

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Substance

Product Name: Sulfur Dioxide

Product Name: SO₂

CAS No: 7446-09-5

Synonyms: Sulfurous anhydride, Sulfurous acid anhydride; Sulfurous Oxide

Intended Use of the Product

Used as a bleaching agent, refrigerant, solvent and in processing food products.

Name, Address, and Telephone of the Responsible Party

Manufacturer

CHEMTRADE LOGISTICS INC.

155 Gordon Baker Road

Suite 300

Toronto, Ontario M2H 3N5

For MSDS Info: (416) 496-5856

www.chemtradelogistics.com

Emergency Telephone Number

Emergency number :

Canada: CANUTEC +1-613-996-6666 / US: CHEMTREC +1-800-424-9300

Chemtrade Emergency Contact: (866) 416-4404

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Liquefied gas H280

Acute Tox. 3 (Inhalation:gas) H331

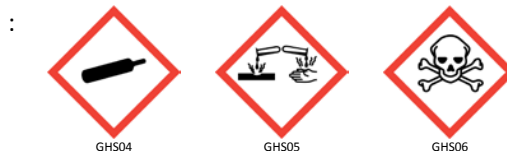
Skin Corr. 1B H314

Eye Dam. 1 H318

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) : H280 - Contains gas under pressure; may explode if heated
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H331 - Toxic if inhaled

Precautionary Statements (GHS-US) : P260 - Do not breathe vapors, mist, spray, gas
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear gloves, protective clothing, eye protection, face protection, respiratory protection
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove

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contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician
P311 - Call a POISON CENTER or doctor/physician
P321 - Specific treatment (see section 4)
P363 - Wash contaminated clothing before reuse
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P410+P403 - Protect from sunlight. Store in a well-ventilated place
P501 - Dispose of contents/container to local, regional, national, and international regulations

Other Hazards

Other Hazards Not Contributing to the Classification: Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Prolonged exposure to gas or overexposure to concentrated gas may cause loss of consciousness, possible damage to lung tissue, a decrease of lung function, vocal chord spasms, chemical pneumonia, inflammation of the throat (bronchitis), and breathing paralysis. Contact with the product may cause cold burns or frostbite.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Name	Product identifier	% (w/w)	Classification (GHS-US)
Sulfur dioxide	(CAS No) 7446-09-5	99 - 100	Compressed gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318

Full text of H-phrases: see section 16

Mixture

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to GENTLY warm the affected area. Do not use hot water. Do not rub affected area. Get immediate medical attention.

Inhalation: When symptoms occur: go into open air and ventilate suspected area. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor/physician. Thaw frosted parts with lukewarm water. Do not rub affected area.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician. If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to GENTLY warm the affected area. Do not use hot water. Do not rub affected area. Get immediate medical attention.

Ingestion: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms and Effects Both Acute and Delayed

General: Causes severe skin burns and eye damage. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. Toxic if inhaled. May cause frostbite.

Inhalation: Toxic if inhaled. Irritating to mouth, nose, throat, and lungs, may cause difficulty in breathing.

Skin Contact: Corrosive. Causes burns. May cause frostbite on contact with the liquefied gas.

Eye Contact: Causes serious eye damage. Contact with the liquefied gas causes frostbite. Can cause blindness.

Ingestion: Not expected to be a route of exposure, but gas is extremely irritating to mucous membranes.

Chronic Symptoms: Prolonged exposure to gas or overexposure to concentrated gas may cause loss of consciousness, possible damage to lung tissue, a decrease of lung function, vocal chord spasms, chemical pneumonia, inflammation of the throat (bronchitis), and breathing paralysis.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If medical advice is needed, have product container or label at hand.

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SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not considered flammable but may burn at high temperatures.

Explosion Hazard: Heating may cause an explosion. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity: Thermal decomposition generates : Corrosive vapors.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products:Not available

Other information: Do not allow run-off from fire fighting to enter drains or water courses.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Ruptured cylinders may rocket. Avoid all contact with skin, eyes, or clothing. Do NOT breathe (dust, vapor, mist, gas). Handle in accordance with good industrial hygiene and safety practice.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up

For Containment: Stop leak without risks if possible. As an immediate precautionary measure, isolate spill or leak area in all directions.

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. Isolate area until gas has dispersed.

Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Ruptured cylinders may rocket. Dissolves in water to form sulfurous acid, a corrosive liquid. Do not pressurize, cut, or weld containers. Contact with the liquefied gas may cause frostbite.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from combustible materials, ignition sources, incompatible materials, direct sunlight, extremely high or low temperatures, water, moisture, humidity.

Storage Area: Store locked up. Store in a well-ventilated place.

Specific End Use(s) Used as a bleaching agent, refrigerant, solvent and in processing food products.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

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Sulfur dioxide (7446-09-5)		
USA ACGIH	ACGIH STEL (ppm)	0.25 ppm
USA OSHA	OSHA PEL (TWA) (mg/m ³)	13 mg/m ³
USA OSHA	OSHA PEL (TWA) (ppm)	5 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	5 mg/m ³
USA NIOSH	NIOSH REL (TWA) (ppm)	2 ppm
USA NIOSH	NIOSH REL (STEL) (mg/m ³)	13 mg/m ³
USA NIOSH	NIOSH REL (STEL) (ppm)	5 ppm
USA IDLH	US IDLH (ppm)	100 ppm
Alberta	OEL STEL (mg/m ³)	13 mg/m ³
Alberta	OEL STEL (ppm)	5 ppm
Alberta	OEL TWA (mg/m ³)	5.2 mg/m ³
Alberta	OEL TWA (ppm)	2 ppm
British Columbia	OEL STEL (ppm)	5 ppm
British Columbia	OEL TWA (ppm)	2 ppm
Manitoba	OEL STEL (ppm)	0.25 ppm
New Brunswick	OEL STEL (mg/m ³)	13 mg/m ³
New Brunswick	OEL STEL (ppm)	5 ppm
New Brunswick	OEL TWA (mg/m ³)	5.2 mg/m ³
New Brunswick	OEL TWA (ppm)	2 ppm
Newfoundland & Labrador	OEL STEL (ppm)	0.25 ppm
Nova Scotia	OEL STEL (ppm)	0.25 ppm
Nunavut	OEL STEL (mg/m ³)	13 mg/m ³
Nunavut	OEL STEL (ppm)	5 ppm
Nunavut	OEL TWA (mg/m ³)	5 mg/m ³
Nunavut	OEL TWA (ppm)	2 ppm
Northwest Territories	OEL STEL (mg/m ³)	13 mg/m ³
Northwest Territories	OEL STEL (ppm)	5 ppm
Northwest Territories	OEL TWA (mg/m ³)	5 mg/m ³
Northwest Territories	OEL TWA (ppm)	2 ppm
Ontario	OEL STEL (mg/m ³)	10.4 mg/m ³
Ontario	OEL STEL (ppm)	5 ppm
Ontario	OEL TWA (mg/m ³)	5.2 mg/m ³
Ontario	OEL TWA (ppm)	2 ppm
Prince Edward Island	OEL STEL (ppm)	0.25 ppm
Québec	VECD (mg/m ³)	13 mg/m ³
Québec	VECD (ppm)	5 ppm
Québec	VEMP (mg/m ³)	5.2 mg/m ³
Québec	VEMP (ppm)	2 ppm
Saskatchewan	OEL STEL (ppm)	5 ppm
Saskatchewan	OEL TWA (ppm)	2 ppm
Yukon	OEL STEL (mg/m ³)	13 mg/m ³
Yukon	OEL STEL (ppm)	5 ppm
Yukon	OEL TWA (mg/m ³)	13 mg/m ³
Yukon	OEL TWA (ppm)	5 ppm

Exposure Controls

Appropriate Engineering Controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective goggles. Insufficient ventilation: wear respiratory protection. Protective clothing. Gloves.

Materials for Protective Clothing: Chemically resistant materials and fabrics. Corrosionproof clothing.

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Hand Protection: Wear chemically resistant protective gloves. Acid-resistant protective gloves.

Eye Protection: Chemical safety goggles.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Gas
Appearance	: Colorless gas
Odor	: Pungent. Strong.
Odor Threshold	: Not available
pH	: Not applicable. In water, sulfur dioxide is rapidly converted to sulfurous acid (pH less than 3).
Relative Evaporation Rate (butylacetate=1)	: 243.2
Melting Point	: Not applicable
Freezing Point	: -75.55 °C (-104°F)
Boiling Point	: -9.99 °C (14°F)
Flash Point	: Not applicable
Critical temperature	: 156.9 °C (314.4°F)
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20 °C	: 2.2 [Air = 1]
Relative Density	: Not available
Specific Gravity	: 1.45
Solubility	: Water: 11.9% by wt. in water at 15°C (60°F) and 760 mmHg. Organic solvent: Soluble in alcohol, chloroform, ether, acetic acid.
Partition coefficient: n-octanol/water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Not expected to present an explosion hazard due to static discharge.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Thermal decomposition generates : Corrosive vapors.

Chemical Stability: Stable at standard temperature and pressure.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Direct sunlight. Extremely high or low temperatures. Ignition sources. Incompatible materials. Water. Moisture.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Water. Humidity. Chlorates, acrolein, active metals such as: aluminum, iron, iron oxide.

Hazardous Decomposition Products: Thermal decomposition generates : Corrosive vapors. Sulfur compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Toxic if inhaled.

LD50 and LC50 Data:

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Sulfur Dioxide (\f)7446-09-5	
ATE (gases)	700.000 ppmV/4h

Skin Corrosion/Irritation: Causes severe skin burns and eye damage.

pH: Not applicable. Not applicable. In water, sulfur dioxide is rapidly converted to sulfurous acid (pH less

Serious Eye Damage/Irritation: Causes serious eye damage.

pH: Not applicable. Not applicable. In water, sulfur dioxide is rapidly converted to sulfurous acid (pH less

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Potential Adverse Human Health Effects and Symptoms: Toxic if inhaled.

Symptoms/Injuries After Inhalation: Toxic if inhaled. Irritating to mouth, nose, throat, and lungs, may cause difficulty in breathing.

Symptoms/Injuries After Skin Contact: Corrosive. Causes burns. May cause frostbite on contact with the liquefied gas.

Symptoms/Injuries After Eye Contact: Causes serious eye damage. Contact with the liquefied gas causes frostbite. Can cause blindness.

Symptoms/Injuries After Ingestion: Not expected to be a route of exposure, but gas is extremely irritating to mucous membranes.

Chronic Symptoms: Prolonged exposure to gas or overexposure to concentrated gas may cause loss of consciousness, possible damage to lung tissue, a decrease of lung function, vocal chord spasms, chemical pneumonia, inflammation of the throat (bronchitis), and breathing paralysis.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Sulfur dioxide (7446-09-5)	
LC50 Inhalation Rat (ppm)	2500 ppm/1h

Sulfur dioxide (7446-09-5)	
IARC Group	3

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Ecology - General: Report spills to the competent authority as this material forms an acidic solution when dissolved in water.

Persistence and Degradability

Sulfur Dioxide (7446-09-5)	
Persistence and Degradability	Not established.

Bioaccumulative Potential

Sulfur Dioxide (7446-09-5)	
Bioaccumulative Potential	Not established.

Sulfur dioxide (7446-09-5)	
BCF fish 1	(no bioaccumulation expected)

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Additional Information: Empty gas cylinders should be returned to the vendor for recycling or refilling.

Ecology – Waste Materials: Avoid release to the environment.

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SECTION 14: TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : SULFUR DIOXIDE
Hazard Class : 2.3
Identification Number : UN1079
Label Codes : 2.3,8
ERG Number : 125



14.2 In Accordance with IMDG

Proper Shipping Name : SULPHUR DIOXIDE
Hazard Class : 2.3
Identification Number : UN1079
Label Codes : 2.3,8
EmS-No. (Fire) : F-C
EmS-No. (Spillage) : S-U
MFAG Number : 125



14.3 In Accordance with IATA

Proper Shipping Name : SULPHUR DIOXIDE
Identification Number : UN1079
Hazard Class : 2
Label Codes : 2.3,8
ERG Code (IATA) : 2CP



14.4 In Accordance with TDG

Proper Shipping Name : SULPHUR DIOXIDE
Hazard Class : 2.3
Identification Number : UN1079
Label Codes : 2.3,8



SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Sulfur Dioxide (7446-09-5)	
SARA Section 311/312 Hazard Classes	Delayed (chronic) health hazard Immediate (acute) health hazard Sudden release of pressure hazard
Sulfur dioxide (7446-09-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on SARA Section 302 (Specific toxic chemical listings)	
SARA Section 302 Threshold Planning Quantity (TPQ)	500

US State Regulations

Sulfur dioxide (7446-09-5)	
U.S. - California - Proposition 65 - Developmental Toxicity	WARNING: This product contains chemicals known to the State of California to cause birth defects.
Sulfur dioxide (7446-09-5)	
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List	


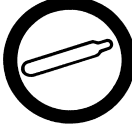


Canadian Regulations

Sulfur Dioxide (7446-09-5)	
WHMIS Classification	Class E - Corrosive Material Class A - Compressed Gas

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	Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects		
			
Sulfur dioxide (7446-09-5)			
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List			
WHMIS Classification	Class A - Compressed Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects Class E - Corrosive Material		

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 05/01/15
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Compressed gas	Gases under pressure Compressed gas
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Liquefied gas	Gases under pressure Liquefied gas
Skin Corr. 1B	Skin corrosion/irritation Category 1B
H280	Contains gas under pressure; may explode if heated
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H331	Toxic if inhaled

Party Responsible for the Preparation of This Document

CHEMTRADE LOGISTICS, INC.
For MSDS Info: (416) 496-5856

Handle product with due care and avoid unnecessary contact. This information is supplied under U.S. OSHA'S "Right to Know" (29 CFR 1910.1200) and Canada's WHMIS regulations. Although certain hazards are described herein, we cannot guarantee these are the only hazards that exist. The information contained herein is based on data available to us and is believed to be true and accurate but it is not offered as a product specification. No warranty, expressed or implied, regarding the accuracy of this data, the hazards connected with the use of the product, or the results to be obtained from the use thereof, is made and Chemtrade and its affiliates assume no responsibility. Chemtrade is a member of the CIAC (Chemistry Industry Association of Canada) and adheres to the codes and principles of Responsible Care™.



North America GHS US 2012 & WHMIS 2