MANUFACTURER'S NAME
Intertrade Holdings, Inc.
3379 Peachtree Rd. NE, Suite 300
Atlanta, Georgia 30326

PRODUCT
CAS Number 7446-09-5
CAS Name Sulfur Dioxide
Synonyms SO₂

PHONE NUMBERS
Regular Telephone No. 404-239-6100
Emergency Telephone No. Chemtrec 1-800-424-9300

COMPOSITION/INFORMATION ON INGREDIENTS
<table>
<thead>
<tr>
<th>CAS No.</th>
<th>% w/w</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfur dioxide 7446-09-5</td>
<td>99.94</td>
</tr>
</tbody>
</table>

TRANSPORTATION INFORMATION
DOT Shipping Information
Hazard Class: Poison Gas - Inhalation Hazard, Zone C
Proper Shipping Name:
Sulfur dioxide, liquid, 2.3, UN 1079,
Poison gas - Inhalation hazard, Zone C.

HAZARD DATA
Corrosive to skin, eyes, causing burns. In low concentrations, gas is irritating to respiratory system.
PEL = 2 ppm TWA
PEL ≤ 5 ppm STEL

PHYSICAL DATA
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
<td>-10°C (14°F)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-75.5°C (-104°F)</td>
</tr>
<tr>
<td>Specific Gravity @ 32°F</td>
<td>1.434</td>
</tr>
<tr>
<td>Vapor Pressure @ 140°F</td>
<td>760 mm Hg</td>
</tr>
<tr>
<td>Vapor Density (air = 1)</td>
<td>2.26</td>
</tr>
<tr>
<td>Solubility in H₂O % by wt.</td>
<td>22.8 g/100 cc @ 90°C</td>
</tr>
<tr>
<td>% Volatiles by Vol.</td>
<td>0.58 g/100 cc @ 90°C</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>(ethyl ether = 1)</td>
<td></td>
</tr>
<tr>
<td>Appearance and Odor</td>
<td>Colorless liquid or irritant gas with characteristic odor of burning sulfur</td>
</tr>
<tr>
<td>pH</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

Colorless liquid or irritant gas with characteristic odor of burning sulfur
Not determined
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FIRE AND EXPLOSION DATA
Flash Point  None
Autoignition Temperature None
Flammable Limits in Air & by Vol. Not applicable

Extinguishing Media
Sulfur dioxide is not flammable. In fires where SO_2 is present, water fog, foam, carbon dioxide and/or dry chemical can be used.

Special Fire Fighting Procedures
Where SO_2 is present, stop any SO_2 flow. Containers should be immediately moved away from fire area. If this cannot be done, keep SO_2 containers cool with water. Wear gas-tight chemical goggles and self-contained breathing apparatus.

Unusual Fire and Explosion Hazard
SO_2 is not flammable nor explosive. However pressure in SO_2 containers increases rapidly with heat, and container should be kept cool with water if it cannot be moved. Containers have fusible metal plugs which melt at 165°F releasing SO_2.

HEALTH HAZARD INFORMATION
Routes of Exposure

Inhalation
Hazard Classification: Corrosive - irritating to mucus membranes in upper respiratory tract.

Basis For Classification: Criteria for recommended standard - Occupational Exposure to Sulfur Dioxide (NIOSH).

References: 1, 2

Skin Contact
Hazard Classification: Corrosive to skin.

Basis For Classification: Criteria for recommended standard - Occupational Exposure to Sulfur Dioxide (NIOSH).

References: 1, 2

Skin Absorption
Hazard Classification: Corrosive.

Basis For Classification: Criteria for recommended standard - Occupational Exposure to Sulfur Dioxide (NIOSH).

References: 1, 2

Eye Contact
Hazard Classification: Corrosive. Gas is irritating to the eye producing burning and corneal damage.

Basis For Classification: Criteria for recommended standard - Occupational Exposure to Sulfur Dioxide (NIOSH).

References: 1, 2

Inhalation
Hazard Classification: Corrosive.

Basis For Classification: Liquid will quickly volatilize to SO_2 gas.

References: 1, 2
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REFERENCES
(2) Occupational Health Guidelines for Chemical Hazards. U. S. Dept. of Human Health Services (NIOSH) Publication 81-123.

EFFECTS OF OVEREXPOSURE
Acute Overexposure - At high concentrations, impaired breathing. Irritation to respiratory system. Severe eye burns and skin burns.
Chronic Overexposure - Symptoms change on acclimatization and exposure levels. Symptoms include irritation to the upper respiratory tract, coughing, epistaxis, constriction in the chest, and hemoptysis.

EMERGENCY AND FIRST AID PROCEDURES
Start first aid at once in case of contact with liquid SO2 or excessive concentration of the gas.
Eyes: Wash with water for at least 15 minutes holding eyelids apart. Call eye physician immediately and follow his directions.
Skin: Flush with water while removing all clothes and shoes. Continue to flush with water for at least 15 minutes. Call a physician immediately.
Inhalation: Remove from exposure and give artificial respiration if breathing has ceased. Administer oxygen if apparatus and trained personnel are on hand. Call physician immediately.
Ingestion: Drink large quantities of water to reduce concentration. Do not induce vomiting. Call a physician immediately.

NOTES TO PHYSICIAN
See references listed above.

CONDITIONS CONTRIBUTING TO INSTABILITY
Elevated temperatures cause liquid to gasify increasing pressure in containers.

INCOMPATIBILITY
Corrosive to zinc. Pressure of cylinders and tanks rapidly rises in fire. See other handling and storage requirements.

HAZARDOUS DECOMPOSITION PRODUCTS
No hazardous decomposition products known.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION
None known.
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DISPOSAL, SPILL OR LEAK PROCEDURES

Aquatic Toxicity (e.g. 96 HR. TLV): Not determined
Waste Disposal Method: Since SO₂ vaporizes at atmospheric pressures and temperatures above 14° F, there is no normal liquid disposal problem. If the gas cannot be vented into an alkaline solution, provide ventilation and dispersion. Do not disperse in low lying stagnant areas as the gas is heavier than air.
Steps to be Taken if Material is Released or Spilled: (Also see waste disposal method above.)
Neutralizing Chemicals: If sulfur dioxide is dissolved in water, sulfurous acid is formed. Neutralize with lime, soda ash, or caustic soda.

SPECIAL PROTECTION INFORMATION

Ventilation Requirements: PEL = 2 ppm TWA,
PEL = 5 ppm STEL.

Exhaust ventilation and enclosure processes shall be used wherever practical. System shall be designed and maintained to prevent the accumulation or recirculation of sulfur dioxide into the work room. Ensure that outside discharge will not produce a health hazard to humans, animals, or plants.

Specific Personal Protective Equipment:
Respiratory (specify in detail): Use self-contained breathing apparatus, positive pressure hood masks equipped with appropriate canister type gas mask equipped for the expected multiple of concentration in relation to the TWA limit.

Eye: Wear chemical safety goggles when danger of eye contact is present. Spectacle-type goggles with unperforated sides may be used for continuous eye protection. Face shield may be worn in place of or in addition to goggles.

Gloves: Wear rubber gloves.
Other Clothing and Equipment: Hard hats. Safety shoes for handling cylinders. Rubber suits are rubber safety boots where possibility of body contact with liquid SO₂.

SPECIAL PRECAUTIONS

Precautionary Statements:
Non-Flammable Gas.
PEL = 5 ppm or 13 mg/m³ STEL
PEL = 2 ppm TWA

Other Handling and Storage Requirements:
Store containers where temperatures of liquid will not reach 125° F. Insulated tanks should be provided with a shed roof. Storage tanks (except cylinders) must be equipped with approved safety vent valves at 225 psig pressure.
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ADDITIONAL REGULATORY CONCERNS

NSF  Drinking Water Additive (Standard 50)
  Maximum use: 10 mg/L.

FDA  Meets FCC requirements for food grade on certification.

EPA  SARA Section 302 (Extremely hazardous substance): Yes
       Section 311/312 (Hazardous categories): Acute,
       chronic, sudden release of pressure
       Section 313 (Toxic chemicals list): No

TSCA  This product is included in the Toxic Substances
       Control Act Inventory of Chemical Substances.

OSHA  Product is a hazardous material as defined by 29 CFR
       1910.1200 because it is corrosive to ingest, skin,
       eyes, and sulfur dioxide is regulated as an air
       contaminant.

Product is not listed in the National Toxicology
Program, the International Agency for Research on
Cancer, nor the Registry of Toxic Effects of Chemical
Substances as a carcinogen or potential carcinogen.

Prepared by  Richard D. Estes
Title:  Manager, Technical Service
Company:  Intertrade Holdings, Inc.
Address:  3379 Peachtree Rd. NE, Suite 300
         Atlanta, Georgia 30326

The above information is believed to be correct. However, Intertrade
Holdings Inc. makes no warranty and assumes no liability as to the
accuracy or completeness.

RM
Revised
6-22-84
11-10-86
7-19-89
10-1-92
11-1-93
1-20-97