PG05 - Use a back flow preventive device in the piping.  
CGA-PG06 - Close valve after each use and when empty.  
CGA-PG10 - Use only with equipment rated for cylinder pressure.  
CGA-PG20 - Use only equipment of compatible materials of construction.

Hazards not Otherwise Classified (HNOC) or not Covered by GHS

## 0.0001% to 0.0999% Carbon Monoxide, 0.0001% to 0.0999% Nitric Oxide in N2

**Route of Entry:** Inhalation; Eyes; Skin; Ingestion

**Target Organs:** Respiratory system; Central nervous system; Reproductive;

**Inhalation:** This product contains carbon monoxide. Inhalation of relative high concentrations of this gas may cause symptoms of carbon monoxide exposure. Carbon monoxide is odorless and colorless. There may be no warning of overexposure until symptoms occur. Carbon monoxide is a chemical asphyxiant. Inhaled carbon monoxide binds with blood hemoglobin to form carboxyhemoglobin. Carboxyhemoglobin cannot take part in normal oxygen transport, greatly reducing the blood's ability to transport oxygen. Depending on concentration of carbon monoxide and duration of exposure, symptoms may include headache, dizziness, heart palpitations, weakness, confusion, nausea, and even convulsions, eventual unconsciousness and death. Lack of oxygen from carbon monoxide over exposure may produce immediate as well as delayed neurological effects. Carbon monoxide may also adversely affect fetal development.

The toxicity of this gas mixture depends upon the amount of nitric oxide present. Generally the only symptoms occurring at the time of exposure are slight cough, fatigue, and nausea. Very concentrated fumes may cause coughing, choking, nausea, headache, abdominal pain and tightness, and burning in the chest. Severe symptoms may be delayed (possibly for several hours) and include cyanosis, increased difficulty in breathing (from hypoxia), irregular respiration, lassitude and eventual death due to pulmonary edema in untreated cases.

Repeated exposure to nitric oxide may cause a permanent decrease in pulmonary function (Silo Filler's Disease) or chronic irritation of the respiratory tract with cough, headache, loss of appetite, dyspepsia, tooth corrosion and gradual loss of strength.

**Skin Contact:** Contact with rapidly expanding gas near the point of release may cause frostbite with redness, skin color change to gray or white, and blistering.

**Eye Contact:** None anticipated. Contact with rapidly expanding gas near the point of release may cause frostbite.

**Ingestion:** Not anticipated. Product is a gas at normal conditions.

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### COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients		
CAS#	%	Chemical Name
630-08-0	0.0001-0.0999%	Carbon monoxide
10102-43-9	0.0001-0.0999%	Nitric oxide
7727-37-9	99.8002-99.9997%	Nitrogen

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### FIRST AID MEASURES

- Inhalation:** PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO PRODUCT. RESCUE PERSONNEL SHOULD BE EQUIPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and be treated with supplemental oxygen. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted (artificial) respiration and supplemental oxygen. The administering of oxygen at an elevated pressure (up to 2 to 2.5 atmospheres) has shown to be beneficial as has treatment in a hyperbaric chamber. The physician should be informed that the patient has inhaled toxic quantities of carbon monoxide.
- Skin Contact:** None required for gas. For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER. Obtain medical attention.
- Eye Contact:** None Required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.
- Ingestion:** Not a direct hazard.

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### FIRE FIGHTING MEASURES

- Flammability:** Not Flammable
- Flash Point:** None
- Flash Point Method:** Not Applicable
- Burning Rate:** Not Applicable
- Autoignition Temperature:** None
- Lower Explosive Limit:** None
- Upper Explosive Limit:** None
- Fire and Explosion Hazards:** Nonflammable. Cylinders may rupture violently or vent rapidly from pressure when involved in a fire situation.
- Extinguishing Media:** None required. Use as appropriate for surrounding materials
- Fire Fighting Instructions:** Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Continue to cool fire-exposed cylinders until well after flames are extinguished.

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### ACCIDENTAL RELEASE MEASURES

Isolate hazard area, evacuate personnel and deny entry to unauthorized/unprotected individuals. Extinguish all ignition sources and ventilate closed spaces and low areas. Personnel entering area should wear appropriate protective equipment including respiratory protection suitable for unknown concentrations. Personnel should not reenter hazard area until nitric oxide, and carbon monoxide has sufficiently dispersed and adequate oxygen re-established. If a leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container of container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/NorLab location.

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### HANDLING AND STORAGE

- Handling Precautions:** Use only in well-ventilated areas. Valve protection caps must remain in place unless the cylinder is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure (<3000 PSIG) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous backflow into the cylinder.
- Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid from in an enclosed space such as a car trunk, van or station wagon.
- Storage Requirements:** Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125 degrees F (52 degrees C). Cylinders should be stored upright and firmly secured to

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prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

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### EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls:** All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use local exhaust at filling zones and where leakage and dust formation is probable. Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure limits in Air below TLV & PEL limits. Maintain atmospheric Oxygen content at or above 19.5%

**Personal Protective Equipment:** Carbon monoxide (630-08-0) [0.0001-0.0999%]  
Nitric oxide (10102-43-9) [0.0001-0.0999%]  
Nitrogen (7727-37-9) [99.8002-99.9997%]

#### Personal protective equipment

**Respiratory protection:** Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching gloves outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact Material: butyl-rubber Minimum layer thickness: 0.3 mm Break through time: 480 min Material tested: Butoject (KCL 897 / Aldrich Z677647, Size M)

**Splash protection:** Material: Chloroprene Minimum layer thickness: 0.6 mm Break through time: 30 min Material tested: Camapren (KCL 722 / Aldrich Z677493, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Eye protection:** Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin and body protection:** Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures:** Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Carbon monoxide (630-08-0) [0.0001-0.0999%]

CEIL 200 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000  
229 mg/m3

Sampling for the carbon monoxide ceiling shall be averaged over 5 minutes but an instantaneous reading over 1500 ppm shall not be exceeded.

TWA 50 ppm USA. Occupational Exposure Limits (OSHA) - Table Z- 1 Limits for Air Contaminants  
55 mg/m3

The value in mg/m3 is approximate.

TWA 25 ppm USA. ACGIH Threshold Limit Values (TLV)  
Carboxyhemoglobinemia

TWA 35 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

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40 mg/m3

TWA 35 ppm USA. NIOSH Recommended Exposure Limits  
40 mg/m3

CEIL 200 ppm USA. NIOSH Recommended Exposure Limits  
229 mg/m3

Nitric oxide (10102-43-9) [0.0001-0.0999%]

TWA 25 ppm USA. Occupational Exposure Limits (OSHA) - Table Z- 1 Limits for Air Contaminants  
30 mg/m3

The value in mg/m3 is approximate.

TWA 25 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000  
30 mg/m3

TWA 25 ppm USA. ACGIH Threshold Limit Values (TLV)  
Upper Respiratory Tract irritation Hypoxia/cyanosis Nitrosyl-hemoglobin formation Substances for which there is a Biological Exposure Index or Indices (see BEI section), see BEI for Methemoglobin Inducers

TWA 25 ppm USA. NIOSH Recommended Exposure Limits  
30 mg/m3

Nitrogen (7727-37-9) [99.703-99.9996%] : no data available

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**PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance:</b>	<b>Colorless Gas</b>	<b>Odor:</b>	<b>Acrid, acidic</b>
<b>Physical State:</b>	<b>Gas</b>	<b>Molecular Formula:</b>	<b>CO, NO, in N2</b>
<b>Odor Threshold:</b>	<b>Not Determined</b>	<b>Solubility:</b>	<b>Slightly Soluble</b>
<b>Particle Size:</b>	<b>Not Applicable</b>	<b>Softening Point:</b>	<b>Not Applicable</b>
<b>Specific Gravity or Density:</b>	<b>Not Applicable</b>	<b>Percent Volatile:</b>	<b>100%</b>
<b>Viscosity:</b>	<b>Not Applicable</b>	<b>Freezing or Melting Point:</b>	<b>Not Determined</b>
<b>Saturated Vapor Concentration:</b>	<b>Not Determined</b>	<b>Flash Point:</b>	<b>Not Applicable</b>
<b>Boiling Point:</b>	<b>Not Determined</b>	<b>Upper Flammability Limit and Lower Flammability Limit:</b>	<b>None</b>
<b>Flammability:</b>	<b>Not Flammable</b>		

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**STABILITY AND REACTIVITY**

<b>Chemical Stability:</b>	<b>Product is stable under normal conditions.</b>
<b>Conditions to Avoid Identification:</b>	<b>Avoid open flames and high temperatures.</b>
<b>Materials to Avoid Identification:</b>	<b>May react vigorously with oxygen, acetylene, chlorine, fluorine, nitrous oxide, oxygen difluoride, barium peroxide. May react vigorously with fluorine, fluorine oxides and chlorine in the presence of moisture. Strong oxidizing agents, strong reducing agents, halides, organic materials, alcohols, hydrocarbons, and oxygen.</b>
<b>Hazardous Decomposition:</b>	<b>Combustion will produce carbon dioxide and, possibly toxic chemicals such as nitic oxides.</b>
<b>Hazardous Polymerization:</b>	<b>Will not occur.</b>

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### TOXICOLOGICAL INFORMATION

Carbon monoxide (630-08-0) [0.0001-0.0999%]

Information on toxicological effects

Acute toxicity:

Oral LD50 Inhalation LC50 LC50 Inhalation - rat - 4 h - 1807 ppm

Dermal LD50 no data available

Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: Known human reproductive toxicant

Specific target organ toxicity - single exposure (Globally Harmonized System): no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System): Inhalation - Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: Blood disorders

Synergistic effects: no data available

Additional Information: RTECS: FG3500000

Nitric oxide (10102-43-9) [0.0001-0.0999%]

Information on toxicological effects

Acute toxicity:

Oral LD50 no data available

Inhalation LC50 LC50 Inhalation - rat - 4 h - 1,068 mg/m3

Dermal LD50

Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System): no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System): no data available

Aspiration hazard: no data available

Potential health effects: Inhalation Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. Causes skin burns. Eyes Causes eye burns.

Signs and Symptoms of Exposure: Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Nausea, Vomiting, Weakness, Dizziness, Vertigo, Headache, Sweating, loss of appetite

Synergistic effects: no data available

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Additional Information: RTECS: QX0525000

Nitrogen (7727-37-9) [99.8.002-99.9997%]

Information on toxicological effects

Acute toxicity:

Oral LD50 no data available

Inhalation LC50

Dermal LD50

Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System):no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):no data available

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: May be harmful., Nausea, Headache, Vomiting

Synergistic effects: no data available

Additional Information:RTECS: QW9700000

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### ECOLOGICAL INFORMATION

Carbon monoxide (630-08-0) [0.0001-0.0999%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Nitric oxide (10102-43-9) [0.0001-0.0999%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Nitrogen (7727-37-9) [99.703-99.9996%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

## 0.0001% to 0.0999% Carbon Monoxide, 0.0001% to 0.0999% Nitric Oxide in N2

Other adverse effects: no data available

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### DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations. Do not attempt to dispose of waste or unused quantities in returnable cylinders. Return in the shipping container, properly labeled, with any valve outlet plugs or caps secure and valve protection cap in place to NorLab for proper disposal. Non-refillable containers should be vented in a well-ventilated area then disposed of in compliance with local regulations, or returned to NorLab.

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### TRANSPORT INFORMATION

Proper Shipping Name US:

UN 1956, Compressed Gas N.O.S., (Carbon Monoxide, Nitrogen), 2.2

Proper Shipping Name Canada:

UN1956, Compressed Gas, N.O.S., (Carbon Monoxide, Nitrogen), 2.2



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### REGULATORY INFORMATION

Component (CAS#) [%] - CODES

Carbon monoxide (630-08-0) [0.0001-0.0999%] MASS, NJEHS, OSHAWAC, PA, PROP65, TSCA, TXAIR

RQ(10LBS), Nitric oxide (10102-43-9) [0.0001-0.0999%] ACUTERCRA, CERCLA, EHS302, MASS, NJEHS, NJHS, OSHAPSM, OSHAWAC, PA, TSCA, TXAIR, TXHWL

Nitrogen (7727-37-9) [99.8002-99.9997%] MASS, PA, TSCA



### WARNING

This product can expose you to chemicals including Carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

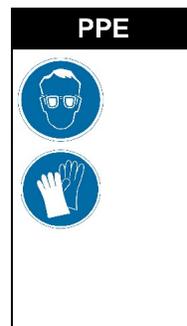
Regulatory CODE Descriptions

RQ = Reportable Quantity  
 MASS = MA Massachusetts Hazardous Substances List  
 NJEHS = NJ Extraordinarily Hazardous Substances  
 OSHAWAC = OSHA Workplace Air Contaminants  
 PA = PA Right-To-Know List of Hazardous Substances  
 PROP65 = CA Prop 65  
 TSCA = Toxic Substances Control Act  
 TXAIR = TX Air Contaminants with Health Effects Screening Level  
 ACUTERCRA = RCRA Acute Hazardous Wastes (P-List)  
 CERCLA = Superfund clean up substance  
 EHS302 = Extremely Hazardous Substance  
 NJHS = NJ Right-to-Know Hazardous Substances  
 OSHAPSM = OSHA Chemicals Requiring process safety management  
 TXHWL = TX Hazardous Waste List

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### OTHER INFORMATION

NFPA: Health = 2, Fire = 0, Reactivity = 0, Specific Hazard = n/a  
 HMIS III: Health = 2, Fire = 0, Physical Hazard = 3  
 HMIS PPE: B - Safety Glasses, Gloves



### Disclaimer:

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