0.0002% to 0.01% Nitrogen Dioxide in Air

1 PRODUCT AND COMPANY IDENTIFICATION

Product Identifier:	**0.0002% to 0.01% Nitrogen Dioxide in Air**
Synonyms:	**Nitrogen Dioxide in Air, NOx gas mix, Calibration gas mix**
Common Name:	**Nitrogen Dioxide in Air**
SDS Number:	**NLB 2220**
Revision Date:	**1/12/2023**
Version:	**5**
CAS Number:	**Not Available - Gas Mixture**
EPA Number:	**Not Availble**
RCRA Number:	**Not Applicable**
Chemical Family:	**Gas Mixture**
Chemical Formula:	**NO2 + O2 + N2**
Product Use:	**Calibration of analyitical 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
CGA-HG24 - SUPPORTS COMBUSTION.

GHS Precautionary Statements:

P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe gas.
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.
P308+313 - IF exposed or concerned: Get medical advice/attention.
P403 - Store and use in a well ventilated place.
P410+412 - Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °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

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

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Target Organs: Eyes; Cardiovascular system; Respiratory system;

Inhalation: Gas mixture contains less than 500 ppm nitrogen dioxide, which can irritate the pulmonary tract. Initial symptoms may include eye and throat irritation, chest tightness, headache, and nausea. Inhalation of high concentrations may cause swelling and fluid retention in the lungs, which can be fatal. Symptoms may be delayed for up to 72 hours following exposure. Mixture contains sufficient oxygen to support life.

Skin Contact: May cause irritation. 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: May cause irritation. Contact with rapidly expanding gas near the point of release may cause frostbite.

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

3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients:

CAS#	%	Chemical Name:
10102-44-0	0.0002-0.01%	Nitrogen dioxide
7782-44-7	20.9%	Oxygen
7727-37-9	79.09-79.0998%	Nitrogen

20.9% Oxygen in Nitrogen Indicates an Air Balance.

4 FIRST AID MEASURES

Inhalation: PROMPT REMOVAL FROM THE CONTAMINATED AREA AND IMMEDIATE MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Delayed onset of life-threatening symptoms is may occur.

Victims should be carried (not assisted) to an uncontaminated area and inhale fresh air supplemented with oxygen. Quick removal from the contaminated area is most important. Keep patient warm, quiet and under competent medical observation until the danger of delayed pulmonary edema has passed (at least 72 hours). Any physical exertion during this period should be discouraged as it may increase the severity of the pulmonary edema or chemical pneumonitis. Bed rest is indicated. Unconscious persons should be moved to an uncontaminated area, given artificial resuscitation and supplemental oxygen. Once respiration has been restored, they should be treated as above.

Skin Contact: Remove contaminated clothing and flush affected area with large quantities of water. If irritation persists or frostbite is suspected, seek medical attention.

Eye Contact: PERSONS WITH POTENTIAL EXPOSURE TO NITROGEN DIOXIDE SHOULD NOT WEAR CONTACT LENSES. Flush eyes with large amounts of water for at least 15 minutes, holding eyelids open to ensure adequate rinsing. If irritation persists, seek immediate medical attention. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.

Ingestion: Not a direct hazard.

5 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:

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Nonflammable. Cylinders may vent rapidly or rupture violently from pressure when involved in a fire situation.

Extinguishing Media:
Use media suitable for surrounding combustible or flammable materials. Nitrogen dioxide can slowly react with water to form a corrosive solution of nitric acid. Nitric acid is corrosive to skin and metal. Small amounts of nitrogen dioxide present are incompatible with halogenated extinguishing media.

Fire Fighting Instructions:
Stop the flow of gas if it can be done without risk. Use water spray to cool surrounding containers. Continue to cool surrounding containers until well after flames are extinguished. Firefighters should wear a full-face piece, NIOSH/MSHA-approved self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout gear.

6 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 nitrogen dioxide 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 Section1or call your closest Norco/NorLab location.

7 HANDLING AND STORAGE

Handling Precautions:

This gas mixture is non-corrosive. Nitrogen dioxide content may cause some corrosion of copper and copper alloys. Teflon is the preferred gasket material for pure nitrogen dioxide.

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.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1.

Never carry a compressed gas cylinder in an enclosed space such as a car trunk, van or station wagon. A leak can result in toxic exposure.

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 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.

8 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:

Nitrogen dioxide cas#:(10102-44-0) [0.0002-0.01%]
Oxygen cas#:(7782-44-7) [20.9%]
Nitrogen cas#:(7727-37-9) [79.09-79.0998%]

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: Tightly fitting safety goggles. Faceshield (8-inch minimum). 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, 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.

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Components with workplace control parameters

TWA	3 ppm	USA. ACGIH Threshold Limit Values (TLV)

Upper Respiratory Tract & Lower Respiratory Tract irritation Not classifiable as a human carcinogen

STEL	5 ppm	USA. ACGIH Threshold Limit Values (TLV)

Upper Respiratory Tract & Lower Respiratory Tract irritation Not classifiable as a human carcinogen

CEIL	5 ppm 9 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z- 1 - Limits for Air Contaminants

The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples
.

STEL	1 ppm 1.8 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

STEL	1 ppm 1.8 mg/m3	USA. NIOSH Recommended Exposure Limits

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9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	**Colorless Gas**		
Physical State:	**Gas**	**Odor:**	**Acidic odor**
Odor Threshold:	**0.1 to 0.4 PPM for Nitrogen Dioxide**	**Molecular Formula:**	**NO2 in Air**
Particle Size:	**Not Applicable**	**Solubility:**	**Very slightly soluble**
Specific Gravity or Density:	**0.906 Air =1**	**Softening Point:**	**Not Applicable**
Viscosity:	**Not Applicable**	**Percent Volatile:**	**100%**
Boiling Point:	**Not Determined**	**Freezing or Melting Point:**	**Not Determined**
Flammability:	**Not Flammable**	**Flash Point:**	**Not Determined**

10 STABILITY AND REACTIVITY

Chemical Stability: **Product is stable under normal conditions.**

Conditions to Avoldentification: **Nitrogen Dioxide reacts with water to form nitric acid.**

Materials to Avoldentification: **Nitrogen dioxide is not compatible with strong bases, strong oxidizers, alkali metals, alkali earth metals and powdered metals. Avoid combustible materials, water, chlorinated hydrocarbons, carbon disulfide, and ammonia.**

Hazardous Decomposition: **Toxic fumes of nitroxides.**

Hazardous Polymerization: **Will not occur.**

11 TOXICOLOGICAL INFORMATION

Nitrogen dioxide cas#:(10102-44-0) [0.0002-0.01%]

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.
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 fatal 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: Inhalation of vapors may cause:, rhinitis, pharyngitis, Cyanosis, respiratory failure, Coma., Unconsciousness, death, weight loss, drop in blood pressure, loss of sense of smell, Amnesia.
Synergistic effects: no data available
Additional Information:RTECS: QW9800000

12 ECOLOGICAL INFORMATION

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Nitrogen dioxide cas#:(10102-44-0) [0.0002-0.01%]

Information on ecological effects
Toxicity:
Toxicity to fish LC50 - Tinca tinca - 19.6 mg/l - 96 h.
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: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.

Oxygen cas#:(7782-44-7) [20.9%]

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 cas#:(7727-37-9) [79.09-79.0998%]

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

13 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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14 TRANSPORT INFORMATION

UN1956, Compressed gas, n.o.s., 2.2
Proper Shipping Name US:
UN 1956, Compressed Gas N.O.S., (Nitrogen Dioxide, Air), 2.2

Proper Shipping Name Canada:
UN1956, Compressed Gas, N.O.S., (Nitrogen Dioxide, Air), 2.2

15 REGULATORY INFORMATION

[%] RQ (CAS#) Substance - Reg Codes

[0.0002-0.01%] RQ(10LBS), Nitrogen dioxide (10102-44-0) ACUTERCRA, CERCLA, CSWHS, EHS302, MASS, NJEHS, NJHS, OSHAPSM, OSHAWAC, PA, TSCA, TXAIR, TXHWL

[20.9%] Oxygen (7782-44-7) MASS, PA, TSCA

[79.09-79.0998%] Nitrogen (7727-37-9) MASS, PA, TSCA

Regulatory Code Legend

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

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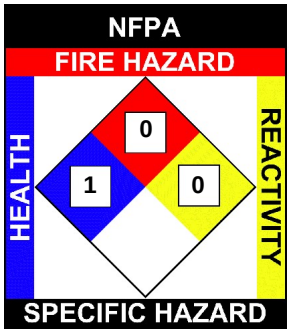
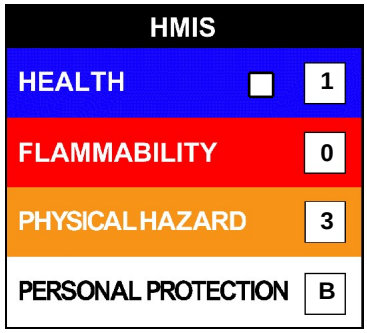
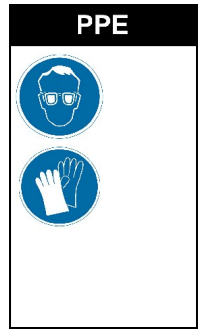
16	OTHER INFORMATION

NFPA: Health = 1, Fire = 0, Reactivity = 0, Specific Hazard = n/a
HMIS III: Health = 1, Fire = 0, Physical Hazard = 3
HMIS PPE: B - Safety Glasses, Gloves







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