

## Praxair Material Safety Data Sheet

### 1. Chemical Product and Company Identification

<b>Product Name:</b> Sulphur Dioxide/Air Mixture	<b>Trade Name:</b> Sulphur Dioxide/Air Mixture
<b>Product Use:</b> Not available.	
<b>Chemical Name:</b> Not applicable.	<b>Synonym:</b> Not available.
<b>Chemical Formula:</b> Not available.	<b>Chemical Family:</b> Not applicable.
<b>Telephone:</b> <b>Emergencies:</b> * 1-800-363-0042	<b>Supplier /Manufacture:</b> Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2 <b>Phone:</b> 905-803-1600 <b>Fax:</b> 905-803-1682

*\*Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

### 2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD <sub>50</sub> (Species & Routes)	LC <sub>50</sub> (Rat, 4 hrs.)	TLV-TWA (ACGIH)
Sulphur dioxide	0.1 - 99.99	7446-09-5	Not available.	1260 ppm	0.25 ppm STEL
Air	0.01 - 99.9	132259-10-0	Not available.	Not available.	Not available.

### 3. Hazards Identification



#### Emergency Overview



**CAUTION!** Toxic, corrosive, high-pressure gas. May be fatal if inhaled. Symptoms may be delayed. May cause respiratory system damage. Self-contained breathing apparatus must be worn by rescue workers.

#### ROUTES OF EXPOSURE:

Swallowing, Skin absorption, Inhalation, Skin contact, Eye contact

#### EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

**INHALATION:** Exposure to concentrations of sulfur dioxide above the Threshold Limit Value (TLV) of 2 ppm may cause irritation of the eyes, nose, throat, sinuses, with choking, coughing, and sometimes bronchoconstriction. Concentrations of 50-100 ppm are considered dangerous, and exposures to 400-500 ppm are immediately life-threatening. Exposure to high concentrations may result in pulmonary edema and paralysis. Lack of oxygen can cause death.

**SKIN CONTACT:** May cause irritation.

**SKIN ABSORPTION:** This product is a gas.

**SWALLOWING:** A highly unlikely route of exposure. This product is a gas at room temperature and pressure. May cause burns to mouth, throat and stomach.

**EYE CONTACT:** Vapour may cause irritation and conjunctival inflammation.

**EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:**

Chronic overexposure by inflammation may cause chronic bronchitis with emphysema and pulmonary function impairment. The pulmonary effects are increased in the presence of respirable particles. May cause respiratory irritation and some nosebleeds. Repeated skin exposure may cause dermatitis. Repeated exposure to low concentrations may cause systematic acidosis.

**OTHER EFFECTS OF OVEREXPOSURE:**

None.

**MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:**

Inhalation may aggravate asthma and inflammatory or fibrotic pulmonary disease. Because of its irritating properties, this material may aggravate an existing dermatitis.

**SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:**

None currently known.

**CARCINOGENICITY:**

Not listed as carcinogen by OSHA, NTP or IARC.

**4. First Aid Measures**

**INHALATION:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

**SKIN CONTACT:**

Immediately flush affected areas with water for at least 15 minutes while removing contaminated clothing and shoes. Discard clothing and shoes. Call a physician.

**SWALLOWING:**

This product is a gas at normal temperature and pressure.

**EYE CONTACT:**

Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open and away from the eyeball to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately.

**NOTES TO PHYSICIAN:**

*Victims of overexposure by inhalation should be observed for up to 72 hours for delayed onset of pulmonary edema. The hazards of this material are mainly due to its severe irritant and corrosive properties on the skin and mucosal surfaces. There is no specific antidote and treatment of should be directed at the control of symptoms and the clinical condition.*

### 5. Fire Fighting Measures

**FLAMMABLE :** No. **IF YES, UNDER WHAT CONDITIONS?** Not applicable.

**FLASH POINT (test method)** Not applicable. **AUTOIGNITION TEMPERATURE** Not applicable.

**FLAMMABLE LIMITS IN AIR, % by volume:** **LOWER:** Not applicable. **UPPER:** Not applicable.

**EXTINGUISHING MEDIA:**

Gas mixture will not catch fire. Use of media appropriate for surrounding fire.

**SPECIAL FIRE FIGHTING PROCEDURES:**

**CAUTION!** Evacuate all personnel from danger area. Immediately cool cylinders with water spray from maximum distance. Reapproach with extreme caution. Use self-contained breathing apparatus. Stop flow of gas if without risk while continuing cooling water spray. Remove all containers from area if without risk. Allow fire to burn out.

**UNUSUAL FIRE AND EXPLOSION HAZARD:**

Non-flammable, toxic, corrosive gas. Container may rupture due to heat of fire. Vapours are extremely irritating. Contact may cause burns to skin and eyes (see Section six). No part of container should be subjected to a temperature higher than 52 C.. Most containers are equipped with a pressure relief device designed to vent contents when they are exposed to elevated temperatures.

**HAZARDOUS COMBUSTION PRODUCTS:**

None.

**SENSITIVITY TO IMPACT:**

Avoid impact against container.

**SENSITIVITY TO STATIC DISCHARGE:**

None currently known.

### 6. Accidental Release Measures

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

**CAUTION!** Corrosive, toxic gas. Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus and protective clothing where needed. Reduce vapours with fog or fine water spray. Reverse flow into cylinder may cause rupture. Shut off leak if without risk. Ventilate area of leak or move leaking container to well ventilated area. Prevent runoff from contaminating surrounding environment. Corrosive, toxic vapours may spread from spill. Before entering area, especially confined areas, check atmosphere with appropriate device.

**WASTE DISPOSAL METHOD:**

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

## 7. Handling and Storage

### PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

### PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. 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. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to Section 16 for the address and phone number along with a list of other available publications.

### OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

**Toxic, corrosive high-pressure gas.** Do not breathe gas. Do not get vapors on skin, or on clothing. Have safety showers and eyewash fountains immediately available. Use piping and equipment adequately designed to withstand pressures to be encountered. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **Store and use with adequate ventilation at all times.** Use only in a closed system constructed of corrosion-resistant materials. Close valve after each use; keep closed even when empty. **Never work on a pressurized system.** If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, provincial, and local laws, then repair the leak. **Never ground a compressed gas cylinder or allow it to become part of an electrical circuit.**

## 8. Exposure Controls/Personal Protection

### VENTILATION/ENGINEERING CONTROLS:

**LOCAL EXHAUST:** A corrosion-resistant system is acceptable.

**MECHANICAL (general):** Inadequate. See SPECIAL.

**SPECIAL:** Use only in a closed system. Corrosion-resistant, forced-draft fume hood is preferred.

**OTHER:** See SPECIAL.

### PERSONAL PROTECTION:

**RESPIRATORY PROTECTION:** Select in accordance with Provincial regulations or guidelines. Selection should also be based on the current CSA Standard Z94.4, "Selection, care and use of respirators." Respirators should be approved by NIOSH and MSHA.

**SKIN PROTECTION:** Neoprene gloves.

**EYE PROTECTION:** Select in accordance with the current CSA Standard Z94.3, "Industrial eye and face protection", and any Provincial regulations or guidelines.

**OTHER PROTECTIVE EQUIPMENT:** Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

### 9. Physical and Chemical Properties

<b>PHYSICAL STATE:</b> GAS	<b>FREEZING POINT:</b> Not available.	<b>pH:</b> Not available.
<b>BOILING POINT:</b> Not available.	<b>VAPOUR PRESSURE:</b> Not available.	<b>MOLECULAR WEIGHT:</b> Not available.
<b>SPECIFIC GRAVITY:</b> Not available. LIQUID ( Water = 1)	<b>SOLUBILITY IN WATER:</b> Not available.	
<b>SPECIFIC GRAVITY:</b> Not available. VAPOUR (air = 1)	<b>EVAPORATION RATE</b> (Butyl Acetate=1): Not available.	<b>COEFFICIENT OF WATER/OIL DISTRIBUTION:</b> Not applicable.
<b>VAPOUR DENSITY:</b> Not available.	<b>% VOLATILES BY VOLUME:</b> Not available.	<b>ODOUR THRESHOLD:</b> Not available.

**APPEARANCE & ODOUR:** Colourless gas at normal temperature and pressure. choking odour about 3-5 ppm (depending on concentrations of sulphur dioxide in mixture).

### 10. Stability and Reactivity

<b>STABILITY:</b>	Stable.
<b>CONDITIONS OF CHEMICAL INSTABILITY:</b>	See Section 7.
<b>INCOMPATIBILITY (materials to avoid):</b>	Oxidizing and reduced agents, chlorine trifluoride, chlorates, sodium carbide, powdered aluminium, moisture, zinc and its alloys, manganese, alkali metals, metal nitrates, rubidium carbide, sodium, ferrous oxide at 300 C, fluorine, stannous oxide, metal acetylides, metal oxides, metal hydrides, and acrolein.
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	None currently known.
<b>HAZARDOUS POLYMERIZATION:</b>	Will not occur.
<b>CONDITIONS OF REACTIVITY:</b>	None currently known.

### 11. Toxicological Information

See section 3.

### 12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

### 13. Disposal Considerations

**WASTE DISPOSAL METHOD:** Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

### 14. Transport Information

**TDG/IMO SHIPPING NAME:** Compressed gas, toxic, n.o.s. (Sulphur Dioxide) when the sulphur dioxide content is >or = 50.4% or Compressed gas n.o.s. (Air) when the sulphur dioxide content is <50.4%

<b>HAZARD CLASS:</b> CLASS 2.3 Toxic Gas (when the sulphur dioxide content is > or = 50.4%.) CLASS 2.2: Non-flammable, non-corrosive, non-toxic (when the sulphur dioxide is < 50.4)	<b>IDENTIFICATION # :</b> UN1955 (when sulphur dioxide content is > or = 50.4%) UN1956 (when sulphur dioxide content is <50.4%)	<b>PRODUCT REPORTABLE QUANTITY (PRO):</b> Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more.
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**SHIPPING LABEL(s):** Toxic gas (when the sulphur dioxide content is > or = 50.4%) or Non-flammable, non corrosive, non toxic gas (when the sulphur dioxide content is < 50.4%)

**PLACARD (when required):** Toxic gas (when the sulphur dioxide content is > or = 50.4%) or Non-flammable, non corrosive, non toxic gas (when the sulphur dioxide content is < 50.4%)

**SPECIAL SHIPPING INFORMATION:**

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

### 15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

**DSL (Canada)** This product is on the DSL list

**WHMIS (Canada)** Class A: Compressed gas.  
Class D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).  
Class D-2A: Material causing other toxic effects (VERY TOXIC).  
Class E: Corrosive gas.

**International Regulations**

**EINECS** Not available.

**DSCL (EEC)** R20- Harmful by inhalation.  
R40- Possible risks of irreversible effects.

**International Lists** No products were found.

### 16. Other Information

**MIXTURES:**

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to 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 make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

**HAZARD RATING SYSTEM:**

**HMIS RATINGS:**

HEALTH 3  
FLAMMABILITY 0  
PHYSICAL HAZARD 2

**STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:**

<b>THREADED:</b>	CGA-660
<b>PIN-INDEXED YOKE:</b>	Not available.
<b>ULTRA-HIGH-INTEGRITY CONNECTION:</b>	Not available.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

- AV-1 Safe Handling and Storage of Compressed Gas
- P-1 Safe Handling of Compressed Gases in Containers
- V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
- V-7 Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
- Handbook of Compressed Gases, Fifth Edition

**For more indepth information for each component, refer to the pure product MSDS.**

**The information contained in this MSDS is generated from technical sources using the Chemmate Mixture MSDS system and the pure-product MSDS for each component. These mixtures are not tested as a whole for chemical, physical, or health effects.**

**PREPARATION INFORMATION:**

<b>DATE:</b>	October 15, 2013
<b>DEPARTMENT:</b>	Safety and Environmental Services
<b>TELEPHONE:</b>	905-803-1600

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

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety nformation, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

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