

SULPHUR

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Product Name: **SULPHUR**

1. Substance and Company Identification

1.1 Product identifier

Trade Name: **Sulphur**
Name according to 67/548/EEC: ES 231-722-6 Sulphur
Other names: Liquid sulphur; Molten sulphur
Marketing authorisation number: **01-2119487295-27-0059**

1.2 Relevant identified uses of the substance and uses advised against

Sulphur is used as a raw material for further industrial processing.
Sulphur shall not be used for other purposes not specified by a relevant process documentation.

1.3 Details of the Supplier of the Material Safety Data Sheet

1.3.1 Business Name and Identification No.

ČESKÁ RAFINÉRSKÁ, a.s.	Company ID: 62741772
Záluží 2	Tax ID: CZ62741772
Litvínov	www.ceskarafinerska.cz
Post Code 436 70	E-mail: info@crc.c

1.3.2 Place of Business

Litvínov Refinery	Kralupy Refinery
P. O. BOX 47	P. O. BOX 96
436 01 <u>Litvínov</u>	278 01 <u>Kralupy n/Vlt.</u>
Phone: +420 476 163 567	+420 315 718 500
Fax: +420 476 165 086	+420 315 718 640
www.crc.cz	info@crc.cz

1.3.3 Person in Charge of the Material Safety Data Sheet

Ing. Václav Pražák	Phone: +420 476 164 308
	E-mail: vaclav.prazak@crc.cz

1.4 Emergency Phone Number

1.4.1 TRINS (Transport Information and Emergency System)

It provides around-the-clock expert as well as practical assistance in handling emergency situations in connection with the transport and storage of hazardous chemical substances in the territory of the Czech Republic. The assistance is provided via fire brigade operational centres or via UNIPETROL RPA, s.r.o. Litvínov - the regional centre number 1 + the national coordination centre TRINS.

TRINS Contact: Mgr. Jaroslav Porteš; phone: +420 476 165 253, E-mail: jaroslav.portes@unipetrol.cz

1.4.2 Toxicological Information Centre

Address: Na Bojišti 1, 120 00 Prague 2
Telephone: +420 224 919 293, +420 224 915 402

Information on Health Risks Only - Acute poisoning of people and animals.

2. Hazard Identification

2.1 Substance Classification

2.1.1 According to Regulation (EC) No. 1272/2008

Sulphur is classified as an irritant

2.1.2 According to Council Directive 67/548/EEC

Sulphur is classified as an irritant

2.2 Label Elements

2.2.1 According to Regulation (EC) No. 1272/2008



Hazard Indication: GHS07

Signal words: Warning (Wng)

Hazard phrases (H-phrases): H315

Instruction for safe handling (P-phrases): P280; P302+P352; P332+P313

2.2.2 According to Council Directive 67/548/EEC



Hazard Indication: Xi

Specific Risk Level (R-phrases): R38

Instructions for Safe Handling (S-phrases): S2; S24; S37; S46

2.3 Other Hazards

2.3.1 PBT Information

According to the criteria in the Annex XIII to the Regulation no. 1907/2006, sulphur does not contain PBT or vPvB substances.

2.3.2 Other Hazardous Impacts

Molten sulphur is strongly adherent to skin and may cause hard to heal burns. The danger of molten sulphur is in its capability to dissolve hydrogen sulphide, which is released during cooling. In these cases a toxic and explosive mixture of hydrogen sulphide and air may arise above the surface of the molten sulphur.

Ingestion of higher amount of sulphur is dangerous, as through activities of intestinal microorganisms a toxic hydrogen sulphide is generated.

3. Composition / Information on Ingredients

3.1 Preparation Composition, Concentration Limits and Ingredients Classification

The product contains the following hazardous substances:

<i>Substance (name)</i>	<i>Content (% V/V)</i>	<i>Number CAS</i>	<i>Number ES.</i>	<i>Registration number</i>
Sulphur	> 99	7704-34-9	231-722-6	01-2119487295-27-0059

3.2 Chemical Specification

The product is molten sulphur with a purity of 99 Wt% . Sulphur is a viscous fluid of yellow brown colour, delivered in hot condition at temperatures above its melting point, usually from 140 to 160 °C. After cooling sulphur is a solid substance of bright yellow colour.

4 First aid instructions

4.1 General instructions

When handling the product, it is necessary to observe all the requirements related to health and safety at work in compliance with the applicable legislation and this Material Safety Data Sheet.

In the case of risk of unconsciousness, transport in the recovery position.

4.2 Inhalation Hazards

Remove to fresh air, provide rest, prevent from walking. If breathing has stopped, apply mouth-to-mouth resuscitation. Seek medical attention promptly.

4.3 Contact with skin

Hot sulphur stuck to the skin must be promptly cooled down (by water). Sulphur should be removed from skin as a part of the First Aid only if small areas of body are affected. Always seek medical treatment.

4.4 Contact with Eye

Flush eyes carefully with plenty of water and obtain medical attention.

4.5 Ingestion

If swallowed, seek medical help immediately.

5 Fire Fighting Measures

5.1 Suitable Extinguishing Media

Foam, powder, carbon dioxide, water in the case of extensive fires.

5.2 Unsuitable extinguishing media

Water jet.

5.3 Special Hazards

During combustion of sulphur, toxic and corrosive sulphur dioxide is developed.

5.4 Special Protective Equipment for Fire Fighters

Fire-resistant clothing, self-contained breathing apparatus.

6 Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Prevent contamination of clothes and shoes, prevent skin and eye contact. To escape a contaminated area, use a respirator fitted with an organic vapour cartridge. Do not smoke. Remove all potential sources of ignition. Evacuate all persons who are not participating in salvage operations.

6.2 Environmental Precautions

Prevent further leakage. Guard the area. Do not drain into sewers.

6.3 Methods and Material for Containment and Cleaning Up

Let molten sulphur to set, mechanically clean and dispose of in compliance with the applicable waste legislation.

6.4 Reference to Other Sections

See sections 8 and 13.

7 Handling and Storage

7.1 Measures for Safe Handling

When handling hazardous chemical substances and chemical preparations, everybody is obliged to protect human health and the environment and observe the warning symbols of hazards, standard phrases marking the degree of risk and standard instructions for safe handling.

7.2 Conditions for Safe Storing of Substances and Mixtures, including Incompatible Substances and Mixtures

The ČSN 65 0201 standard applies to storage. The premises must be equipped in accordance with ČSN 75 3415. Keep in a well-ventilated area away from ignition sources. Electrical equipment must conform to the respective regulations. Protect from electrostatic charges. Do not smoke.

7.3 Specific Final Use

Sulphur is designed to be used as a raw material for further industrial processing, e.g. production of sulphuric acid, etc. Sulphur shall not be used for any other purposes not specified in the process documentation.

8 Exposure Controls / Personal Protection

8.1 Exposure Limits

8.1.1 According to Government Resolution no. 361/2007 Coll.

Not specified for sulphur.

With regards to the potential existence of hydrogen sulphide and development of sulphur dioxide, the following limitations shall be adhered to.

	hydrogen sulphide	sulphur dioxide
PEL mg/m ³	10	5
NPK-P mg/m ³	20	10
fatal concentration	1 4000	

8.1.2 DNEL according to CSR

N/A.

8.2 Exposure Controls

General safety and sanitary precautions: never eat, drink or smoke when working with liquid sulphur. Before meals and drinks and after work wash the skin with warm water and soap and apply a suitable moisturizing cream.

8.2.1 Employee Exposure Controls

<i>Respiratory protection:</i>	Respirator with cartridge
<i>Eye protection:</i>	Chemical type goggles.
<i>Hand protection:</i>	Safety gloves.
<i>Skin protection:</i>	Protective clothing

8.2.2 Environmental Exposure Controls

See also Clauses 2.1, 6.2 and 16.3.

9 Physical and Chemical Properties

9.1 Basic Physical and Chemical Properties

<i>Physical state (at 20 °C):</i>	solid (supplied molten at temperatures approx. from 140 to 160 °C)
<i>Colour:</i>	bright yellow in solid state, yellow brown to brown in liquid state
<i>Odour:</i>	characteristic sulphurous odour
<i>Liquid density at 150 °C:</i>	1 780 kg/m ³
<i>Boiling Point:</i>	444.6 °C
<i>Solubility in water:</i>	insoluble
<i>Vapour pressure at 20°C:</i>	---
<i>Flash point:</i>	approx. 168°C
<i>Concentration explosion limits:</i>	<i>lower:</i> 2.3 g of dust / m ³ of air <i>upper:</i> ---
<i>Maximum experimental safety gap</i>	---

9.2 Additional information

<i>Dynamic viscosity, Pa.s</i>	at 120 °C:	0.017
	at 158 °C:	0.006
	at 160 °C:	5.95
	at 188 °C:	93.0
	at 200 °C:	78.86
	at 300 °C:	3.72

10 Stability and Reactivity

10.1 Reactivity

The product is stable at normal use conditions.

10.2 Chemical stability

The product is stable at normal use conditions.

10.3 Possibility of Hazardous Chemical Reactions

None in normal conditions, when burning, toxic and corrosive sulphur dioxide is developed.

10.4 Conditions to Avoid

Concentrations within explosion limits, presence of ignition sources, contact with naked flames.

10.5 Incompatible Materials

Oxidizing agents.

10.6 Hazardous Decomposition Products

Indecomposable.

11 Toxicological Information

11.1 Acute toxicity

LD50 (oral)	> 2 000 mg/kg bw
LD50 (dermal)	> 2 000mg/kg bw
LC50 (inhalation)	> 5 430 mg/m ³ /4 h

11.2 Skin Causticity / Irritation

Irritating to skin.

11.3 Serious Damage / Irritation to Eyes

N/A.

11.4 Respiratory / Skin Sensitisation

N/A.

11.5 Mutagenic Impacts in Elementary Cells

N/A.

11.6 Carcinogenicity:

N/A.

11.7 Reproductive Toxicity

N/A.

11.8 STOT - Single Exposure

Unknown.

11.9 STOT - Repeated Exposure

N/A.

11.10 Inhalation Hazards

N/A.

12 Ecological Information

12.1 Toxicity

N/A.

12.2 Persistency and Degradability

N/A.

12.3 Bio-Accumulative Potential

N/A.

12.4 Mobility in Soil:

N/A.

12.5 PBT Assessment Results

Does not contain substances indicating compliance with the criteria for PBT or vPvB substances.

12.6 Other Adverse Effects

N/A.

13 Disposal Considerations

13.1 Legal Regulations on Wastes

In accordance with the Act No. 185/2001 Coll., on wastes, as amended, including related regulations and provisions, the product is classified as follows:

Waste type code according to the inventory:	05 01 16
Waste category:	O

13.2 Substance Disposal

Wastes and unused residues are disposed of in compliance with the applicable legislation on wastes, usually by controlled dumping or recycling. Incineration is inappropriate.

13.3 Contaminated Container Disposal

Sulphur is usually supplied in railway tank cars. Decontamination and disposal of these containers follows the applicable ADR/RID regulations.

14 Transportation

The product is usually transported using railway tank cars.

Nomenclature and labelling in accordance with the European Agreement on Dangerous Goods RID/ADR as amended:

SULPHUR, MOLTEN	Hazard ID No.:	44	Classification code:	F3
	UN No.:	2448	Class:	4.1
			Packing Group:	III



15 Regulatory Information

15.1 Safety, health and environmental regulations / legislation specific for the substance or mixture

- Act No. 258/2000 Coll., on public health protection, as amended, including the related regulations and provisions
- Act No. 262/2006 Coll., the Labour Code, as amended, including the related regulations and provisions
- Government Regulation No. 361/2007 Coll., on Occupational Safety, as amended, including the related regulations and provisions

15.2 Chemical Safety Assessment

Has been performed.

15.3 Other Regulatory Information

15.3.1 Act No. 86/2002 Coll., on air conservation

Not applicable to the product.

15.3.2 ČSN 65 0201 Flammable Liquids – Plants and Storage Facilities

Not applicable to the product.

15.3.3 ČSN 33 0371 Non-explosive Electrical Equipment – Explosive Mixtures – Classification and Test Methods

In accordance with ČSN 33 0371, the product is classified as the T3 temperature class product.

16 Other Information Applying to the Dangerous Chemical Substance or Preparation

16.1 Information on Changes

All changes in this safety data sheet were made in accordance with the new data on substance hazardness gained during its registration process and in accordance with the requirements of the regulation no. 1907/2006/EC and the regulation no. 1272/2008.

16.2 Used literature

- Regulation (EC) No. 1907/2006 of the European Parliament and the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended, including related rules and regulations
- Regulation of the European Parliament and of the Council (EC) no. 1272/2008 dated 16 December 2008 on classification, labelling and packaging of substances and mixture, as amended, including related rules and regulations
- Act No. 86/2002 Coll., on air conservation, as amended, including the related regulations and provisions
- Act No. 111/1994 Coll., on road transport, as amended, including the related regulations and provisions (ADR)
- Act No. 185/2001 Coll., on wastes, as amended, including the related regulations and provisions
- Act No. 254/2001 Coll., Water Act, as amended, including the related regulations and provisions
- Act No. 258/2000 Coll., on public health protection, as amended, including the related regulations and provisions
- Act No. 262/2006 Coll., the Labour Code, as amended, including the related regulations and provisions
- Act No. 266/1994 Coll., on railways, as amended, including the related regulations and provisions (RID)
- Act No. 356/2003 Coll., on chemical substances and chemical preparations, as amended, including the related regulations and provisions
- Government Regulation No. 361/2007 Coll., on Occupational Safety, as amended, including the related regulations and provisions
- ČSN 33 0371 Non-explosive Electrical Equipment – Explosive Mixtures – Classification and Test Methods
- ČSN 65 0201 Flammable Liquids – Plants and Storage Facilities

16.3 List of Used R-Phrases and H-Phrases, S-Phrases and P-Phrases

16.3.1 Standards Phrases for Specific Degree of Risk (R-Phrases)

R38 Irritating to skin

16.3.2 Hazard phrases (H-phrases):

H315 Causes skin irritation

16.3.3 Standard Instructions for Safe Handling (S-Phrases)

S2 Keep out of the reach of children

S24 Avoid contact with skin

S37 Wear suitable protective gloves

S46 If swallowed, seek medical advice immediately and show this container or label

16.3.4 Instructions for Safe Handling (P-phrases):

P280 Wear protective gloves, safety goggles and protective clothing

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

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

16.4 Training Instructions

Trainings are carried out in accordance with the requirements of the Labour Code and Act No. 258/2000 Coll.

16.5 Other Information

The information contained in this Material Safety Data Sheet applies to the specified product only and is based on our current knowledge and experience and need not be comprehensive. The user is responsible for the proper handling of the product in accordance with the applicable legislation.