# SAFETY DATA SHEET
## Sulfur (pieces)
According to Appendix D, OSHA Hazard Communication Standard 29 CFR §1910.1200

## 1. Identification

### Product identifier

**Product name** Sulfur (pieces)

**CAS number** 7704-34-9

### Recommended use of the chemical and restrictions on use

**Application** Physical vapor deposition of thin films

**Uses advised against** No specific uses advised against are identified.

### Details of the supplier of the safety data sheet

**Supplier** Kurt J Lesker Company

**Manufacturer**
Kurt J Lesker Company
1925 Route 51
Jefferson Hills, PA 15025
+1 412-387-9200

Kurt J Lesker Company LTD
United Kingdom
Austin House
Sidney Little Road
Churchfields Industrial Estate
St Leonards on Sea, East Sussex, TN38 9PU, United Kingdom
Customer Service: +44 (0) 1424 458100
msds@lesker.com

### Emergency telephone number

**Emergency telephone**
Emergency Numbers
North America [USA, Canada, Mexico]: 1-866-519-4752
Mainland China: (+86) 4001 2001 74
Europe: {int'l call prefix}-1-760-476-3961
Asia Pacific: {int'l call prefix}-1-760-476-3960
Middle East & Africa: {int'l call prefix}-1-760-476-3959
South Korea: +080-880-0455
Philippines: (+63) 2 83953471

## 2. Hazard(s) identification

### Classification of the substance or mixture

**Physical hazards** Not Classified

**Health hazards** Skin Irrit. 2 - H315

**Environmental hazards** Not Classified

### Label elements

# Sulfur (pieces)

**Hazard symbols**



| | |
|---|---|
| **Signal word** | Warning |
| **Hazard statements** | H315 Causes skin irritation. |
| **Precautionary statements** | P264 Wash contaminated skin thoroughly after handling.<br>P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.<br>P302+P352 If on skin: Wash with plenty of water.<br>P321 Specific treatment (see medical advice on this label).<br>P332+P313 If skin irritation occurs: Get medical advice/ attention.<br>P362+P364 Take off contaminated clothing and wash it before reuse. |

**Other hazards**

This product does not contain any substances classified as PBT or vPvB.

## 3. Composition/information on ingredients

**Mixtures**

| | |
|---|---|
| **Sulfur (pieces)** | **100%** |
| CAS number: 7704-34-9 | |

**Composition comments** The exact percentage is withheld as a trade secret in accordance with 29 CFR 1910.1200.

## 4. First-aid measures

**Description of first aid measures**

| | |
|---|---|
| **General information** | Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel. |
| **Inhalation** | Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Loosen tight clothing such as collar, tie or belt. Get medical attention if symptoms are severe or persist. |
| **Ingestion** | Rinse mouth thoroughly with water. Get medical advice/attention if you feel unwell. Do not induce vomiting unless under the direction of medical personnel. |
| **Skin Contact** | Rinse with water. |
| **Eye contact** | Rinse with water. Get medical attention if any discomfort continues. |
| **Protection of first aiders** | First aid personnel should wear appropriate protective equipment during any rescue. |

**Most important symptoms and effects, both acute and delayed**

| | |
|---|---|
| **General information** | The severity of the symptoms described will vary dependent on the concentration and the length of exposure. |
| **Inhalation** | No specific symptoms known. |
| **Ingestion** | May cause irritation. |
| **Skin contact** | Redness. Irritating to skin. |
| **Eye contact** | No specific symptoms known. May be slightly irritating to eyes. |

**Indication of immediate medical attention and special treatment needed**

# Sulfur (pieces)

**Notes for the doctor** Treat symptomatically.

## 5. Fire-fighting measures

### Extinguishing media

**Suitable extinguishing media** The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.

**Unsuitable extinguishing media** Do not use water jet as an extinguisher, as this will spread the fire.

### Special hazards arising from the substance or mixture

**Specific hazards** None known.

**Hazardous combustion products** Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.

### Advice for firefighters

**Protective actions during firefighting** Avoid breathing fire gases or vapors. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.

**Special protective equipment for firefighters** Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

**Personal precautions** Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk.

### Environmental precautions

**Environmental precautions** Avoid discharge into drains or watercourses or onto the ground.

### Methods and material for containment and cleaning up

**Methods for cleaning up** Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Collect spillage with a shovel and broom, or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. For waste disposal, see Section 13.

**Reference to other sections** For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

## 7. Handling and storage

### Precautions for safe handling

**Usage precautions** Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use.

**Advice on general occupational hygiene** Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.

# Sulfur (pieces)

**Dust Explosion Class**

**Conditions for safe storage, including any incompatibilities**

| | |
|---|---|
| **Storage precautions** | Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage. |
| **Storage class** | Chemical storage. |

**Specific end uses(s)**

| | |
|---|---|
| **Specific end use(s)** | The identified uses for this product are detailed in Section 1. |

## 8. Exposure controls/Personal protection

**Exposure controls**

**Protective equipment**



| | |
|---|---|
| **Appropriate engineering controls** | Provide adequate ventilation. Observe any occupational exposure limits for the product or ingredients. |
| **Eye/face protection** | Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses. |
| **Hand protection** | Wear protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with OSHA 1910.138 and be demonstrated to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended. |
| **Other skin and body protection** | Wear appropriate clothing to prevent repeated or prolonged skin contact. |
| **Hygiene measures** | Wash hands thoroughly after handling. Wash at the end of each work shift and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product. |
| **Respiratory protection** | Ensure all respiratory protective equipment is suitable for its intended use and is NIOSH approved. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with OSHA 1910.134. Full face mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. Half mask and quarter mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. |
| **Environmental exposure controls** | Keep container tightly sealed when not in use. |

## 9. Physical and chemical properties

**Information on basic physical and chemical properties**

| | |
|---|---|
| **Appearance** | Solid. |
| **Color** | Yellow. |
| **Odor** | Rotten eggs. |
| **Odor threshold** | No information available. |
| **pH** | Not applicable. |

# Sulfur (pieces)

| | |
|---|---|
| **Melting point** | 113°C/235.4°F |
| **Initial boiling point and range** | 445°C/833°F |
| **Flash point** | 207.2°C/405°F |
| **Evaporation rate** | Not applicable. |
| **Flammability (solid, gas)** | No information available. |
| **Upper/lower flammability or explosive limits** | Upper flammable/explosive limit: 46.0% Lower flammable/explosive limit: 3.3% |
| **Vapor pressure** | No information available. |
| **Vapor density** | Not applicable. |
| **Relative density** | 2.07 |
| **Bulk density** | Not available. |
| **Solubility(ies)** | Insoluble in water. |
| **Partition coefficient** | Not applicable. |
| **Auto-ignition temperature** | 235°C/455°F |
| **Decomposition Temperature** | Not available. |
| **Viscosity** | Not applicable. |
| **Molecular weight** | 32.06 |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity** | There are no known reactivity hazards associated with this product. |
| **Stability** | Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions. |
| **Possibility of hazardous reactions** | No potentially hazardous reactions known. |
| **Conditions to avoid** | There are no known conditions that are likely to result in a hazardous situation. |
| **Materials to avoid** | No specific material or group of materials is likely to react with the product to produce a hazardous situation. |
| **Hazardous decomposition products** | Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors. |

## 11. Toxicological information

### Information on toxicological effects

**Acute toxicity - oral**

**Notes (oral $LD_{50}$)** Based on available data the classification criteria are not met.

**Acute toxicity - dermal**

**Notes (dermal $LD_{50}$)** Based on available data the classification criteria are not met.

**Acute toxicity - inhalation**

**Notes (inhalation $LC_{50}$)** Based on available data the classification criteria are not met.

# Sulfur (pieces)

**Skin corrosion/irritation**

**Animal data** Irritating.

**Serious eye damage/irritation**

**Serious eye damage/irritation** Based on available data the classification criteria are not met.

**Respiratory sensitization**

**Respiratory sensitization** Based on available data the classification criteria are not met.

**Skin sensitization**

**Skin sensitization** Based on available data the classification criteria are not met.

**Germ cell mutagenicity**

**Genotoxicity - in vitro** Based on available data the classification criteria are not met.

**Carcinogenicity**

**Carcinogenicity** Based on available data the classification criteria are not met.

**IARC carcinogenicity** None of the ingredients are listed or exempt.

**Reproductive toxicity**

**Reproductive toxicity - fertility** Based on available data the classification criteria are not met.

**Reproductive toxicity - development** Based on available data the classification criteria are not met.

**Specific target organ toxicity - single exposure**

**STOT - single exposure** Not classified as a specific target organ toxicant after a single exposure.

**Specific target organ toxicity - repeated exposure**

**STOT - repeated exposure** Not classified as a specific target organ toxicant after repeated exposure.

**Aspiration hazard**

**Aspiration hazard** Not relevant. Solid.

**General information** The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

**Inhalation** No specific symptoms known.

**Ingestion** May cause irritation.

**Skin Contact** Redness. Irritating to skin.

**Eye contact** No specific symptoms known.

**Route of exposure** Ingestion Inhalation Skin and/or eye contact

**Target Organs** No specific target organs known.

## 12. Ecological information

**Ecotoxicity** Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

**Toxicity** Based on available data the classification criteria are not met.

**Persistence and degradability**

**Persistence and degradability** The degradability of the product is not known.

# Sulfur (pieces)

### Bioaccumulative potential

**Bio-Accumulative Potential** No data available on bioaccumulation.

**Partition coefficient** Not applicable.

### Mobility in soil

**Mobility** No data available.

### Other adverse effects

**Other adverse effects** None known.

## 13. Disposal considerations

### Waste treatment methods

**General information** The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.

**Disposal methods** Dispose of waste via a licensed waste disposal contractor.

## 14. Transport information

**General** For limited quantity packaging/limited load information, consult the relevant modal documentation using the data shown in this section.

### UN Number

**UN No. (TDG)** 1350

**UN No. (IMDG)** 1350

**UN No. (ICAO)** 1350

**UN No. (DOT)** UN1350

### UN proper shipping name

**Proper shipping name (TDG)** SULPHUR

**Proper shipping name (IMDG)** SULPHUR

**Proper shipping name (ICAO)** SULPHUR

**Proper shipping name (DOT)** SULFUR

### Transport hazard class(es)

**DOT hazard class** 4.1

**DOT hazard label** 4.1

**TDG class** 4.1

**TDG label(s)** 4.1

**IMDG Class** 4.1

**ICAO class/division** 4.1

# Sulfur (pieces)

**Transport labels**



**DOT transport labels**




**Packing group**

| | |
|---|---|
| **TDG Packing Group** | III |
| **IMDG packing group** | III |
| **ICAO packing group** | III |
| **DOT packing group** | III |

**Environmental hazards**

**Environmentally Hazardous Substance**
No.

**Special precautions for user**

Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

| | |
|---|---|
| **EmS** | F-A, S-G |
| **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** | Not applicable. |

## 15. Regulatory information

**US Federal Regulations**

**SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities**
None of the ingredients are listed or exempt.

**CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)**
None of the ingredients are listed or exempt.

**SARA Extremely Hazardous Substances EPCRA Reportable Quantities**
None of the ingredients are listed or exempt.

**SARA 313 Emission Reporting**
None of the ingredients are listed or exempt.

**CAA Accidental Release Prevention**
None of the ingredients are listed or exempt.

**FDA - Essential Chemical**
None of the ingredients are listed or exempt.

**FDA - Precursor Chemical**
None of the ingredients are listed or exempt.

# Sulfur (pieces)

### SARA (311/312) Hazard Categories
None of the ingredients are listed or exempt.

### OSHA Highly Hazardous Chemicals
None of the ingredients are listed or exempt.

## US State Regulations

### California Proposition 65 Carcinogens and Reproductive Toxins
None of the ingredients are listed or exempt.

### California Air Toxics "Hot Spots" (A-I)
None of the ingredients are listed or exempt.

### California Air Toxics "Hot Spots" (A-II)
None of the ingredients are listed or exempt.

### California Directors List of Hazardous Substances
None of the ingredients are listed or exempt.

### Massachusetts "Right To Know" List
None of the ingredients are listed or exempt.

### Rhode Island "Right To Know" List
None of the ingredients are listed or exempt.

### Label Prop 65 data

### Minnesota "Right To Know" List
None of the ingredients are listed or exempt.

### Pennsylvania "Right To Know" List
None of the ingredients are listed or exempt.

### New Jersey "Right To Know" List
None of the ingredients are listed or exempt.

## Inventories

### EU - EINECS/ELINCS
All the ingredients are listed or exempt.

### Canada - DSL/NDSL
All the ingredients are listed or exempt.

### US - TSCA
All the ingredients are listed or exempt.

### US - TSCA 12(b) Export Notification
None of the ingredients are listed or exempt.

### Australia - AICS
All the ingredients are listed or exempt.

### Japan - ENCS
All the ingredients are listed or exempt.

# Sulfur (pieces)

**Korea - KECI**
All the ingredients are listed or exempt.

**China - IECSC**
All the ingredients are listed or exempt.

**Philippines - PICCS**
All the ingredients are listed or exempt.

**New Zealand - NZIOC**
All the ingredients are listed or exempt.

**Taiwan - TCSI**
All the ingredients are listed or exempt.

## 16. Other information

| | |
|---|---|
| **Training advice** | Only trained personnel should use this material. |
| **Revision comments** | NOTE: Lines within the margin indicate significant changes from the previous revision. |
| **Issued by** | HS&E Manager. |
| **Revision date** | 11/7/2022 |
| **Revision** | 3 |
| **Supersedes date** | 6/13/2018 |
| **SDS No.** | 5466 |
| **SDS status** | Approved. |
| **Hazard statements in full** | H315 Causes skin irritation. |
| **NFPA - health hazard** | Temporary incapacitation, injury. (2) |
| **NFPA - flammability hazard** | Burns only if pre-heated. (1) |
| **NFPA - instability hazard** | Normally stable. (0) |
| **End of SDS** | _____ |

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.