



# SAFETY DATA SHEET

**MATERION**

## 1. Identification

**Product identifier** Sulfur

**Other means of identification**

SDS number 1ZU

Materion Code 1ZU

CAS number 7704-34-9

Synonyms SULFUR \* SULPHUR

### Manufacturer/Importer/Supplier/Distributor information

#### Manufacturer

**Company name** Materion Advanced Chemicals Inc.

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1316 W. St. Paul Avenue  
Milwaukee, WI 53233  
United States

**Telephone** 414.212.0290

**E-mail** advancedmaterials@materion.com

**Contact person** Laura Hamilton

**Emergency phone number** Chemtrec 800.424.9300

## 2. Hazard(s) identification

**Physical hazards** Not classified.

**Health hazards** Skin corrosion/irritation Category 2  
Serious eye damage/eye irritation Category 2B  
Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

**Environmental hazards** Not classified.

**OSHA defined hazards** Combustible dust

### Label elements



**Signal word** Warning

**Hazard statement** Causes eye irritation. Causes skin irritation. May cause respiratory irritation. May form combustible dust concentrations in air.

**Precautionary statement**

**Prevention** Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Prevent dust accumulation to minimize explosion hazard. Wash thoroughly after handling.

**Response** If exposed or concerned: Get medical advice/attention.

**Storage** Store in a well-ventilated place. Keep container tightly closed. Store locked up.

**Disposal** Dispose of contents/container in accordance with local/regional/national/international regulations.

**Hazard(s) not otherwise classified (HNOC)** None known.

**Supplemental information** None.

### 3. Composition/information on ingredients

#### Substances

Chemical name	Common name and synonyms	CAS number	%
Sulfur	SULFUR SULPHUR	7704-34-9	100

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008.

#: This substance has been assigned Community workplace exposure limit(s).

M: M-factor

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

\*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

**Composition comments** The full text for all R- and H-phrases is displayed in section 16.

#### 4. First-aid measures

<b>Inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
<b>Skin contact</b>	Take off immediately all contaminated clothing. Remove and isolate contaminated clothing and shoes. Wash with plenty of soap and water. Call a physician or poison control center immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash contaminated clothing before reuse.
<b>Eye contact</b>	Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
<b>Ingestion</b>	Call a physician or poison control center immediately. Rinse mouth thoroughly. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
<b>Most important symptoms/effects, acute and delayed</b>	May cause temporary blindness and severe eye damage. Corrosive effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin and eyes. Irritating to mouth, throat, and stomach. Skin irritation. May cause redness and pain. Rash. Defatting of the skin. Prolonged exposure may cause chronic effects.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
<b>General information</b>	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

#### 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture. Water fog. Foam. Dry chemical powder. Dry sand. Carbon dioxide (CO <sub>2</sub> ). Apply extinguishing media carefully to avoid creating airborne dust.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. During fire, gases hazardous to health may be formed.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Structural firefighters protective clothing will only provide limited protection.
<b>Fire fighting equipment/instructions</b>	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials. Move container from fire area if it can be done without risk. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. In the event of fire and/or explosion do not breathe fumes.
<b>General fire hazards</b>	Flammable solid. May form combustible dust concentrations in air.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures** Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Use only non-sparking tools. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Methods and materials for containment and cleaning up** ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk.

Large Spills: Wet down with water and dike for later disposal. Absorb in vermiculite, dry sand or earth and place into containers. Shovel the material into waste container. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

**Environmental precautions** Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

## 7. Handling and storage

**Precautions for safe handling** Minimize dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not smoke. Explosion-proof general and local exhaust ventilation. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. Avoid contact with eyes, skin, and clothing. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

**Conditions for safe storage, including any incompatibilities** Store locked up. Store in a cool, dry place out of direct sunlight. Keep containers tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

## 8. Exposure controls/personal protection

**Occupational exposure limits** This substance has no PEL, TLV, or other recommended exposure limit.

**Biological limit values** No biological exposure limits noted for the ingredient(s).

**Appropriate engineering controls** Ventilate as needed to control airborne dust. Use explosion-proof ventilation equipment if airborne dust levels are high. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

### Individual protection measures, such as personal protective equipment

**Eye/face protection** If contact is likely, safety glasses with side shields are recommended.

#### Skin protection

**Hand protection** Wear appropriate chemical resistant gloves.

**Other** Wear appropriate chemical resistant clothing.

<b>Respiratory protection</b>	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
<b>Thermal hazards</b>	Wear appropriate thermal protective clothing, when necessary.
<b>General hygiene considerations</b>	Do not get in eyes. When using, do not eat, drink or smoke. Do not get this material in contact with skin. Do not get this material on clothing. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

## 9. Physical and chemical properties

### Appearance

<b>Physical state</b>	Solid.
<b>Form</b>	Powder
<b>Color</b>	Not available.
<b>Odor</b>	Not available.
<b>Odor threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Melting point/freezing point</b>	235.04 - 248 °F (112.8 - 120 °C)
<b>Initial boiling point and boiling range</b>	832.3 °F (444.61 °C)
<b>Flash point</b>	404.6 °F (207.0 °C)
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not available.
<b>Flammability limit - upper (%)</b>	Not available.
<b>Explosive limit - lower (%)</b>	Not available.
<b>Explosive limit - upper (%)</b>	Not available.
<b>Vapor pressure</b>	< 0.0000001 kPa (77 °F (25 °C))
<b>Vapor density</b>	Not available.
<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Not available.
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	449.6 °F (232 °C)
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Density</b>	1.80 g/cm <sup>3</sup> 2.07 g/cm <sup>3</sup>
<b>Dynamic viscosity</b>	11.13 mPa.s (251 °F (121.67 °C))
<b>Explosive properties</b>	Not explosive.
<b>Kinematic viscosity</b>	6.183 mm <sup>2</sup> /s estimated
<b>Molecular formula</b>	S
<b>Molecular weight</b>	32.06 g/mol
<b>Oxidizing properties</b>	Not oxidizing.

<b>Specific gravity</b>	1.8 2.07
<b>Surface tension</b>	60.8 mN/m (248 °F (120 °C))

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>Conditions to avoid</b>	Minimize dust generation and accumulation. Dust clouds may be explosive under certain conditions.
<b>Incompatible materials</b>	Strong oxidizing agents.
<b>Hazardous decomposition products</b>	Sulfur oxides.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	May cause irritation to the respiratory system.
<b>Skin contact</b>	Irritating to skin.
<b>Eye contact</b>	Irritating to eyes.
<b>Ingestion</b>	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

<b>Symptoms related to the physical, chemical and toxicological characteristics</b>	Dusts may irritate the respiratory tract, skin and eyes.
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### Information on toxicological effects

<b>Acute toxicity</b>	Causes skin and eye irritation. May cause irritation to the respiratory system.
<b>Skin corrosion/irritation</b>	May be irritating to the skin.
<b>Serious eye damage/eye irritation</b>	Causes eye irritation.
<b>Respiratory or skin sensitization</b>	
<b>Respiratory sensitization</b>	Due to lack of data the classification is not possible.
<b>Skin sensitization</b>	Not available.
<b>Germ cell mutagenicity</b>	Not available.
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

#### IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

#### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

#### US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

<b>Reproductive toxicity</b>	Due to lack of data the classification is not possible.
<b>Specific target organ toxicity - single exposure</b>	May cause respiratory irritation.
<b>Specific target organ toxicity - repeated exposure</b>	May cause damage to organs (respiratory system) through prolonged or repeated exposure.
<b>Aspiration hazard</b>	Not available.

## 12. Ecological information

<b>Ecotoxicity</b>	Contains a substance which causes risk of hazardous effects to the environment.
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Product	Species	Test Results
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Sulfur (CAS 7704-34-9)

**Aquatic**

*Acute*

Fish

LC50

Western mosquitofish (*Gambusia affinis*) > 10000 mg/l, 96 hours

**Persistence and degradability**

No data is available on the degradability of this product.

**Bioaccumulative potential**

No data available.

**Mobility in soil**

No data available.

**Other adverse effects**

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

### 13. Disposal considerations

**Disposal instructions**

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations**

Dispose in accordance with all applicable regulations.

**Hazardous waste code**

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products**

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Avoid discharge into water courses or onto the ground.

**Contaminated packaging**

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

### 14. Transport information

**DOT**

**UN number**

NA1350

**UN proper shipping name**

Sulfur

**Transport hazard class(es)**

**Class**

9

**Subsidiary risk**

-

**Label(s)**

9

**Packing group**

III

**Special precautions for user**

Read safety instructions, SDS and emergency procedures before handling.

**Special provisions**

30, IB8, IP2

**Packaging exceptions**

None

**Packaging non bulk**

None

**Packaging bulk**

240

**IATA**

**UN number**

UN1350

**UN proper shipping name**

Sulfur

**Transport hazard class(es)**

**Class**

4.1

**Subsidiary risk**

-

**Label(s)**

4.1

**Packing group**

III

**Environmental hazards**

No.

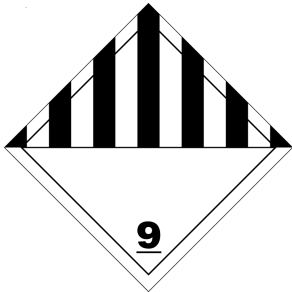
**Special precautions for user**

Read safety instructions, SDS and emergency procedures before handling.

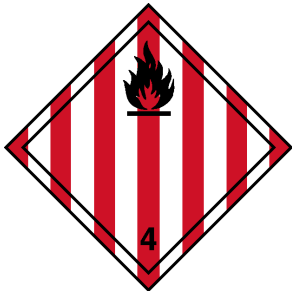
## IMDG

UN number	UN1350
UN proper shipping name	Sulfur
Transport hazard class(es)	
Class	4.1
Subsidiary risk	-
Label(s)	9
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

## DOT



## IATA; IMDG



## 15. Regulatory information

### US federal regulations

All components are on the U.S. EPA TSCA Inventory List.  
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.  
CERCLA/SARA Hazardous Substances - Not applicable.

### Toxic Substances Control Act (TSCA)

#### TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

### CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

### SARA 304 Emergency release notification

Not regulated.

### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

#### SARA 302 Extremely hazardous substance

Not listed.

**SARA 311/312 Hazardous chemical**      Yes

**Classified hazard categories** Combustible dust  
Skin corrosion or irritation  
Serious eye damage or eye irritation  
Specific target organ toxicity (single or repeated exposure)

**SARA 313 (TRI reporting)**  
Not regulated.

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**  
Not regulated.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**  
Not regulated.

**Safe Drinking Water Act (SDWA)** Not regulated.

**US state regulations** California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

**California Proposition 65**

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**16. Other information, including date of preparation or last revision**

**Issue date** 05-18-2015

**Revision date** 12-16-2020

**Version #** 08

**Further information** Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

**References** ACGIH  
EPA: AQUIRE database  
NLM: Hazardous Substances Data Base  
US. IARC Monographs on Occupational Exposures to Chemical Agents

**Disclaimer** Materion Advanced Chemicals Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. Additional information is given in the Material Safety Data Sheet. This document has been prepared using data from sources considered to be technically reliable and the information is believed to be correct. Materion makes no warranties, expressed or implied, as to the accuracy of the information contained herein. Materion cannot anticipate all conditions under which this information and its products may be used and the actual conditions of use are beyond its control. The user is responsible to evaluate all available information when using this product for any particular use and to comply with all Federal, State, Provincial and Local laws, statutes and regulations.

**Revision information** Transport Information: Material Transportation Information