Elemental Sulfur (S)

Granular / Pastilles (2–6 mm) · Lump / Brimstone (0–200 mm) · Milled Powder (-40 to -325 Mesh)

BEG-MSDS-SULFUR · REV 2.0
Effective Date: 23 Nov 2026
CAS: 7704-34-9 · **EC:** 231-722-6
Supplier Tel: +44 744 913 9023

CHEMICAL PURITY	SIGNAL WORD	HAZARD STATEMENTS	TRANSPORT (POWDER/LUMP)	TRANSPORT (GRANULAR)
99.5% – 99.95% S	WARNING	H228 · H315	UN 1350 · Class 4.1	SP 242 Exempt

WARNING **Flammable Solid (Cat. 2) · Skin Irritant (Cat. 2) · Combustible Dust Hazard**

H228: Flammable solid. | **H315:** Causes skin irritation. | Finely divided airborne sulfur dust may form explosive mixtures with air. Combustion releases toxic Sulfur Dioxide (SO_2) gas.

NFPA 704
Health: 1 (Slight)
Flamm.: 1 (Solid)
Reactivity: 0

SECTION 1 Identification of the Substance & of the Supplier

1.1 & 1.2 SUBSTANCE IDENTIFIER & RELEVANT USES

Product Name: Elemental Sulfur (Granular, Lump & Milled Powder)

Synonyms: Brimstone, Flowers of Sulfur, Recovered SRU Sulfur

Identified Uses: Sulfuric acid production, phosphate fertilizers, rubber vulcanization, chemical synthesis, industrial metallurgy & soil amendment.

Uses Advised Against: Direct food consumption or unventilated confined-space dusty blasting.

1.3 & 1.4 SUPPLIER DETAILS & EMERGENCY CONTACT

Supplier Role: Global Commodity Supplier / Distributor (Commercial Desk)

Supplier Name: Beroil Energy Group

Office Address: 4-6 Middlesex St., E1 7JH, London, United Kingdom

Email / Phone: info@beroilenergy.com · +44 744 913 9023

Emergency Line: +44 744 913 9023 (Commercial) · Dial local emergency services (999 / 112 / 911) or Port Fire/Poison Center for acute spills or fires.

SECTION 2 Hazards Identification

2.1 GHS / CLP Classification: Flammable Solids, Category 2 (H228); Skin Corrosion/Irritation, Category 2 (H315). Dust suspended in air presents an acute deflagration/explosion risk.

2.3 Other Hazards: Molten sulfur (> 115 °C) causes severe thermal burns and may release toxic Hydrogen Sulfide (H_2S) and Sulfur Dioxide (SO_2) in enclosed headspaces. Does not meet PBT/vPvB or endocrine-disruptor criteria.

2.2 Label & Precautionary Statements: Signal Word: **Warning** (Pictogram: GHS02 Flame).

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P240 / P241: Ground/bond container & receiving equipment; use explosion-proof electrical/ventilation equipment.

P280 / P302+P352 / P370+P378: Wear gloves & eye protection; wash skin with water; use water fog/foam/dry powder for fire.

SECTION 3 Composition / Information on Ingredients

3.1 SUBSTANCE CHEMICAL NAME	CAS NO.	EC NO.	CLP INDEX NO.	CONC. (% W/W)	HAZARD CLASSIFICATION (CLP/GHS)
Elemental Sulfur (S)	7704-34-9	231-722-6	016-094-00-1	≥ 99.50 – 99.95%	Flam. Sol. 2 (H228); Skin Irrit. 2 (H315)
Inert Process Trace (Moisture / Ash)	—	—	—	≤ 0.50% H_2O · ≤ 0.05% Ash	Non-hazardous solid impurities (H_2SO_4 acidity ≤ 0.01%)

SECTION 4 First-Aid Measures

INHALATION

Remove victim to fresh air and keep at rest in a comfortable breathing position. If coughing, wheezing, or exposure to SO_2/H_2S combustion fumes occurs, seek prompt medical attention.

SKIN CONTACT

Wash off immediately with soap and plenty of water. Remove contaminated clothing. **Molten sulfur:** Cool immediately with cold water; do NOT peel solidified crust off skin — seek emergency burn care.

EYE CONTACT

Flush eyes immediately with gentle running water for at least 15 minutes while holding eyelids apart. Remove contact lenses if easy. Consult an ophthalmologist if irritation persists.

INGESTION

Rinse mouth thoroughly with water and give 200–300 ml water to drink if conscious. Do NOT induce vomiting. Sulfur has low oral toxicity; seek medical advice if large quantities were swallowed.

4.2 & 4.3 Symptoms & Medical Treatment: Dust causes mechanical eye irritation and transient skin/respiratory irritation. Burning fumes irritate respiratory mucosa. Treat symptomatically.

Sections 5 – 9: Fire, Spill, Handling, Exposure Controls & Physical Data

SECTION 5 Fire-Fighting Measures

5.1 Suitable Extinguishing Media: Fine water spray/fog, alcohol-resistant foam, dry sand, or dry chemical powder.

Unsuitable Media: Do NOT use solid high-pressure water streams (may scatter burning molten sulfur or loft explosive dust clouds).

5.2 Special Fire Hazards: Burns with a pale blue flame difficult to see in daylight; melts into flowing fire and generates toxic, corrosive Sulfur Dioxide (SO_2). Small molten fires can re-ignite spontaneously.

5.3 Firefighter PPE: Wear positive-pressure SCBA and full thermal/chemical protective turnout gear. Fight fire from upwind; keep adjacent stockpiles cool with water mist and diked runoff contained.

SECTION 6 Accidental Release Measures

6.1 Personal Precautions: Eliminate sparks, flames, and static charge. Avoid breathing dust or raising airborne clouds; wear safety goggles, dust mask, and protective gloves.

6.2 Environmental Precautions: Prevent granular/powder sulfur from entering storm drains, sewers, or surface waters. Notify port/local water authorities for major aquatic releases.

6.3 Clean-Up Methods: Gently shovel or vacuum spilled product using grounded, explosion-proof/spark-free tools (non-sparking aluminum, bronze, or wood). Mist lightly with water fog if dusty before collection into labeled, sealed containers.

SECTION 7 Handling and Storage

7.1 PRECAUTIONS FOR SAFE HANDLING

Minimize dust generation and accumulation on ledges/beams. Ground and bond all hoppers, chutes, pneumatic conveyors, and FIBC discharge frames to prevent electrostatic ignition. Prohibit smoking, open flames, and hot-work welding unless gas/dust-free certified. Maintain dust concentrations well below Lower Explosion Limit (~25–35 g/m³).

7.2 SAFE STORAGE & INCOMPATIBILITIES

Store in cool, dry, well-ventilated warehouses or covered terminals away from heat (< 40 °C recommended for bagged cargo). Segregate strictly from strong oxidizers (chlorates, nitrates, permanganates, peroxides), halogens, phosphorus, and reactive metal powders. Keep wet bulk stockpiles separated from alkaline earth carbonates/stainless internals if prolonged corrosion occurs.

SECTION 8 Exposure Controls / Personal Protection

8.1 OCCUPATIONAL EXPOSURE LIMITS (OELS)

Elemental Sulfur Dust: Treated under PNOR / PNOS nuisance particulates: **OSHA PEL:** 15 mg/m³ (total), 5 mg/m³ (respirable) · **ACGIH TLV:** 10 mg/m³ (inhalable), 3 mg/m³ (respirable).

Off-Gases (Heated/Combustion): **SO_2** ACGIH TLV 0.25 ppm STEL / OSHA 5 ppm TWA · **H_2S** ACGIH 1 ppm TWA / 5 ppm STEL.

8.2 ENGINEERING CONTROLS & HYGIENE

Use local exhaust ventilation (LEV) at bagging, crushing, and conveyor transfer points with spark-arresting dust collectors. Provide emergency eyewash stations and safety showers near molten/handling bays. Wash hands before breaks; prohibit eating or drinking in work zones.

EYE / FACE PROTECTION	HAND PROTECTION	RESPIRATORY PROTECTION	SKIN & BODY PROTECTION
Dust-tight chemical safety goggles (EN 166); add full face shield when handling molten sulfur.	Nitrile (0.4 mm), leather, or heavy PVC work gloves; heat-insulated gauntlets for molten (>115 °C).	Not required for dust-free granules; use EN 149 FFP2 / NIOSH N95 respirator for dusty powder; SCBA if SO_2/H_2S present.	Anti-static, flame-retardant closed workwear (EN ISO 11612 / EN 1149) and safety footwear.

SECTION 9 Physical and Chemical Properties

PROPERTY	VALUE / DESCRIPTION	PROPERTY	VALUE / DESCRIPTION
Physical State & Form	Solid (granules, pastilles, lumps, or milled powder)	**Melting / Freezing Point**	**112.8 °C (rhombic) – 119.0 °C (monoclinic); ~115 °C**
Color & Odor	Bright yellow; faint sulfurous odor	**Boiling Point**	444.6 °C (832 °F) at 101.3 kPa
Flash Point (Closed Cup)	**~160 – 168 °C (320 – 334 °F)**	**Auto-Ignition Temp.**	**~232 – 246 °C (450 – 475 °F)**
Dust Explosion Limit (LEL)	**~25 – 35 g/m³ airborne dust cloud (VDI 2263)**	**Vapor Pressure**	Negligible at 20 °C (~0.13 kPa @ 184 °C)
True Density (@ 20 °C)	2.07 g/cm³ (rhombic solid)	**Loose Bulk Density**	~1,050 – 1,250 kg/m³ (Granular / Lump)
Water Solubility (@ 20 °C)	Insoluble (< 0.005 mg/L)	**Organic Solubility**	Soluble in CS_2 (~35 g/100 g @ 20 °C)
pH (Aqueous Suspension)	Neutral (~6.5 – 7.5; insoluble)	**Flammability / Explosive**	Flammable solid (Cat. 2); non-explosive in bulk mass

Sections 10 – 16: Stability, Toxicology, Ecology, Transport & Regulatory

SECTION 10 Stability and Reactivity

10.1–10.3 Reactivity & Stability: Chemically stable under normal ambient temperature and dry storage conditions. No hazardous polymerization occurs.

10.4 Conditions to Avoid: Excessive heat (> 115 °C), sparks, open flames, electrostatic discharge, and airborne dust dispersion.

10.5 Incompatible Materials: Strong oxidizing agents (chlorates, nitrates, permanganates, chromates, peroxides), halogens, phosphorus, strong bases, carbides, and finely divided metals (e.g., iron/zinc).

10.6 Decomposition Products: Sulfur oxides (SO_2, SO_3) upon combustion; Hydrogen Sulfide (H_2S) when heated with hydrocarbons or moisture/metals.

SECTION 11 Toxicological Information

11.1 Acute Toxicity (Experimental Data):

· **Oral LD_{50} (Rat):** > 2,000 – 3,000 mg/kg (virtually non-toxic)

· **Dermal LD_{50} (Rabbit):** > 2,000 mg/kg

· **Inhalation LC_{50} (Rat, 4h):** > 9.23 mg/L

Irritation / Sensitization: Classified **Skin Irrit. 2 (H315)**; dust causes mild mechanical eye irritation. Not a respiratory or dermal sensitizer.

CMR / STOT: Not mutagenic (Ames negative); not listed as carcinogenic by IARC, NTP, or OSHA; no reproductive or specific target organ toxicity observed.

SECTION 12 Ecological Information

12.1 Ecotoxicity: Low acute aquatic hazard due to near-zero water solubility: Fish (*Oncorhynchus mykiss*) **96h LC_{50} > 180 mg/L**; *Daphnia magna* **48h EC_{50} > 5,000 mg/L**.

12.2–12.4 Persistence, Bioaccumulation & Mobility: Inorganic solid element; biodegradation test not applicable. Insoluble in water with low bioavailability and no volatility from surface water.

12.5–12.6 PBT / Other: Not PBT or vPvB; no ozone-depleting potential. Avoid uncontrolled bulk spills into waterways (slow microbial oxidation lowers soil/water pH).

SECTION 13 Disposal Considerations

13.1 Waste Treatment: Clean recovered solid sulfur should preferably be recycled or reprocessed for industrial/agricultural use where uncontaminated. Unusable waste must be sent to an authorized industrial waste incineration or treatment facility in compliance with national and local waste laws.

Contaminated Packaging: Empty FIBC jumbo bags and PP+PE sacks completely without shaking airborne dust; dispose of liners and bags as industrial plastic waste or via licensed recovery contractors.

SECTION 14 Transport Information (IMDG / ADR / RID / IATA-ICAO)

CARGO FORM / PHYSICAL STATE	UN NO.	PROPER SHIPPING NAME	CLASS / PG	REGULATORY PROVISION & MARINE POLLUTANT
Formed Sulfur (Granules, Pastilles, Prills, Pellets)	—	Not Regulated as Dangerous Goods	Non-DG	Exempt under IMDG / ADR SP 242 & IATA SP A105 (specific formed non-dusting shape)
Crushed Lump, Brimstone & Milled Powder	UN 1350	SULPHUR (SULFUR)	Class 4.1 · PG III	Flammable Solid label required · Marine Pollutant: No (IMDG Code)
Molten / Liquid Sulfur (Reference)	UN 2448	SULPHUR, MOLTEN	Class 4.1 · PG III	Heated insulated IMO tanks only (> 115 °C); elevated-temp H_2S monitoring

SECTION 15 Regulatory Information

15.1 International Inventories: Listed on EU EINECS/REACH (EC 231-722-6), US TSCA (CAS 7704-34-9), Canada DSL, UK REACH, China IECSC, and Australia AIIC.

Safety Frameworks: Classified under EU CLP Regulation (EC) 1272/2008, UK GB-CLP, and OSHA HazCom 2012 (29 CFR 1910.1200). Not listed as a Seveso III major-accident substance under ambient solid form.

15.2 Chemical Safety Assessment: A Chemical Safety Assessment has been carried out for sulfur under REACH by primary manufacturers; observe Section 7 & 8 controls.

SECTION 16 Other Information

Full H-Statements: H228 Flammable solid · **H315** Causes skin irritation.

Key Abbreviations: CAS: Chemical Abstracts Service · **CLP:** Classification, Labelling & Packaging · **EC_{50}/LC_{50}/LD_{50}:** Median Effective/Lethal Dose or Conc. · **IMDG:** Int'l Maritime Dangerous Goods · **LEL:** Lower Explosion Limit · **PEL/TLV:** Permissible/Threshold Limit Value · **SP 242:** Special Provision 242.

Revision History: Rev. 2.0 (23 Nov 2026) — Full 16-section GHS/REACH supplier SDS edition.

Supplier Notice & Disclaimer (Beroil Energy Group): Beroil Energy Group provides this Safety Data Sheet in its capacity as global commodity supplier and commercial distributor (not primary refinery manufacturer). Information herein is compiled from peer-reviewed chemical literature and global regulatory standards for safe handling, transport, and storage of elemental sulfur (CAS 7704-34-9). It does not constitute a contractual specification or Certificate of Analysis (refer to BEG-TDS-SULFUR and shipment SGS/Intertek COA). Recipients must verify local regulations and workplace suitability prior to use.