Safety Data Sheet

Material Name: SULFUR HEXAFLUORIDE

*** Section 1 - IDENTIFICATION***

Manufacturer Information
MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920

General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Product Identifier: SULFUR HEXAFLUORIDE

Trade Names/Synonyms
MTG MSDS 81; SULFUR FLUORIDE; SULPHUR HEXAFLUORIDE; ELEGAS; UN 1080; F6S; RTECS: WS4900000

Chemical Family
inorganic, gas

Product Use
industrial

Restrictions on Use
None known.

*** Section 2 - HAZARDS IDENTIFICATION***

GHS Classification
Gas under pressure, Liquefied gas

GHS LABEL ELEMENTS
Symbol(s)

Signal Word
WARNING

Hazard Statement(s)
Contains gas under pressure; may explode if heated

Precautionary Statement(s)
Protect from sunlight. Store in a well-ventilated place.

*** Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS***

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2551-62-4</td>
<td>SULFUR HEXAFLUORIDE</td>
<td>100</td>
</tr>
</tbody>
</table>

Component Related Regulatory Information
This product may be regulated, have exposure limits or other information identified as the following: Fluorides.
**Section 4 - FIRST AID MEASURES**

**Inhalation**
If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

**Skin**
If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115°F; 41-46°C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

**Eyes**
Flush eyes with plenty of water.

**Ingestion**
If a large amount is swallowed, get medical attention.

**Note to Physicians**
For inhalation, consider oxygen.

**Symptoms: Immediate**

suffocation

**Symptoms: Delayed**
No data available.

**Section 5 - FIRE FIGHTING MEASURES**

See Section 9 for Flammability Properties

**Specific Hazards Arising from the Chemical**
Negligible fire hazard. Containers may rupture or explode if exposed to heat.

**Extinguishing Media**
carbon dioxide, regular dry chemical
Large fires: Use regular foam or flood with fine water spray.

**Unsuitable Extinguishing Media**
None known.

**Protective Equipment and Precautions for Firefighters**
Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

**Fire Fighting Measures**
Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Use extinguishing agents appropriate for surrounding fire. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Do not get water directly on material. Reduce vapors with water spray. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Consider downwind evacuation if material is leaking.

**Hazardous Combustion Products**
Combustion: fluorinated compounds, oxides of sulfur, sulfur compounds, hydrogen fluoride, hydrogen sulfide

**Section 6 - ACCIDENTAL RELEASE MEASURES**

**Personal Precautions**
Wear personal protective clothing and equipment, see Section 8.

**Environmental Precautions**
Avoid release to the environment.
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Methods for Containment
Reduce vapors with water spray. Eliminate all ignition sources if safe to do so. Keep unnecessary people away, isolate hazard area and deny entry.

Cleanup Methods
Ventilate closed spaces before entering. Damaged cylinders should be handled only by specialists.

Handling Procedures
Avoid breathing gas. Use only with adequate ventilation.

Storage Procedures

Incompatibilities combustible materials, metals, oxidizing materials

Component Exposure Limits
SULFUR HEXAFLUORIDE (2551-62-4)
ACGIH: 1000 ppm TWA
OSHA (Final): 1000 ppm TWA; 6000 mg/m3 TWA
OSHA (Vacated): 1000 ppm TWA; 6000 mg/m3 TWA
NIOSH: 1000 ppm TWA; 6000 mg/m3 TWA

Component Biological Limit Values
SULFUR HEXAFLUORIDE (2551-62-4)
ACGIH: 2 mg/L Medium: urine Time: prior to shift Parameter: Fluoride (background, nonspecific); 3 mg/L Medium: urine Time: end of shift Parameter: Fluoride (background, nonspecific, related to Fluorides)

Engineering Controls
Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT
Eyes/Face
For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing
For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

Glove Recommendations
Wear insulated gloves.

Protective Materials
leather

Respiratory Protection
Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
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For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

*** Section 9 - PHYSICAL AND CHEMICAL PROPERTIES***

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor:</td>
<td>odorless</td>
</tr>
<tr>
<td>pH:</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>63.9 °C @ 101.3 kPa</td>
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<tr>
<td>Decomposition:</td>
<td>Not available</td>
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<tr>
<td>Vapor Pressure:</td>
<td>16548 mmHg @ 20 °C</td>
</tr>
<tr>
<td>Vapor Density (air = 1):</td>
<td>5.1</td>
</tr>
<tr>
<td>Water Solubility:</td>
<td>slightly soluble</td>
</tr>
<tr>
<td>Log KOW:</td>
<td>see Section 12</td>
</tr>
<tr>
<td>Auto Ignition:</td>
<td>Not available</td>
</tr>
<tr>
<td>Sublimation Point:</td>
<td>-63.9 °C</td>
</tr>
<tr>
<td>Volatility by Volume:</td>
<td>100 %</td>
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<tr>
<td>Molecular Formula:</td>
<td>F6-S</td>
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</table>

Appearance: Not available
Physical Form: gas
Odor Threshold: Not available
Melting/Freezing Point: -50.5 °C
Flash Point: not flammable
Evaporation Rate: Not available
Henry's Law Constant: 4.52
KOW: 47.867
KOC: 195 (estimated)
Viscosity: 0.0156 cP @ 25 °C
Volatility: 100 %
Molecular Weight: 146.06

Solvent Solubility
- Soluble: alcohol, ether, potassium hydroxide solutions, transformer oil
- Slightly Soluble: ethanol
- Insoluble: hydrochloric acid, ammonia

*** Section 10 - STABILITY AND REACTIVITY***

Chemical Stability
Stable at normal temperatures and pressure.

Conditions to Avoid
Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

Possibility of Hazardous Reactions
Will not polymerize.

Incompatible Materials
- Combustible materials, metals, oxidizing materials

Hazardous Decomposition
Combustion: fluorinated compounds, oxides of sulfur, sulfur compounds, hydrogen fluoride, hydrogen sulfide

*** Section 11 - TOXICOLOGICAL INFORMATION***

Acute and Chronic Toxicity
Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and no selected endpoints have been identified.

RTECS Acute Toxicity (selected)
The components of this material have been reviewed and RTECS publishes no data as of the date on this document.
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Immediate Effects
  suffocation

Delayed Effects
  No data available.

Irritation/Corrosivity Data
  No human or animal test data available.

RTECS Irritation
  The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

Respiratory Sensitizer
  No data available.

Dermal Sensitizer
  No data available.

Carcinogenicity

Component Carcinogenicity
  SULFUR HEXAFLUORIDE (2551-62-4)
    ACGIH:  A4 - Not Classifiable as a Human Carcinogen (related to Fluorides)

Mutagenic Data
  No data available.

Reproductive Effects Data
  No data available.

Tumorigenic Data
  No data available.

Specific Target Organ Toxicity - Single Exposure
  simple asphyxiants

Specific Target Organ Toxicity - Repeated Exposure
  No data available.

Aspiration Hazard
  Not applicable.

Medical Conditions Aggravated by Exposure
  None known.

*** Section 12 - ECOLOGICAL INFORMATION***

Component Analysis - Aquatic Toxicity
  No LOLI ecotoxicity data are available for this product's components.

Persistence and Degradability
  No data available.

Bioaccumulative Potential
  No data available.

Mobility in Environmental Media
  No data available.

*** Section 13 - DISPOSAL CONSIDERATIONS***

Disposal Methods
  Dispose in accordance with all applicable regulations.

Component Waste Numbers
  The U.S. EPA has not published waste numbers for this product's components.
*** Section 14 - TRANSPORT INFORMATION***

US DOT Information
Shipping Name: Sulfur hexafluoride
UN/NA #: UN1080 Hazard Class: 2.2
Required Label(s): 2.2

IMDG Information
Shipping Name: Sulphur hexafluoride
UN #: UN1080 Hazard Class: 2.2

*** Section 15 - REGULATORY INFORMATION***

Component Analysis
U.S. Federal Regulations
None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA 311/312 Hazardous Categories
Acute Health: Yes Chronic Health: No Fire: No Pressure: Yes Reactive: No

U.S. State Regulations
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
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<tbody>
<tr>
<td>SULFUR HEXAFLUORIDE</td>
<td>2551-62-4</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</table>

Not regulated under California Proposition 65

Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>US</th>
<th>CA</th>
<th>EU</th>
<th>AU</th>
<th>PH</th>
<th>JP</th>
<th>KR</th>
<th>CN</th>
<th>NZ</th>
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</thead>
<tbody>
<tr>
<td>SULFUR HEXAFLUORIDE</td>
<td>2551-62-4</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*** Section 16 - OTHER INFORMATION***

NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe
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Material Name: SULFUR HEXAFLUORIDE
SDS ID: MAT22300

Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information
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End of Sheet MAT22300