

0.0001% to 0.0999% Sulfur Dioxide in Air

1 PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: 0.0001% to 0.0999% Sulfur Dioxide in Air
Synonyms: Sulfur Dioxide in Air, Sulfur Dioxide Calibration Gas
Common Name: Sulfur Dioxide in Air
SDS Number: NLB 2190
Revision Date: 7/25/2018
Version: 3
CAS Number: Not Available - Gas Mixture
EPA Number: Not Available
RCRA Number: Not Applicable
Chemical Family: Gas Mixture
Chemical Formula: SO₂ + O₂ + N₂
Product Use: Calibration of analytical instrumentation

Supplier Details: NorLab - A Division of Norco Inc.
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.
P251 - Pressurized container: Do not pierce or burn, even after use.
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 - Use only outdoors or in a well-ventilated area.
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+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-PG12 - Do not open valve until connected to equipment prepared for use.
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

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Route of Entry:	Eyes; Inhalation; Skin;
Target Organs:	Eyes; Respiratory system; Skin;
Inhalation:	Sulfur dioxide is very irritating and generally causes severe nose, throat and respiratory irritation before toxic concentrations are present. Exposure to low concentrations of sulfur dioxide may cause sneezing, coughing, bronchospasm, and systemic acidosis. Relatively high concentrations of product would have to be inhaled for pulmonary edema or respiratory arrest to occur, however, individual susceptibility to the effects of sulfur dioxide varies. Prolonged or repeated low level exposures may impair lung function and cause corrosion of the teeth. Reproductive toxicity and developmental changes in newborn have been observed in experimental animals exposed to sulfur dioxide. Sulfur dioxide is mutagenic in experimental cell assay systems.
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 with associated redness, swelling and tears. 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	
7446-09-5	0.0001 - 0.0999%	Sulfur dioxide	
7782-44-7	20.9%	Oxygen	
7727-37-9	79.0001 - 79.0999%	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. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Keep victim warm and calm. Further treatment should be symptomatic and supportive. Seek immediate medical attention.
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 SULFUR 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

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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:

Use water spray to cool adjacent cylinders and areas. 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

Personal Precautions, Protective Equipment and Emergency Procedures:

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 re-enter an area until sulfur 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 valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/Norlab location.

Environmental Precautions:

Prevent further release (leakage/spillage) if safe to do so.

Methods and Materials for Containments and Cleaning Up:

Contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/Norlab location. Ensure adequate ventilation.

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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.

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

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a 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.

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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%

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Personal Protective Equipment:

Sulfur dioxide cas#:(7446-09-5) [0.0001-0.0999%]
Oxygen cas#:(7782-44-7) [20.9%]
Nitrogen cas#:(7727-37-9) [79.0001-79.0999%]

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. Immersion protection Material: butyl-rubber Minimum layer thickness: 0.3 mm Break through time: > 480 min Material tested:Butoject (Aldrich Z677647, Size M)

Splash protection: Material: Chloroprene Minimum layer thickness: 0.6 mm Break through time: > 30 min Material tested:Camapren (Aldrich Z677493, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, 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.

Sulfur dioxide cas#:(7446-09-5) [0.0001-0.0999%]

Components with workplace control parameters

STEL 5 ppm USA. ACGIH Threshold Limit Values (TLV)
13 mg/m³

Not classifiable as a human carcinogen

TWA 2 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
5 mg/m³

STEL 5 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
13 mg/m³

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

The value in mg/m³ is approximate.

STEL 0.25 ppm USA. ACGIH Threshold Limit Values (TLV)
Pulmonary function Lower Respiratory Tract irritation Not classifiable as a human carcinogen

TWA 2 ppm USA. NIOSH Recommended Exposure Limits
5 mg/m³

STEL 5 ppm USA. NIOSH Recommended Exposure Limits
13 mg/m³

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

Nitrogen cas#:(7727-37-9) [79.0001-79.0999%]

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PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless Gas	Odor:	Irritating/pungent odor
Physical State:	Gas	Molecular Formula:	SO₂ in Air
Odor Threshold:	0.67 - 4.75 PPM	Solubility:	Slightly Soluble
Particle Size:	Not Applicable	Softening Point:	Not Determined
Specific Gravity or Density:	Not Available	Percent Volatile:	100%
Viscosity:	Not Determined	Upper Flammability Limit and Lower Flammability Limit:	Not Applicable
Saturated Vapor Concentration:	Not Determined		
Flammability:	Not Flammable		

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STABILITY AND REACTIVITY

Chemical Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Incompatibilities, flames, ignition sources.
Materials to Avoid:	Mixture contains only 0-0.0999% sulfur dioxide. The following data is for pure sulfur dioxide. Reacts violently with peroxides, chromates, permanganates and oxygen difluoride. It also reacts with chlorates to form chlorine, which may become explosive at elevated temperatures. Forms sulfuric acid solutions with water.
Hazardous Decomposition:	Nitrogen Oxides (NO_x) and Sulfur Oxides
Hazardous Polymerization:	Will not occur.

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TOXICOLOGICAL INFORMATION

Sulfur dioxide cas#:(7446-09-5) [0.0001-0.0999%]

Information on toxicological effects

Acute toxicity:

Oral LD50 Inhalation LC50 LC50 Inhalation - rat - 1 h - 2520 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:

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Sulphur dioxide)

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

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Potential health effects: Inhalation May be harmful 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., bronchoconstriction, pulmonary edema
Synergistic effects: no data available
Additional Information: RTECS: WS4550000

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

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: Nausea, Dizziness, Unconsciousness, May be harmful.

Synergistic effects: no data available

Additional Information: RTECS: RS2060000

Nitrogen cas#:(7727-37-9) [79.0001-79.0999%]

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

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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

Sulfur dioxide cas#:(7446-09-5) [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

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) [79.0001-79.0999%]

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

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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

UN1956, 2, Compressed gas, n.o.s.

Proper Shipping Name US:

UN 1956, Compressed Gas N.O.S., (Sulfur Dioxide, Air), 2.2

Proper Shipping Name Canada:

UN1956, Compressed Gas, N.O.S., (Sulfur Dioxide, Air), 2.2



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REGULATORY INFORMATION

Component (CAS#) [%] - CODES

Sulfur dioxide (7446-09-5) [0.0001-0.0999%] EHS302, MASS, NJEHS, NJHS, OSHAPSM, OSHAWAC, PA, TSCA, TXAIR

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

Nitrogen (7727-37-9) [79.0001-79.0999%] MASS, PA, TSCA



WARNING

This product can expose you to chemicals including Sulfur dioxide, 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.

Regulatory CODE Descriptions

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

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OTHER INFORMATION

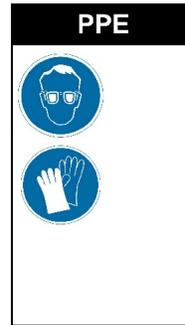
NFPA: Health = 1, Fire = 0, Reactivity = 0, Specific Hazard = n/a

HMIS III: Health = 1, Fire = 0, Physical Hazard = 3

HMIS PPE: B - Safety Glasses, Gloves



HMIS	
HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	3
PERSONAL PROTECTION	B



Disclaimer:

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