

## Material Safety Data Sheet

Date Printed: 24/MAY/2005

Date Updated: 17/MAY/2004

Version 1.5

According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

## 1 - Product and Company Information

Product Name	SULFUR, 99.998%
Product Number	213292
Company	Sigma-Aldrich Pty, Ltd Unit 2, 14 Anella Avenue Castle Hill NSW 1765 Australia
Technical Phone #	+61 2 9841 0555
Fax	+61 2 9841 0500
Emergency Phone #	+61 2 9841 0566

## 2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
SULFUR	7704-34-9	231-722-6	None

Formula	S
Molecular Weight	32.06 AMU
Synonyms	Agri-Sul * Asulfa-Supra * Atomic sulfur * Bensulfoid * Brimstone * Collokit * Colloidal sulfur * Colsul * Corosul D and S * Cosan * Cosan 80 * Crystex * Devisulphur * Elosal * Flour sulphur * Flowers of sulphur * Gofrativ * Ground vocle sulphur * Hexasul * Kolofog * Kolospray * Kristex * Kumulus * Kumulus FL * Magnetic 70, 90, and 95 * Micowetsulf * Microflotox * Microthiol * Precipitated sulfur * Sofril * Sperlox-S * Spersul * Spersul thiovit * Sublimed sulfur * Sufran * Sufran D * Sulfex * Sulfidal * Sulforon * Sulkol * Sulphur * Super cosan * Sulsol * Technetium Tc 99M sulfur colloid * Tesuloid * Thiolux * Thiovit * Thiovit S * Thiozol * Ultra Sulfur * Wettasul

## 3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT  
Highly flammable.

## 4 - First Aid Measures

## AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give  
artificial respiration. If breathing is difficult, give oxygen.

## AFTER SKIN CONTACT

In case of contact, immediately wash skin with soap and copious amounts of water.

#### AFTER EYE CONTACT

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

#### AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician. Do not induce vomiting.

---

### 5 - Fire Fighting Measures

---

#### EXPLOSION DATA

Dust Potential: This material, like most materials in powder form, is capable of creating a dust explosion.

#### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

#### SPECIAL RISKS

Specific Hazard(s): Flammable solid. Emits toxic fumes under fire conditions.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

---

### 6 - Accidental Release Measures

---

#### PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Avoid raising dust. Sweep up, place in a bag and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

---

### 7 - Handling and Storage

---

#### HANDLING

Directions for Safe Handling: Avoid contact with eyes, skin, and clothing. Avoid breathing dust. Avoid prolonged or repeated exposure.

#### STORAGE

Conditions of Storage: Keep container closed. Keep away from heat, sparks, and open flame.

---

### 8 - Exposure Controls / Personal Protection

---

#### ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

#### GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

---

### 9 - Physical and Chemical Properties

---

Appearance	Physical State: Solid Color: Light yellow Form: Flakes	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	444.7 °C	760 mmHg
MP/MP Range	117 °C	
Flash Point	168 °C	Method: closed cup
Flammability	Flammable according to the test criteria	
Autoignition Temp	190 °C	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	Lower: 1 % Upper: 40 %	
Vapor Pressure	10 mmHg	246 °C
SG/Density	2.36 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	8.9 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

---

### 10 - Stability and Reactivity

---

#### STABILITY

Stable: Stable.

Conditions to Avoid: Moisture.

Materials to Avoid: Oxidizing agents.

#### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Sulfur oxides, Hydrogen sulfide gas.

#### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

---

### 11 - Toxicological Information

---

RTECS NUMBER: WS4250000

#### ACUTE TOXICITY

LD50  
Oral  
Rat  
> 5,000 mg/kg  
LC50  
Inhalation  
Rat  
> 9,230 mg/m3  
4 H  
LD50  
Skin  
Rabbit  
> 2,000 mg/kg

LC50  
Inhalation  
Mammal  
1,660 mg/m3

#### IRRITATION DATA

Skin  
Rabbit  
Remarks: No irritation effect  
Eyes  
Rabbit  
Remarks: No irritation effect

Eyes  
Human  
8 ppm

#### SENSITIZATION

Sensitization: Will not occur

#### SIGNS AND SYMPTOMS OF EXPOSURE

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure can cause: Dermatitis.

#### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.  
Skin Absorption: May be harmful if absorbed through the skin.  
Eye Contact: May cause eye irritation.  
Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.  
Ingestion: May be harmful if swallowed.

---

#### 12 - Ecological Information

No data available.

---

#### 13 - Disposal Considerations

---

#### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

---

#### 14 - Transport Information

---

RID/ADR

UN#: 1350  
Class: 4.1  
PG: III  
Proper Shipping Name: Sulphur

IMDG

UN#: 1350  
Class: 4.1  
PG: III  
Proper Shipping Name: Sulphur  
Marine Pollutant: No  
Severe Marine Pollutant: No

IATA

UN#: 1350  
Class: 4.1  
PG: III  
Proper Shipping Name: Sulphur  
Inhalation Packing Group I: No

---

15 - Regulatory Information

---

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

INDICATION OF DANGER: F  
Highly Flammable.  
R-PHRASES: 11  
Highly flammable.  
S-PHRASES: 16 26  
Keep away from sources of ignition - no smoking. In case of  
contact with eyes, rinse immediately with plenty of water and  
seek medical advice.

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 1

SWITZERLAND

SWISS POISON CLASS: 5

---

16 - Other Information

---

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

DISCLAIMER

For R&D use only. Not for drug, household or other uses.