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## SAFETY DATA SHEET

### Section 1- IDENTIFICATION

COMPOSITION <b>S</b>		PRODUCT NAME <b>Sulfur</b>
SUPPLIER: <b>Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030</b>	RECOMMENDED USE: <b>Laboratory Chemicals Scientific Research</b>	EMERGENCY TELEPHONE NUMBERS <b>US: 001-800-424-9300 Europe: 001-703-527-3887</b>

### Section 2- HAZARD(S) IDENTIFICATION

<b>Classification:</b> This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
<b>Skin Irritation:</b> Category 2 (H315)
<b>SIGNAL WORD:</b> Warning

<b>HAZARD STATEMENTS</b>
-H315: Causes skin irritation
<b>PRECAUTIONARY STATEMENTS</b>
<b>Prevention:</b>
-P264: Wash face, hands and any exposed skin thoroughly after handling
-P270: Do not eat, drink or smoke when using this product
-P280: Wear protective gloves, protective clothing, eye protection and face protection
-P302 + P352: IF ON SKIN: Wash with plenty of water.
-P332 + P313: If skin irritation occurs, get medical advice/attention
-P362: Take off contaminated clothing and wash before reuse
<b>Hazards not otherwise classified (HNOC):</b>
-Combustible dust

### Section 3- COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS-No	Molecular Weight
Sulfur	7704-34-9	32.07 g/mol

### Section 4- FIRST AID MEASURES

<b>GENERAL ADVICE:</b> Consult a physician. Show this safety data sheet to the doctor in attendance.
<b>INHALATION:</b> Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If

not breathing, give artificial respiration. Consult a physician.

**SKIN CONTACT:** Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Consult a physician.

**EYE CONTACT:** Flush eyes with lukewarm water, lifting upper and lower lids, for at least 15 minutes as a precaution.

**INGESTION:** Rinse mouth with water. Never give anything by mouth to an unconscious person. Consult a physician.

**MOST IMPORTANT SYMPTOMS/EFFECTS:** Described in Section 2 and/or in Section 11

### Section 5- FIREFIGHTING MEASURES

**Suitable Extinguishing Media:**

Carbon Dioxide (CO<sub>2</sub>); Dry Chemical, Water Spray, alcohol-resistant foam

**Unsuitable Extinguishing Media:**

No Information Available

**Specific Hazards Arising from the Chemical:**

No data available.

**Protective Equipment & Precautions for Firefighters:**

As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.

### Section 6- ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Ensure adequate ventilation. Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist or gas.

**Environmental Precautions:** Do not let product enter drains.

**Methods for Containment & Clean Up:** Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

### Section 7- HANDLING AND STORAGE

**Handling:** Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed.

**Storage:** Keep in a dry, cool and well ventilated place. Keep container tightly closed.

Storage Class (TRGS 510): Flammable solid hazardous materials

### Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Measures:** Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

**Personal Protective Equipment:**

**Eye/Face Protection:** Wear safety glasses with side shields as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) and EN166 (EU).

**Skin and Body Protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory Protection:** For nuisance exposures use type P95 (US) or type P1 (EU EN143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety practice.

## Section 9- PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Solid

**Appearance:** Light yellow

**Odor:** Slight

**Odor Threshold:** No information available

**pH:** No information available

**Melting Point/Range:** 118-120°C / 244-248°F

**Boiling Point/Range:** 444.7°C / 832.5°F

**Flash Point:** 207°C / 405°F – closed cup

**Evaporation Rate:** No data available

**Flammability (solid,gas):** May form combustible dust concentration in air

**Flammability or Exposure Limits:**

**Upper:** 6.83% (V)

**Lower:** 0.17 % (V)

**Vapor Pressure:** 10 hPa (8 mmHg) at 246°C (475°F); 1 hPa (1 mmHg) at 183.8°C (362.8°F)

**Vapor Density:** Not applicable

**Relative Density:** 2.07 g/mL at 25°C (77°F)

**Solubility:** Insoluble

**Partition coefficient; n-octanol/water:** No data available

**Auto Ignition Temperature:** 240°C (464°F)

**Decomposition Temperature:** No information available

**Viscosity:** 8 mm<sup>2</sup>/s at 140°C (284°F)

**Explosive Properties:** No data available

**Oxidizing Properties:** No data available

## Section 10- STABILITY AND REACTIVITY

**Reactive Hazard:** None known, based on information available.

**Stability:** Stable under recommended storage conditions.

**Conditions to Avoid:** Avoid moisture, heat, flames and sparks.

**Incompatible Materials:** Strong oxidizing agents, amines, bases

**Hazardous Decomposition Products:** Hazardous decomposition products formed under fire conditions-Sulfur Oxides. Other decomposition products-No information available

**Hazardous Polymerization:** No information available

**Hazardous Reactions:** No information available

## Section 11- TOXICOLOGICAL INFORMATION

### Acute Toxicity:

#### Product Information/Component Information:

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	LDLO Intravenous	LDLO Intraperitoneal
Sulfur	175 mg/kg (Rabbit)	2,000 mg/kg (Rabbit)	4 h - >9.23 mg/l (Rat)	8 mg/kg (Rat)	55 mg/kg (Guinea Pig)
	2,000 mg/kg (Rat)			5 mg/kg (Rabbit)	
				10 mg/kg (Dog)	

**Delayed and immediate effects as well as chronic effects from short and long term exposure:**

**Skin Corrosion/Irritation:** Moderate skin irritation (Rabbit) (OECD Test Guideline 404)  
**Serious eye damage/irritation:** No eye irritation (Rabbit)  
**Respiratory or Skin Sensitization:** No information available  
**Carcinogenicity:** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	OSHA	ACGIH
S	7704-34-9	Not Listed	Not Listed	Not Listed	Not Listed

**Mutagenic Effects:** No information available  
**Reproductive Effects:** No information available  
**Development Effects:** No information available  
**Teratogenicity:** No information available  
**STOT – single exposure:** No information available  
**STOT – repeated exposure:** No information available  
**Aspiration Hazard:** No information available  
**Symptoms/effects, both acute & delayed:** (RTECS: WS4250000) Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting and dermatitis.  
**Other Adverse Effects:** The chemical, physical and toxicological properties have not been fully investigated.

**Section 12- ECOLOGICAL INFORMATION**

**Toxicity:**

**Toxicity to fish:** LC50-Oncorhynchus mykiss (rainbow trout) – >180 mg/l – 96 h  
LC50-Other Fish – 866 mg/l – 96 h  
**Toxicity to daphnia and other aquatic invertebrates:** EC50-Daphnia magna (water flea) – 5,000 mg/l – 48 h

**Persistence and Degradability:** No information available  
**Bioaccumulation/Accumulation:** No information available  
**Mobility in Soil:** No information available  
**Other Adverse Effects:** No information available

**Section 13- DISPOSAL CONSIDERATIONS**

**Waste Disposal Methods:** Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dispose of contaminated packaging as unused product.

**Section 14- TRANSPORT INFORMATION**

**DOT:**

**UN-No:** 1350  
**Proper Shipping Name:** Sulfur  
**Hazard Class:** 9  
**Packing Group:** III  
**Poison Inhalation Hazard:** No

**IATA:**

**UN-No:** 1350  
**Proper Shipping Name:** Sulfur  
**Hazard Class:** 4.1  
**Packing Group:** III

**IMDG/IMO:****UN-No:** 1350**Proper Shipping Name:** Sulphur**Hazard Class:** 4.1**Packing Group:** III**EMS-No:** F-A, S-G**Section 15- REGULATORY INFORMATION****US Federal Regulations:****TSCA 12(b):** Not applicable**SARA 302:** Not applicable**SARA 313:** Not applicable**HMIS (USA):****Health Hazard:** 2**Flammability:** 2**Physical Hazard:** 2**National Fire Protection Association (USA):****Health Hazard:** 2**Fire Hazard:** 1**Reactivity Hazard:** 2**US California Proposition 65:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.**US Massachusetts RTK – Substance List:** Sulfur (CAS 7704-34-9)**US New Jersey Right-to-Know Act:** Sulfur (CAS 7704-34-9)**US Pennsylvania RTK – Hazardous Substances:** Sulfur (CAS 7704-34-9)**Section 16- OTHER INFORMATION**

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