

SULPHUR POWDER

Date of compilation: 06-08-2026 | Revised: 06-08-2026 | Version: 1

SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

SULPHUR POWDER
Sulfur; Elemental Sulphur; Brimstone; Flowers of Sulphur (fine grade)
CAS: 7704-34-9

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Rubber vulcanisation, fertiliser and soil amendment, agricultural fungicide/pesticide raw material, chemical intermediate (sulphuric acid manufacture), industrial and pharmaceutical intermediate. For industrial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
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1.4 Emergency phone number:

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SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Flam. Sol. 2	Flammable solid, Category 2, H228
Skin Irrit. 2	Skin irritation, Category 2, H315 (dust, prolonged contact)
Eye Irrit. 2	Eye irritation, Category 2, H319 (dust)

2.2 GHS label elements, including precautionary statements:

GHS: Warning

Hazard statements:

Flam. Sol. 2: H228 – Flammable solid.
Skin Irrit. 2: H315 – Causes skin irritation.
Eye Irrit. 2: H319 – Causes serious eye irritation.

Precautionary statements:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting equipment.
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/dust mask.
P302+P352: IF ON SKIN: Wash with plenty of water.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370+P378: In case of fire: Use dry sand, dry chemical powder or CO² to extinguish. Do NOT use a strong water jet (dust dispersion risk).
P501: Dispose of contents/container in accordance with local/regional/national regulations.

2.3 Other hazards which do not result in classification:

Fine sulphur dust dispersed in air can form explosive dust clouds in the presence of an ignition source (dust explosion hazard). Combustion produces toxic sulphur dioxide gas.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Elemental Sulphur (S₈), powder/ground form
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 7704-34-9	Sulphur – Flam. Sol. 2: H228; Skin Irrit. 2: H315; Eye Irrit. 2: H319 – Warning	≥ 99.5%

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Request medical assistance if symptoms persist, showing the SDS of this product.

By inhalation:

Remove the person affected to fresh air. If exposed to combustion fumes (sulphur dioxide), seek immediate medical attention.

By skin contact:

Remove contaminated clothing. Wash skin thoroughly with plenty of water and soap. Seek medical advice if irritation persists.

By eye contact:

Rinse eyes thoroughly with water for at least 15 minutes, holding eyelids apart, to remove dust particles. Seek medical attention if irritation persists.

By ingestion/aspiration:

Rinse mouth with water. Do not induce vomiting. Seek medical advice if large quantities are ingested or discomfort occurs.

4.2 Most important symptoms/effects, acute and delayed:

Dust may cause irritation of skin, eyes and upper respiratory tract. Inhalation of combustion products (SO&sub2;) can cause severe respiratory irritation.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Treat symptomatically. In case of SO&sub2; exposure from combustion, seek immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:

Suitable: Dry sand, dry chemical powder, carbon dioxide (CO²), water spray/fog (fine mist only, applied carefully)
Unsuitable: Do not use a strong/solid water jet, as it may disperse dust and create a dust explosion hazard.

5.2 Specific hazards arising from the chemical:

Flammable solid. Fine dust dispersed in air can form explosive mixtures. Burns to produce toxic and corrosive sulphur dioxide (SO&sub2;) gas. Molten sulphur can auto-ignite under certain conditions and produce hydrogen sulphide (H&sub2;S) under reducing conditions.

5.3 Special protective actions for fire-fighters:

Evacuate all non-essential personnel. Wear self-contained breathing apparatus (SCBA) and full protective clothing due to toxic SO&sub2; combustion products. Approach from upwind.

Additional provisions:

Cool fire-exposed containers with water spray from a safe distance if safe to do so. Prevent dust dispersal during fire-fighting.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Eliminate all ignition sources. Avoid generating dust. Use personal protective equipment as per section 8. Ensure adequate ventilation.

For emergency responders:

Wear appropriate protective equipment including dust mask/respirator. Prevent access by unprotected persons.

6.2 Environmental precautions:

Prevent entry into drains, sewers and watercourses. Avoid generating airborne dust.

6.3 Methods and materials for containment and cleaning up:

Sweep up carefully (avoid raising dust; use wet methods where practical) and place in suitable closed containers for reuse or disposal. Avoid contact with ignition sources during clean-up.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

A. General precautions for safe use:

Handle away from heat, sparks, open flames and other ignition sources. Minimise dust generation; use local exhaust ventilation during transfer operations. Avoid contact with strong oxidising agents.

B. Technical recommendations for the prevention of fires and explosions:

Ground and bond equipment during transfer to prevent static discharge. Use explosion-proof electrical equipment in areas where dust may accumulate. Control dust accumulation on surfaces and equipment.

C. Technical recommendations on general occupational hygiene:

Do not eat, drink or smoke while handling the product. Wash hands and exposed skin after handling.

D. Technical recommendations to prevent environmental risks:

Prevent spillage from entering drains or watercourses.

7.2 Conditions for safe storage, including any incompatibilities:

A. Specific storage requirements:

Minimum Temp.	Ambient
Maximum Temp.	40°C (below melting point; avoid heat sources)
Maximum time	24 Months (in sealed original containers, kept dry)

B. General conditions for storage:

Store in closed bags/containers in a cool, dry, well-ventilated place away from ignition sources, oxidising agents and reducing metals. Keep separate from incompatible materials (see 10.5).

7.3 Specific end use(s):

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:

Sulphur dust is treated as a Particulate Not Otherwise Classified under general industrial hygiene guidance; indicative limits commonly referenced internationally are provided below as a general guide.

Identification	Occupational Exposure Limit Type	Value
Sulphur (total dust) CAS: 7704-34-9	Time Weighted average concentration (8 hrs)	~10 mg/m³ (general PNOC guideline)

8.2 Appropriate engineering controls:

Use local exhaust ventilation/dust extraction during bagging, milling and bulk transfer to control airborne dust and minimise dust explosion risk.

B. Respiratory protection:

Dust mask (P1/P2) recommended when handling powder with inadequate ventilation; use a properly fitted respirator for prolonged or high-dust operations.

C. Specific protection for the hands:

Protective gloves recommended for prolonged handling.

D. Eye and face protection:

Safety glasses or dust goggles to prevent particulate contact with eyes.

E. Bodily protection:

Antistatic protective clothing; avoid clothing that can generate static discharge. Closed footwear.

F. Additional emergency measures:

Eyewash station and emergency shower recommended in the work area.

Environmental exposure controls:

Avoid environmental spillage of both the product and its container. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

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Appearance	
Physical state at 20°C	Solid (fine powder)
Appearance	Fine crystalline powder
Color	Bright yellow
Odor	Faint characteristic odor (odor of burning sulphur when heated)
Odour threshold	Not relevant *
Volatility	
Boiling point at atmospheric pressure	444.6°C
Vapour pressure at 20°C	Negligible
Evaporation rate at 20°C	Not relevant *
Product Description	
Density / Relative density at 20°C	~2.0 g/cm³
Dynamic / Kinematic viscosity	Not relevant (solid)
Concentration	≥ 99.5%
pH	Not relevant (insoluble in water)
Vapour density at 20°C	Not relevant *
Partition coefficient n-octanol/water 20°C	Not applicable (elemental solid)
Solubility in water at 20°C	Insoluble; soluble in carbon disulphide
Decomposition temperature	Not relevant (sublimes/burns rather than decomposing)
Melting point/freezing point	115 – 119°C
Flammability	
Flash Point	~207°C (molten sulphur)
Flammability (solid, gas)	Flammable solid (H228); fine dust presents dust-explosion risk
Autoignition temperature	~232°C
Lower / Upper flammability limit	Dust cloud MEC (Minimum Explosible Concentration) typically 35 – 50 g/m³
Particle Characteristics	
Median equivalent diameter	Fine powder grade – typically < 75 µm

* Not relevant due to the nature of the product, not providing information on the properties of its hazards.

9.2 Other information:

Explosive properties	Dust cloud may be explosive in presence of an ignition source
Oxidising properties	Not oxidising
Corrosive to metals	Not corrosive to dry metals; can be corrosive in presence of moisture (forms sulphurous/sulphuric species)
Heat of combustion	~9.2 MJ/kg (typical for elemental sulphur)
Surface tension at 20°C	Not relevant (solid)
Refraction index	Not established

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity:**
Reacts with strong oxidising agents (may be violent). Reacts with metals to form sulphides, especially when heated. Reacts with hydrogen at elevated temperature to form hydrogen sulphide.
- 10.2 Chemical stability:**
Chemically stable under the indicated conditions of storage, handling and use.
- 10.3 Possibility of hazardous reactions:**
Dust cloud/air mixtures may explode in the presence of an ignition source. Contact with strong oxidisers can cause violent/exothermic reactions.
- 10.4 Conditions to avoid:**

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Avoid static discharge in dust clouds	Dust cloud/air mixtures are explosible	Danger of ignition near heat sources	No particular hazard	No particular hazard (dry storage preferred)

10.5 Incompatible materials:

Strong Oxidising Agents	Metals/Reducing Agents	Ignition Sources
Avoid contact – may react violently	Avoid contact, especially with heating – forms sulphides	Keep away

- 10.6 Hazardous decomposition products:**
Combustion produces sulphur dioxide (SO₂), a toxic and corrosive gas. Under reducing conditions, may produce hydrogen sulphide (H₂S).

SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1 Information on toxicological effects:**
Elemental sulphur has a well-documented low order of acute toxicity. In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse effects may result depending on the means of exposure:
- A. Ingestion (acute effect):**
Low acute oral toxicity. Large doses may cause gastrointestinal discomfort.
- B. Inhalation (acute effect):**
Dust may cause irritation of the upper respiratory tract. Combustion products (SO₂) are severely irritant/corrosive to the respiratory tract.
- C. Contact with skin and eyes (acute effect):**
Dust may cause mild skin and eye irritation on prolonged contact.
- D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):**
Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. IARC: Not listed.
- E. Sensitizing effects:**
Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure:
Classification criteria are not met for the product itself based on available data; combustion products are respiratory irritants.

G. Specific target organ toxicity (STOT) – repeated exposure:
Classification criteria are not met based on available data.

H. Aspiration hazard:
Not relevant (solid powder).

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Sulphur CAS: 7704-34-9	LD50 oral: > 5,000 mg/kg (practically non-toxic)	Rat
	LD50 dermal: > 2,000 mg/kg	Rabbit

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment (elemental form).

12.1 Toxicity:

Identification	Acute Toxicity	Species	Genus
Sulphur CAS: 7704-34-9	LC50: > 100 mg/L (96h, practically non-toxic, low aqueous solubility)	Not specified	Fish
	EC50: > 100 mg/L (48h)	Not specified	Crustacean (Daphnia)

12.2 Persistence and degradability:
Elemental sulphur is a naturally occurring element and is cycled in the environment via microbial oxidation/reduction; biodegradation as conventionally defined is not applicable.

12.3 Bioaccumulative potential:
Not expected to bioaccumulate; sulphur is an essential element in biological systems.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Not relevant (insoluble solid)	Not relevant	Low mobility	Low mobility; oxidised by soil bacteria over time

12.5 Results of PBT and vPvB assessment:
Not applicable – naturally occurring element; PBT/vPvB criteria are not designed for this substance class.

12.6 Other adverse effects:
Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Not normally classified as hazardous waste in its elemental form. Dispose of via a licensed waste contractor in accordance with local regulations, avoiding conditions that could generate dust clouds or ignition. Empty containers may retain product residue and should be handled accordingly.
Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023):

14.1 UN number	UN1350
14.2 UN proper shipping name	SULPHUR
14.3 Transport hazard class(es)	4.1
14.4 Packing group	III
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9. Not subject to ADR when in lump or pelleted form below defined particle-size thresholds – consult current ADR special provisions.
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	UN1350
14.2 UN proper shipping name	SULPHUR
14.3 Transport hazard class(es)	4.1
14.4 Packing group	III
14.5 Marine pollutant	No
14.6 Special precautions for user	EmS Codes: F-A, S-G
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Non-applicable

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	UN1350
14.2 UN proper shipping name	SULPHUR
14.3 Transport hazard class(es)	4.1
14.4 Packing group	III
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:
It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:

Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
Insecticides Act, 1968 (where used as an agricultural fungicide/pesticide active)

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

H228: Flammable solid.
H315: Causes skin irritation.
H319: Causes serious eye irritation.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

Publicly available GHS classification references and standard industrial chemical data compilations for elemental sulphur (CAS 7704-34-9).

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | MEC: Minimum Explosible Concentration | PNOC: Particulate Not Otherwise Classified | IARC: International Agency for Research on Cancer

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET