SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY UNDERTAKING

1.1. Product identifier

LIQUID SULFUR

Product obtained by Claus method during coke oven gas desulphurization.

EC Number: 231-722-6
CAS Number: 7704-34-9
Index Number: 016-094-00-1
Registration number: 01-2119487295-27-0167

1.2. Relevant identified uses of the substance ~~or mixture~~ and uses advised against

Liquid sulfur is used as raw material to chemical and rubber industries.

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Koksownia Częstochowa Nowa Sp. z o.o.
ul. Chłodna 51
00-867 Warszawa
Installation address and correspondence:
Koksownia Częstochowa Nowa Sp. z o.o.
ul. Odlewników 20
42-200 Częstochowa
tel. 0048 34 / 389-07-01
fax. 0048 34 / 389-07-99
REGON 141056327
e-mail: koksownia@koksownianowa.pl
www.koksownianowa.pl
http://kpkreach.pl

1.4. Emergency telephone

Information service: +48 662 137 739
Emergency office: 07:00 do 15:00 tel.: +48 34 389-07-61
piotr.bargiel@koksownianowa.pl

SECTION 2: HAZARDS IDENTIFICATION

Information about particular health hazard and environmental harmfulness.
Sulfur in liquid state, above melting temperature 119°C, creates hazards of burn and emission of fumes containing sulfur dioxide.

2.1. Classification of the substance ~~or mixture~~

CLASSIFICATION ACCORDING TO REGULATION (EC) NO 1272/2008

Skin. Irrit. 2 H315

The Classification is based on the European Registration Dossier

2.2. Label elements

Pictograms defining kinds of danger according to Regulation (EC) No 1272/2008

GHS07

Signal Word:
Warning

Hazard statement
H315 Causes skin irritation.

Precautionary statements
Prevention
P280 Wear protective gloves/protective clothing/eye protection/face protection

Response
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P332+P313 If skin irritation occurs: Get medical advice/attention

2.3. Other hazards

Molten sulfur creates hazards due to its high temperature (above melting temperature of ca. 120°C). Sulfur fumes and dust may cause irritations of eyes and respiratory system, as well as skin, when under prolonged exposure. Causes burn during contact with skin.
Environmental hazard occurs, when product is subjected to high temperature facilitating it ignition. Sulfur during combustion emits toxic and caustic gases and fumes. Sulfur dust may form explosive mixtures with air.
Substance does not meet the criteria of PBT and vPvB.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Sulfur, in form of technical product, contains technological impurities originating from desulphurization process.
Sulfur content: over ***99.9 %***
Ash content: below ***0.08 %***

Dangerous components	CAS EINECS No	Content [%]	Classification* Regulation (EC) No 1272/2008	Pictogram, codes of signal words	Specific Concentration Limits, M-factors
Sulphur	231-722-6 7704-34-9	99.9%	Skin Irrit. 2; H315	GHS07 Warning	Skin Irrit. 2; C ≥1

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

4.1.1. First aid instructions by relevant routes of exposure

Contact with eyes	Rinse eyes immediately with plenty of cool water. In case when small sulfur particles remain in eyes, perform aseptic dressing and provide medical assistance.
Contact with skin	Remove dirty clothing. Rinse body with cool water with soap. Dress scalding, disinfect possible small grazes or cuts. Contact doctor if necessary.
Oral poisoning	Possibility of consumption by mistake is very unlikely. When swallowed in small amounts rinse out mouth with cool water. Do not cause vomiting. Serve 500 cm^3 of milk and water with scrambled raw egg white. Perform gastric lavage with 5% solution of sodium bicarbonate. Contact doctor if necessary.
Inhalation	Provide access to fresh air. In case of discomfort, provide medical aid.

4.2. Most important symptoms and effects, both acute and delayed

No available data.

4.3. Indication of any immediate medical attention and special treatment needed

No available data.

SECTION 5: FIRE – FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media

In the case of fire use appropriate extinguishing media (agents): foam, powder or spreading stream of water, dry extinguishing media (sand, earth).
Unsuitable extinguishing media
Avoid using CO_2 (possibility CS_2 formation) and solid stream of water.

5.2. Special hazards arising from the substance or mixture
In case of fire use dispersed water stream, extinguishing foam or other extinguishing media. Avoid CO_2 extinguisher. Protect from penetration of extinguishing water into the ground water.

5.2. Other information
Very dangerous when combusted. Immediately remove people from danger zone, where toxic gases from sulfur combustion are detected. Immediately call specialized units of fire brigade and chemical rescue. In fire area no person allowed, except ones with self-contained breathing apparatus. Main combustion product is very toxic gas – sulfur dioxide. Chilled liquid sulfur sublimes forming “flowers of sulfur”. Sulfur dust may form explosive mixtures with air.

5.3. Advice for firefighters
Use appropriate protective clothing, resistant to high temperatures as well as respiratory equipment. Flames are low, dark blue at night, faintly visible during day. Vapors resublime, sulfur dust may form explosive mixtures with air. Molten sulfur contains small amounts of hydrogen sulfide. Toxic sulfur dioxide is product of sulfur combustion. Avoid penetration into sewage system and ground water. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Provide preliminary assistance, if necessary. Help during the evacuation from the contaminated area, if possible. Call the appropriate service to provide first aid. Avoid breathing the vapors, try to stand against the wind if possible.

6.1.2. For emergency responders
Remove all persons from danger zone. Persons without suitable protection are not allowed to the danger zone. Persons providing aid should be equipped with protective clothing, gloves, protective glasses (face protection) and gas filtration masks or breathing apparatus.

6.2. Environmental precautions
Protect sewage system, do not allow the product to reach sewage system or water bodies.
In case of the product releasing to environment, suitable services should be informed.

6.3. Methods and material for containment and cleaning up

6.3.1. Prevention

In areas of potential release to the environment use bunds and/or trenches to prevent spreading of the spill.

6.3.2. Disposal
Allow molten substance to cool down spontaneously. Collect mechanically, clean polluted area. Recycle if possible or collect in container to store in specialized landfill or to utilize according to current regulations.

6.3.3. Unsuitable methods
Never use a strong stream of water for removing (dispersion) of spill.

6.4. Reference to other sections
Dispose of contaminated material as waste according to item 13.
See Section 8 for information on personal protection equipment.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

7.1.1. General recommendations
During production, storage and transportation keep basic safety precautions, do not allow releasing of vapors. Installations should be hermetic with exhaust ventilation in places potential of releasing of vapors. Do not admit to heating above ignition temperature. Do not inhale vapours, protect skin and eyes. Provide for possibility of electricity discharging – ground the installations. During filling the tanks avoid filling in a manner that causes splashing of liquid.

7.1.2. Occupational hygiene
Take precautions during utilization: do not eat, drink, smoke, take drugs, avoid inhalation of fumes and vapors. Wash hands after work and during breaks. Wear protective clothing, shoes, gloves and glasses. Wash contaminated protective clothing separately.

7.2. Conditions for safe storage, including any incompatibilities
Store in appropriate, adapted, marked (labelled) and grounded containers according to fire and environmental protection regulations. Molten sulfur is stored and transported at temperature above 135^{o}C. Do not admit heating above ignition temperature (160^{o}C). Avoid contact with fire sources and uncontrolled temperature increase. Containers' thermal insulation should be non-flammable. Electric installation must be compliant with explosive prevention standards. Protect from elements made of copper, as well as from ammonia, nitric acid, metal dust, chlorates, nitrates, perchlorates, permanganates, anhydrides and oxidants. Container should be 98% full. Liquid sulfur is corrosive for metals.

7.3. Specific end use(s)
See attached the Exposure Scenario.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Threshold Limit Values (TLV) of particular components emitted from molten sulfur in workplaces
According to Polish Regulations

Component	TLV-TWA [mg/m^3]	TLV-STEL [mg/m^3]	Remarks: Labeling the substance, the notation "skin*
Hydrogen sulfide	10	20	-
Sulfur dioxide	1.3	2.7	-

** Labeling the substance by the notation "skin" means that the absorption of the substance through the skin may be just as important as for inhalation exposure*

8.2. Exposure controls

During contact with product (technological operations, transport) suitable protective measures should be taken for both minimizing the contact and assurance of required safety regulations.

OCCUPATIONAL EXPOSURE CONTROLS, INDIVIDUAL PROTECTIVE EQUIPMENT

Respiratory protection	In case of intensified vapor exposure use gas filtration masks or breathing apparatus when needed.
Hands and skin	Use leather protective gloves according to suitable regulations. Gloves should be changed when evidence of wear is apparent. Gloves should be used only on clean hands. Use barrier cream for skin. Use suitable standard working clothing which should be often washed and changed.
Eye and face	Use protective glasses or face protection. Cool water should be available near the work stand.
Occupational hygiene	Do not eat, drink or smoke cigarettes during work to assure good ventilation at closed work stand. Ensure good ventilation in closed workplaces.
Thermal hazard	Temperature of storage and transportation of liquid sulfur is above melting temperature. Therefore, during technological operations protective clothing should be complete – thermal effect is possible.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state	Hot liquid
Colour	Light yellow
Odour	Characteristic smell of sulphur
Melting point/freezing point	113 - 120°C
Boiling point or initial boiling point and boiling range	444,6°C
Flammability	Above the flash point, sulfur ignites on contact with an ignition source.
Lower and upper explosion limit	Does not apply to liquids. The risk of explosion may arise due to the formation of an explosive mixture of air with sulfur vapors and dust generated during resublimation.
Flash point	Above 160ºC
Auto-ignition temperature	Above 232°C
Decomposition temperature	Chemical element dosn't thermally decompose.
pH	Not determined, pH of the water extract approx. 7
Kinematic viscosity	Parameter can,t be determined
Solubility	Not soluble in water. Soluble in CS_2 and some organic solvents p.e.toluene and ethylene alcohol.
Partition coefficient n-octanol/water (log value)	Not determined, inorganic sustance
Vapour pressure	1,4×10-6 hPa w 20°C 136 hPa in 119°C
Density and/or relative density	Below 2000 kg/m^3 in 120ºC
Relative vapour density	Not determined
Particle characteristics	Not applicable liquids

9.3. Other information
None.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity
Liquid sulfur shows no chemical reactivity posing a threat.

10.2. Chemical stability
Sulfur is chemically stable at room temperature and after melting. At elevated temperature crystallographic changes occur.

10.3. Possibility of hazardous reactions
Combustion of sulfur occurs above the ignition temperature.

10.4. Conditions to avoid
Avoid contact with open flame, ignition sources, sparks, especially at elevated temperature.

10.5. Incompatible materials
Avoid contact with alkaline and alkaline earth metals, oxides of metals and nonmetals, fluorine, oxidants, nitrites, acids, peroxide compounds, hydrides, ethers, carbides.

10.6. Hazardous decomposition products
During combustion, as well as oxidation at temperature above 250^{o}C toxic sulfur dioxide is formed, as well as sulfur trioxide in low quantity.

SECTION 11: TOXICOLOGICAL INFORMATION

Liquid sulfur is non-toxic. Sulfur vapors and dusts may be irritating for eyes and respiratory system and also during prolonged contact with skin. In contact with skin thermal burn is caused.

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008
After contact with vapors of sulfur irritation of respiratory system and mucous membranes of eyes occurs as well as fatigue, sleepiness, dizziness and headache.
Data in accordance with registration dossier:

Toxicological data

	Dose	Value	Unit
Sulfur	LD_{50} - oral, rat	>2000	mg/kg
	LC_{50} - inhalation, rat	>5.43	mg/L
	LD_{50} - dermal, rat	>2000	mg/kg

Acute toxicity
Does not show acute toxicity.

Skin corrosion/irritation
Irritates skin.

Serious eye damage/irritation
Eyes irritation does not occur.

Respiratory or skin sensitization
Sensitization of the skin and respiratory tracks does not occur.

Germ cell mutagenicity
Sulfur is not mutagenic substance.

Carcinogenicity
Sulfur is not carcinogenic substance.

Reproductive toxicity

Sulfur not shows negative influence for reproductiveness.

Aspiration hazard
Swallowing and penetration through respiratory tract is not dangerous.

Health results of chronic exposure
Chronic exposure to toxic vapors of sulfur can evolve irritation of mucous membranes, headache and dizziness, fatigue, sleepiness and problems with gastrointestinal tract.

Skin	The possibility of burns and irritation, after prolonged exposure red marks and even destruction of the skin.
Eyes	Irritation in the case of contact with vapors and dust, possibility of conjunctival inflammation.
Alimentary tracks	Nauseas and vomiting are possible.
Respiratory tracks	Vapors realase from molten sulfur can irritate respiratory system.

11.1. Information on other hazards

11.1.1. Endocrine disrupting properties
See section 12.6.

11.1.2. Other nformations
None.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity
Sulfur in natural conditions is not very dangerous to the environment. It is gradually absorbed by ecosystem. As a result of its oxidation (combustion) toxic gas is formed: sulfur dioxide.

12.2. Persistence and degradability
Not determined (inorganic substance).

12.3. Bioaccumulative potential
Not determined (inorganic substance).

12.4. Mobility in soil
Not determined (inorganic substance).

12.5. Results of PBT and vPvB assessment
Assessment of PBT and vPvB was not carried out.

12.6. Endocrine disrupting properties
Sulfur has no endocrine disrupting properties.

12.7. Other adverse effects

None.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Proceeding with waste
Avoid releasing to environment according to chemical products processing standards. Act on legal regulations relating to protection of waters and soil against pollution. Method of disposal should be coordinated with Department of Environmental Protection of Provincial Office. Polluted wastes, if possible, should be transferred to recycling. Waste should be stored in specialized landfill or incinerated in incineration plants.

Method of used packaging removal
If possible use repeatedly or store in specialized landfill. Avoid fire. Incinerate in incineration plants.

SECTION 14: TRANSPORT INFORMATION

Product is a harmful substance by means of transportation regulation, according to Agreement ADR/RID, ICAO and IATA.

14.1. UN number or ID number
UN number 2448

14.2. UN proper shipping name
SULPHUR MELTED

14.3. Transport hazard class(es)
4.1

14.4. Packing group
III

14.5. Environmental hazards
The substance is hazardous to the environment, because hot liquid sulfur vapors may contain sulfur dioxide and hydrogen sulfide.

14.6. Special precautions for user
Transport in temperature below ignition temperature.

14.7. Maritime transport in bulk according to IMO instrument
When using the maritime transport, classification in accordance with the IMDG Codex for UN 2448 substance should be used.

SECTION 15: REGULATORY INFORMATION

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

15.2. Chemical safety assessment
Chemical Safety Report belongs to registration dossier.
Exposure scenarios are attached to SDS.

SECTION 16: OTHER INFORMATIONS

Safety data Sheet had been prepared according to COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

SOURCE OF INFORMATION:

- Registration Dossier prepared by Lead Registrant (RÜTGERS Basic Aromatics GmbH);
- IUCLID Data Bank (European Commission – European Chemicals Bureau).

Full H statements

These H statements refer to section 2: "Dangerous Components".
H315: Causes skin irritation.

Version No 6 of SDS

Changes made in SDS 15.11.2022 - Removing of classification according to Directive No 67/548/EWG; Changes in titles of sections according to Regulation (EC) No 2015/830; Small editorial changes.

This version of SDS replaces all previous version of it.

All of the above data are based on our knowledge. At the same time they do not guarantee any specific product evaluation and they cannot be used as the basis of any legally solid agreements. Above information is given for description of product from safety point of view.

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