

SAFETY DATA SHEET
Sulphur Powder

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Issued: 10/06/2025
Revision No: 3

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product identifier:

Name: Sulphur
Trade name: Milled sulphur, Powered sulphur
CAS No: 7704-34-9
EC No: 231-722-6
Index No: 016-09400-1
Registration No: 01-2119487295-27-XXXX

Relevant identified uses of the substance or mixture and uses advised against:

The product is used as a raw material in the organic and inorganic chemical industry, including the production of sulphuric acid, fertilizers, crop protection chemicals, paper, paper and plastic packaging, explosive materials, carbon electrodes, cutting fluids, rubber vulcanizing, crude oil refining, steel melting, pH control in food industry, disinfection of tools and rooms used for agricultural manufacturing processes.

Details of the supplier of the safety data sheet:

Company name: Nexchem Ltd
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Leycroft Road
Leicester
LE4 1ET
Tel: 0116 2311130
24/7 Emergency Tel: 0800 246 1274
Email: sales@nexchem.co.uk

2. HAZARDS IDENTIFICATION

Classification of the substance or preparation:

Classification in accordance with Regulation (EC) No 1272/2008 (CLP): Not classified.

Effects of physical and chemical properties: No hazard.

For humans:

Irritating effects on skin: Skin Irritant. 2 (H315 Causes skin irritation).

For environment: Not classified. No hazard.

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Label elements

GHS Pictograms:



GHS07

Signal word:

Warning

Hazard Statement:

H315 Causes skin irritation

Precautionary Statement:

P280 Wear protective gloves/protective clothing/eye protection/ face protection.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P332 + P313 If skin irritation occurs: Get medical advice/attention.

Other hazards:

Solid sulphur is a combustible substance. As the result of combustion, toxic and irritant gases, steams and smokes are emitted, which may cause irritation to mucous membranes, eyes and, upon longer exposure, also skin. The chemical combustion of sulphur may result from its contact with antioxidants and in mixture with coal, carbon black, fats and oils. Combined sulphur dusts and air form an explosive mixture. Danger of explosions exists also in the case of exceeding the ignition temperature through a layer of accumulated sulphur dust, e.g. by contact with hot surfaces of an installation or abnormal operation of devices resulting in heating of components (in particular movable ones). Such situation may lead to the ignition of settled dust and then ignition of dust-air mixture. Sulphur indicates very high proneness to stativity - static electricity may initiate an explosion of sulphur dust.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances	Substance name	Symbol	% by weight	CAS No.	EC No.	Index No.
Sulphur		S	>99	7704-34-9	231-722-6	016-09400-1

4. FIRST AID MEASURES

Description of first aid measures:

Skin contact:

Change contaminated clothing. Carefully wash the contaminated skin with soap and water, then rinse with large amounts of water. Seek medical advice if symptoms persist or in the case of irritation.

Inhalation:

Getting the victim into fresh air should be sufficient. Seek medical advice if symptoms persist or when feeling unwell.

Ingestion:

Immediately rinse the mouth out with water, then drink a large amount of water. Seek medical advice if symptoms persist or when feeling unwell.

Eye contact:

Immediately rinse the eyes with plenty of cool water, under the lids as well. If irritation persists, continue rinsing for 15 minutes, occasionally lifting the eyelids. Seek medical advice if symptoms persist or when feeling unwell.

[cont...]

Most important symptoms and effects, both acute and delayed: Not likely to occur.

Indication of any immediate medical attention and special treatment needed: If SO₂ is released, use respiratory protection.

Show the safety data sheet, label or packaging to the medical personnel providing aid.

Recommendations for doctors: Symptomatic treatment.

5. FIRE-FIGHTING MEASURES

Extinguishing media:

Suitable extinguishing media: Sprayed water, foam, CO₂ and other available extinguishing media.

Unsuitable extinguishing media: High volume water jet.

Special hazards arising from the substance or mixture: Flammable substance.

While burning, sulphur emits toxic (in contact with respiratory tracts), irritating gas – sulphur dioxide. People should be immediately evacuated from zones under the hazard of explosion and contamination from poisonous gases generated during fire. Containers exposed to the effect of fire or high temperature are to be cooled with water currents and, to possible extent, safely removed from danger zone and continuously cooled. Dusts and steams of sulphur combined with air form explosive mixtures, which may cause transfer of explosions and fires.

Advice for fire fighters: Use spray, droplet and mist water for extinguishing a large fire. Water mist is efficient in rooms. Use full, fireproof clothing and respiratory apparatus with independent air supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Remove from the danger zone all persons not participating in emergency action. Call rescue forces. Do not let people without proper protection enter the danger zone. Use personal protection means – see section 8 safety data sheets. Do not cause dust rise. Eliminate potential ignition sources. Avoid inhaling dusts and vapours. In the case of releasing dusts in confined space, provide sufficient ventilation.

Environmental Precautions: Secure drains.

Methods and material for containment and cleaning up:

Collect scattered material. If the collected material is not suitable for intended use and is classified as waste, proceed in accordance with the provisions of section 13 of this safety data sheet.

Reference to other sections: Refer also to sections 8 and 13 of this safety data sheet.

[cont...]

7. HANDLING AND STORAGE

Precautions for safe handling: Due to the high tendency of the mixture of sulphur dust and air to explosions, during the process of filling/removing sulphur to/from unit packages (bags, big-bags), it is necessary to prevent the conditions for such explosions, by preventing the creation of dust-air mixture, in which the content of dusts exceeds lower explosion limit.

Eliminating explosion initiators (open fire, mechanical sparks, short-circuits, static electricity, etc.).

In order to prevent the creation of explosive mixture, one must restrict the possibility of generating sulphur dusts during each stage of processing (storage, transportation and use of solid sulphur), and never allow sulphur dusts to accumulate, use appropriate extractors in places where, due to performed technological processes, sulphur dusts may be released.

In order to eliminate the initiators of ignition or explosion, it is necessary to implement protection against: Electrifying of sulphur, i.e. implementing an effective method of protection against static electricity, e.g. through proper earthing of installation components that require it (to carry away electrostatic charges), proper materials used in installation components having contact with sulphur, using electrical devices that meet safety requirements of European and national standards in the area of electrical installations and devices operating in zones under the hazard of explosion (according to ATEX directive).

Not using open fire in the presence of sulphur.

Preventing temperature growth to ignition hazard level.

Detailed technical solutions should result from the specific nature of a given process.

When performing any actions related to sulphur, it is prohibited to eat, drink, smoke, use medicines, one should also avoid inhaling steams, dusts, smokes and aerosols, as well as observe personal hygiene. Use PPE in accordance with the provisions of section 8 of this safety data sheet.

Conditions for safe storage, including any incompatibilities:

All storage rooms must be ventilated due to the risk of the formation of explosive mixtures with air. Electrical systems should be explosion-proof. Keep away from naked flame, heat sources and reactive products (strong bases, oxidants).

Large amounts of sulphur are kept in bulk, preferably under cover. Smaller amounts are stored in bags, jars or drums. Avoid contact with pyrophoric iron, copper components, ammonia, nitric acid, metallic dust, chlorates, nitrates, perchlorates, permanganates, anhydrides. Molten sulphur reacts with most oxidants.

Specific end use(s): See section 1.2.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure control parameters: Sulphur particulates (other non-toxic industrial particulates, also with free (crystalline) silica < 2% of respirable fraction) OEL: 10 mg/m³

Sulphur dioxide: OEL: 1.3 mg/m³. STEL: 2.7 mg/m³. TLV-C: – (fire and sulphur inflammation) Regulation of the Polish Ministry of Labour and Social Policy of 6 June 2014 on the maximum occupational exposure limits for the concentration and intensity levels of harmful factors (Polish Journal of Laws Year 2014, item. 817).

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DNEL: Not applicable (non-toxic substance).

PNEC: Not applicable (non-toxic substance).

Exposure controls:

Technical measures to prevent exposure: Provide general and local ventilation to ensure that the concentration of air contaminants below the allowable maximum limits. When substance concentration is known and stable, select PPE with consideration of the substance concentration at the workplace, exposure time and operations performed by the personnel. Where explosive or toxic concentrations of gas, dust and vapour may exist, apply water spraying.

Eye and face protection: Use hermetic safety goggles in the case of excessive dust concentration.

Skin protection: Wear fabric gloves, preferably made of cotton, with leather protective sections. Use clothing made of close weave fabric and safety shoes.

Respiratory protection: Under normal conditions, with proper ventilation, special protection for respiratory tracts is not required. In the case of excessive dust concentration, use filtering semi-masks. When working in atmosphere combined with sulphur dusts and steams, emitted from burned sulphur, use masks with appropriate absorber. When working in atmosphere with insufficient oxide content and in closed spaces with small cubic capacity, use protective equipment that isolates respiratory tracts.

Thermal hazards: N/A

Environmental exposure control: Avoid releasing the substance to soils, sewage drains and waters.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

Form: Solid

Colour: Yellow

Odour: Characteristic

Odour threshold: Not applicable

pH: 6.5% (100 g/l at 20°C)

Melting/freezing points: 112,8°C / Not specified

Initial boiling temperature: 444,6°C

Ignition temperature: 180°C

(max. temp. of the wall of vessel in which sulphur is stored, must not exceed)

Evaporation rate: Not specified (no available data)

Flammability (solid/gas): Flammable

Lower explosion limit LEL of a dust cloud: 20+ /-1.2 g/m³ *

Vapour pressure: 133,3 Pa (at 183°C)

Vapour density: Not specified (no available data)

Relative density: 2.07 g/cm³ at 20°C

Solubility: Non-soluble in water. Soluble in carbon disulphide, chloroform, benzene, toluene.

N-octanol/water partition coefficient (Pow): Not specified (non-organic substance)

Self-ignition temperature: 215°C

Decomposition temperature: Not specified (no available data)

Viscosity: 10-11cP (119°C)

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Explosive properties: Sulphur dust forms explosive mixtures with air.
Sulphur poses the risk of explosion in reactions with nitrates, chlorates, perchlorates and permanganates.

Oxidising properties: Molten sulphur reacts with most oxidants.

Other information:

Maximum explosion pressure p_{max} : $7,1 \pm 0.4$ bar *

Maximum pressure rise rate (dp/ dt) max: 794 ± 78 bar/s *

Explosion index Kst max: 216 ± 22 m·bar/s *

Explosion class: St2 *

Dust cloud ignition temperature T_{cl}: $270 \pm 3.6^{\circ}\text{C}$ *

Dust layer ignition temperature T₅ mm: Melts under the temperature of ca. 123°C *

Minimum energy of dust cloud ignition MI E: < 1.8 mJ *

Surface tension: 1200-1350 kg/m³ (granulated sulphur)

550-750 kg/m³ (milled sulphur)

* - Parameters apply to milled sulphur

10. STABILITY AND REACTIVITY

Reactivity: The product is reactive.

Chemical stability: The substance is stable during storage and handling under normal ambient conditions, nominal temperature and pressure.

Possibility of hazardous reactions: Avoid contact with pyrophoric iron, copper components, ammonia, nitric acid, metallic dust, chlorates, nitrates, perchlorates, permanganates, anhydrides.

Conditions to avoid: Avoid contact with naked flame and other strong heat sources.

Incompatible materials: Avoid contact with pyrophoric iron, copper components, ammonia, nitric acid, metallic dust, chlorates, nitrates, perchlorates, permanganates, anhydrides. Molten sulphur reacts with most oxidants. Sulphur is corrosive to metals.

Hazardous decomposition products: No hazardous decomposition products identified. Combustion products released under fire conditions. See section 5 of this safety data sheet.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects:

Acute toxicity:

LD50: > 2000 mg/kg BM (oral, rat)

LD50: > 2000 mg/kg BM (skin, rabbit)

LC50: > 5430 mg/m³ (inhalation, rat, 4h)

[cont...]

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Caustic/ irritating effects on skin: Sulphur dust irritates the skin.

Severe disturbances to eyes/irritating effects on eyes: Sulphur dust irritates the skin. The product may be irritating to eyes and results in reddening or even pain.

Allergic effects on respiratory system or skin: Based on the available information, classification criteria are not met.

Mutagenic effects on reproductive cells: Based on the available information, classification criteria are not met.

Carcinogenic effects: Based on the available information, classification criteria are not met.

Reproductive effects: Based on the available information, classification criteria are not met.

Toxic effects on specific organs – one-time exposure: Based on the available information, classification criteria are not met. Inhaling vapours results in shortening breath with coughing. Vapours released from molten sulphur may be absorbed by the lungs very quickly. When swallowed, nausea and vomiting occur, or, in more severe cases hand and leg shaking and dizziness may result.

Toxic effects on specific organs – repeated exposure: Based on the available information, classification criteria are not met. Persons under repeated exposure to the inhalation of air containing a large amount of sulphur vapours and dust may suffer from sensitization of mucous membranes, headaches and dizziness, excitement or sedation, digestive disorders, dryness and cracking of the skin.

Hazards related to aspiration: Based on the available information, classification criteria are not met.

12. ECOLOGICAL INFORMATION

Toxicity

Aquatic environment:

Examination of acute and chronic toxicity on invertebrates, algae and fish: No data.

Sediment:

Examination of toxic effects on species in sediment: No data.

Land environment:

Examination of toxic effects on invertebrates: No data.

Examination of toxic effects on plants: No data.

Examination of toxic effects on earthworms: No data.

Persistence and degradability: Sulphur as a result of microbiological decomposition in soil, unbound sulphur is oxidized to sulphate (aerobic conditions) or reduced to sulphide (anaerobic conditions).

Bio accumulative potential: No data.

Mobility in soil: No data.

Results of PBT and vPvB assessment: No data.

Other adverse effects: A small amount of sulphur left on the ground does not pose a significant threat to the environment, as the amount is gradually reduced: it is used on the ground surface both by microorganisms and plants; it is transformed to sulphur dioxide in contact with air or sulphuric acid (IV) in contact with moisture, or, under some conditions, to sulphur trioxide and sulphuric acid (VI) or it is reduced to sulphides.

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13. DISPOSAL CONSIDERATIONS

Waste disposal methods:

Wastes related to the use of sulphur may include: Contaminated sulphur, used sulphur packaging.

Such wastes should be adequately managed each time (recycling or disposal) in accordance with applicable national regulations on wastes (particularly hazardous wastes) and local agreements between the user of sulphur and administration (e.g. decisions by respective Province Governors).

Waste codes:

060699 (wastes not otherwise specified).

There are no limitations for reusing contaminated sulphur, provided that the technology allows recovery. Recovery or disposal of product wastes must adhere to applicable regulations. Contaminated sulphur product packaging may be reused for the same purpose and becomes wastes only when it is not reusable anymore (including damaged packaging). There are no specific recommendations for methods of disposal of used sulphur product packaging.

14. TRANSPORT INFORMATION

Milled sulphur is not covered by ADR/RID provisions (it does not meet the classification criteria according to RID and ADR) – pursuant to classification certificate No. 031/IPO-BC/2015 issued by the Institute of Organic Industry in Warsaw on 27.11.2015).

Granulated sulphur is not covered by ADR/RID/IMDG/ADN provisions based on the specific/special regulation No. 242.

Milled sulphur is covered by IMDG (sea transport) and ADN provisions (land or water transport).

UN number: 1350

UN proper shipping name: Sulphur

Transport hazard class(es): 4.1

Packing group: III

Environmental hazards: No hazard to environment

Special precautions for the user: None

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: No data available

15. REGULATORY INFORMATION

Chemical Safety Assessment (CSA): The manufacturer has performed the assessment of the substance chemical safety.

Note:

The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

[cont...]

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16. OTHER INFORMATION

Acronyms:

@ - at
< - less than
> - more than
ADR - European Agreement concerning the International carriage of dangerous goods by road
CAS – Chemical Abstracts Service
Cat. – Category
CSA – Chemical Safety Assessment
DNEL – Derived No-Effect Level
EC – Effective Concentration
EC OEL – European Commission Occupational Exposure Limit
EINECS - European Inventory of Existing Commercial Chemical Substances
GHS – Globally Harmonized System of Classification and Labelling of Chemicals
H** - Hazard Statements
IATA – International Air Transport Association
IMDG – International Maritime Code for Dangerous Goods
L – Litre
LC50 – Lethal Concentration, 50 percent
LD50 – Lethal dose, 50 percent
m³ – metre cubed
mg – milligram
ml – millilitre
n.o.s. – Not Otherwise Specified
°C – degrees Centigrade
P** - Precautionary Statements
PBT – Persistent, bio accumulative and Toxic
pH – Potential of Hydrogen
PNEC – Predicted No-Effect Level
RID – Regulations Concerning the International Transport of Dangerous Goods by Rail
SDS – Safety Data Sheet
SG – specific gravity
UN – United Nations
vPvB – very Persistent, very Bio accumulative

Legal disclaimer:

The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation. This advice is given by Nexchem Ltd who accept no legal liability for it except otherwise provided by law. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.