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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Trade name	: MOLTEN SULFUR
Chemical name	: sulfur
EC Index	: 016-094-00-1
EC-No.	: 231-722-6
CAS-No.	: 7704-34-9
REACH registration No	: 01-2119487295-27-0120
Product group	: Trade product

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

1.2.1. Relevant identified uses


Intended for general public

Main use category : Industrial use, Professional use, Consumer use

Use of the substance/mixture : see attached exposure scenario.

Title	Use descriptors
Manufacture of substance (ES Ref.: 01)	SU3, SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC1, ERC4, ESVOC SPERC 1.1.v1
Use as an intermediate (ES Ref.: 02)	SU3, SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, PROC22, PROC23, ERC6a, ESVOC SPERC 6.1a.v1
Distribution (ES Ref.: 03)	SU3, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1
Formulation & (re)packing of substances and mixtures (ES Ref.: 04)	SU3, SU10, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, PROC23, PROC24, ERC2, ESVOC SPERC 2.2.v1
Use as binders and release agents (ES Ref.: 05)	SU3, PROC1, PROC2, PROC3, PROC4, PROC6, PROC8a, PROC8b, PROC10, PROC13, PROC14, ERC4, ESVOC SPERC 4.10a.v1
Use in rubber production and processing (ES Ref.: 10)	SU3, SU10, SU11, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC21, ERC1, ERC4, ERC6d, ESVOC SPERC 4.19.v1
Use as a fuel (ES Ref.: 11)	SU3, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC16, ERC7, ESVOC SPERC 7.12a.v1
Use as binders and release agents (ES Ref.: 06)	SU22, PROC1, PROC2, PROC3, PROC4, PROC6, PROC8a, PROC8b, PROC10, PROC13, PROC14, ERC8a, ERC8d, ESVOC SPERC 8.10b.v1
Use in agrochemicals (ES Ref.: 07)	SU22, PROC1, PROC4, PROC8a, PROC8b, PROC11, PROC13, ERC8a, ERC8d, ESVOC SPERC 8.11a.v1
Road and construction applications (ES Ref.: 09)	SU22, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, ERC8d, ERC8f, ESVOC SPERC 8.15.v1
Explosives manufacture & use (ES Ref.: 12)	SU22, PROC1, PROC3, PROC5, PROC8a, PROC8b, ERC8e
Use in agrochemicals (ES Ref.: 08)	SU21, PC12, PC22, PC27, ERC8a, ERC8d, ESVOC SPERC 8.11b.v1
Use in matches (ES Ref.: 13)	SU21, PC11, ERC8e
Use in fireworks (ES Ref.: 14)	SU21, PC11, ERC8e

Full text of use descriptors: see section 16

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1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier

NIS a.d. Novi Sad
 Narodnog Fronta 12
 21000 Novi Sad - Serbia
 T + 381 (0) 21 481 1111
Dragana.Cvetkov@nis.eu (REACH)

Only Representative

BENS Consulting d.o.o.
 Špruha 19
 1236 Trzin - Slovenija
 T +386 41 979 800
info@bens-consulting.eu

1.4. Emergency telephone number

Emergency number : + 381 (0) 21 481 1111
 Only available during office hours.

Country	Official advisory body	Address	Emergency number
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin Irrit. 2 H315

Full text of H- and EUH-statements: see section 16

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS07

Signal word :

Warning

Hazard statements (CLP) :

H315 - Causes skin irritation.

Precautionary statements (CLP) :

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.

Listed in Annex VI :

EC Index-No.: 016-094-00-1

Child-resistant fastening :


Not applicable

Tactile warning :

Not applicable

2.3. Other hazards

Other hazards : Results of PBT and vPvB assessment : Not applicable.

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This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

Contains no PBT/vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance name	: sulfur
CAS-No.	: 7704-34-9
EC-No.	: 231-722-6
EC Index	: 016-094-00-1

Substance name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
sulfur	(CAS-No.) 7704-34-9 (EC-No.) 231-722-6;231-984-1 (EC Index) 016-094-00-1	≤ 100	Skin Irrit. 2, H315
Hydrogen sulphide (H2S)	(CAS-No.) 7783-06-4 (EC-No.) 231-977-3 (EC Index) 016-001-00-4	$< 0,001$	Flam. Gas 1A, H220 Press. Gas (Comp.), H280 Acute Tox. 2 (Inhalation), H330 Aquatic Acute 1, H400

Full text of H- and EUH-statements: see section 16


3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

Additional advice	: First aider: Pay attention to self-protection!. Concerning personal protective equipment to use, see section 8. In case of doubt or persistent symptoms, consult always a physician. Show this safety data sheet to the doctor in attendance.
Inhalation	: Remove casualty to fresh air and keep warm and at rest. Give oxygen or artificial respiration if necessary. In case of doubt or persistent symptoms, consult always a physician.
Skin contact	: Remove contaminated clothing and shoes. Gently wash with plenty of soap and water. Wash contaminated clothing before reuse. In case of doubt or persistent symptoms, consult always a physician.
Eyes contact	: Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Continue rinsing. In case of doubt or persistent symptoms, consult always a physician.
Ingestion	: Rinse mouth thoroughly with water. Do NOT induce vomiting. Get medical advice/attention.

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

Inhalation	: May cause respiratory irritation. The following symptoms may occur: Shortness of breath. Cough.
Skin contact	: Causes skin irritation. Hot product (liquid) can cause thermal burns.
Eyes contact	: Hot product (liquid) can cause thermal burns. May cause eye irritation.
Ingestion	: May cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray, Alcohol resistant foam, Carbon dioxide, Dry extinguishing powder.
Unsuitable extinguishing media	: Strong water jet.

5.2. Special hazards arising from the substance or mixture

Specific hazards	: Combustible. Vapours may form explosive mixture with air. Dust may form explosive mixture in air.
Hazardous decomposition products in case of fire	: Sulphur oxides. Hydrogen sulfide.

5.3. Advice for firefighters

Firefighting instructions	: Evacuate area. Use water spray or fog for cooling exposed containers. Contain the extinguishing fluids by bunding. Prevent fire fighting water from entering the environment.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus.
Other information	: Do not allow run-off from fire-fighting to enter drains or water courses. Dispose of waste in accordance with environmental legislation.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel


For non-emergency personnel	: Evacuate unnecessary personnel. Keep upwind. Provide adequate ventilation. Do not breathe vapours, dust. Avoid contact with skin, eyes and clothing. Wear recommended personal protective equipment. Concerning personal protective equipment to use, see section 8. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ensure equipment is adequately earthed.
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6.1.2. For emergency responders

For emergency responders	: Ensure procedures and training for emergency decontamination and disposal are in place. Concerning personal protective equipment to use, see section 8.
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6.2. Environmental precautions

Do not allow to enter into surface water or drains. Notify authorities if product enters sewers or public waters.

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6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Stop leak if safe to do so. Dam up the solid spill. Take up mechanically (sweeping, shovelling) and collect in suitable container for disposal. Large spills: scoop solid spill into closing containers. This material and its container must be disposed of in a safe way, and as per local legislation. Hose down gases, fumes and/or dust with water.

6.4. Reference to other sections

Concerning personal protective equipment to use, see section 8. Concerning disposal elimination after cleaning, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Provide adequate ventilation. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Do not breathe dust, vapours. Avoid contact with skin, eyes and clothing. Take any precaution to avoid mixing with Incompatible materials, Refer to Section 10 on Incompatible Materials. Ensure proper process control to avoid excess waste discharge (temperature, concentration, pH, time). Avoid release to the environment. Take precautionary measures against static discharges. Ensure equipment is adequately earthed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hygiene measures : Keep good industrial hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feedingstuffs. Remove contaminated clothes. Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a dry, cool and well-ventilated place. Do not store near or with any of the incompatible materials listed in section 10.

Storage temperature : 127 – 149 °C

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

Special rules on packaging : Containers which are opened should be properly resealed and kept upright to prevent leakage. Keep container tight closed.

Packaging materials : Keep only in the original container. Keep in insulated tanks to maintain the product in the liquid state.


7.3. Specific end use(s)

see attached exposure scenario.


SECTION 8: Exposure controls/personal protection

8.1. Control parameters


sulfur (7704-34-9)		
Latvia	OEL TWA	6 mg/m ³
Lithuania	IPRV (OEL TWA)	6 mg/m ³
Romania	OEL STEL	15 mg/m ³ (dust)
Hydrogen sulphide (H ₂ S) (7783-06-4)		
EU	IOEL TWA	7 mg/m ³
EU	IOEL TWA [ppm]	5 ppm

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Hydrogen sulphide (H2S) (7783-06-4)		
EU	IOEL STEL	14 mg/m ³
EU	IOEL STEL [ppm]	10 ppm
Austria	MAK (OEL TWA)	7 mg/m ³
Austria	MAK (OEL TWA) [ppm]	5 ppm
Austria	MAK (OEL STEL)	7 mg/m ³
Austria	MAK (OEL STEL) [ppm]	5 ppm
Austria	OEL C	7 mg/m ³
Austria	OEL C [ppm]	5 ppm
Belgium	OEL TWA	7 mg/m ³
Belgium	OEL TWA [ppm]	5 ppm
Belgium	OEL STEL	14 mg/m ³
Belgium	OEL STEL [ppm]	10 ppm
Bulgaria	OEL TWA	7 mg/m ³
Bulgaria	OEL TWA [ppm]	5 ppm
Bulgaria	OEL STEL	14 mg/m ³
Bulgaria	OEL STEL [ppm]	10 ppm
Croatia	GVI (OEL TWA) [1]	7 mg/m ³
Croatia	GVI (OEL TWA) [2]	5 ppm
Croatia	KGVI (OEL STEL)	14 mg/m ³
Croatia	KGVI (OEL STEL) [ppm]	10 ppm
Cyprus	OEL TWA	7 mg/m ³
Cyprus	OEL TWA [ppm]	5 ppm
Cyprus	OEL STEL	14 mg/m ³ (vapor)
Cyprus	OEL STEL [ppm]	10 ppm (vapor)
Czech Republic	PEL (OEL TWA)	7 mg/m ³
Denmark	OEL TWA [1]	7 mg/m ³
Denmark	OEL TWA [2]	5 ppm
Estonia	OEL TWA	7 mg/m ³
Estonia	OEL TWA [ppm]	5 ppm
Estonia	OEL STEL	14 mg/m ³
Estonia	OEL STEL [ppm]	10 ppm
Finland	HTP (OEL TWA) [1]	7 mg/m ³
Finland	HTP (OEL TWA) [2]	5 ppm
Finland	HTP (OEL STEL)	14 mg/m ³
Finland	HTP (OEL STEL) [ppm]	10 ppm
France	VME (OEL TWA)	7 mg/m ³ (restrictive limit)
France	VME (OEL TWA) [ppm]	5 ppm (restrictive limit)
France	VLE (OEL C/STEL)	14 mg/m ³ (restrictive limit)
France	VLE (OEL C/STEL) [ppm]	10 ppm (restrictive limit)
Germany	Occupational exposure limit value (mg/m ³) (TRGS900)	2(l) 7,1 mg/m ³ peak limitation : 2(l)
Germany	Occupational exposure limit value (ppm) (TRGS900)	5 ppm Y= There is no fertility risk if the threshold limit as well as the biological threshold limit (BGW) is met

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Hydrogen sulphide (H2S) (7783-06-4)		
Gibraltar	OEL TWA	7 mg/m ³
Gibraltar	OEL TWA [ppm]	5 ppm
Gibraltar	OEL STEL	14 mg/m ³
Gibraltar	OEL STEL [ppm]	10 ppm
Greece	OEL TWA	7 mg/m ³
Greece	OEL TWA [ppm]	5 ppm
Greece	OEL STEL	14 mg/m ³
Greece	OEL STEL [ppm]	10 ppm
Hungary	AK (OEL TWA)	7 mg/m ³
Hungary	CK (OEL STEL)	14 mg/m ³
Ireland	OEL TWA [1]	7 mg/m ³
Ireland	OEL TWA [2]	5 ppm
Ireland	OEL STEL	14 mg/m ³
Ireland	OEL STEL [ppm]	10 ppm
Italy	OEL TWA	7 mg/m ³
Italy	OEL TWA [ppm]	5 ppm
Italy	OEL STEL	14 mg/m ³
Italy	OEL STEL [ppm]	10 ppm
Latvia	OEL TWA	7 mg/m ³
Latvia	OEL TWA [ppm]	5 ppm
Lithuania	IPRV (OEL TWA)	7 mg/m ³
Lithuania	IPRV (OEL TWA) [ppm]	5 ppm
Lithuania	TPRV (OEL STEL)	14 mg/m ³
Lithuania	TPRV (OEL STEL) [ppm]	10 ppm
Lithuania	NRV (OEL C)	20 mg/m ³
Lithuania	NRV (OEL C) [ppm]	15 ppm
Luxembourg	OEL TWA	7 mg/m ³
Luxembourg	OEL TWA [ppm]	5 ppm
Luxembourg	OEL STEL	14 mg/m ³
Luxembourg	OEL STEL [ppm]	10 ppm
Malta	OEL TWA	7 mg/m ³
Malta	OEL TWA [ppm]	5 ppm
Malta	OEL STEL	14 mg/m ³
Malta	OEL STEL [ppm]	10 ppm
Netherlands	TGG-8u (OEL TWA)	2,3 mg/m ³
Poland	NDS (OEL TWA)	7 mg/m ³
Poland	NDSch (OEL STEL)	14 mg/m ³
Portugal	OEL TWA	7 mg/m ³ (indicative limit value)
Portugal	OEL TWA [ppm]	5 ppm (indicative limit value)
Portugal	OEL STEL	14 mg/m ³ (indicative limit value)
Portugal	OEL STEL [ppm]	10 ppm (indicative limit value)

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Hydrogen sulphide (H2S) (7783-06-4)		
Romania	OEL TWA	7 mg/m ³
Romania	OEL TWA [ppm]	5 ppm
Romania	OEL STEL	14 mg/m ³
Romania	OEL STEL [ppm]	10 ppm
Slovakia	NPHV (OEL TWA) [1]	7 mg/m ³
Slovakia	NPHV (OEL TWA) [2]	5 ppm
Slovakia	NPHV (OEL C)	14 mg/m ³
Slovenia	OEL TWA	7 mg/m ³
Slovenia	OEL TWA [ppm]	5 ppm
Slovenia	OEL STEL	14 mg/m ³
Slovenia	OEL STEL [ppm]	10 ppm
Spain	VLA-ED (OEL TWA) [1]	7 mg/m ³
Spain	VLA-ED (OEL TWA) [2]	5 ppm
Spain	VLA-EC (OEL STEL)	14 mg/m ³
Spain	VLA-EC (OEL STEL) [ppm]	10 ppm
Sweden	NGV (OEL TWA)	7 mg/m ³
Sweden	NGV (OEL TWA) [ppm]	5 ppm
Sweden	KTV (OEL STEL)	14 mg/m ³
Sweden	KTV (OEL STEL) [ppm]	10 ppm
United Kingdom	WEL TWA (OEL TWA) [1]	7 mg/m ³
United Kingdom	WEL TWA (OEL TWA) [2]	5 ppm
United Kingdom	WEL STEL (OEL STEL)	14 mg/m ³
United Kingdom	WEL STEL (OEL STEL) [ppm]	10 ppm
Norway	Grenseverdi (OEL TWA) [1]	7 mg/m ³
Norway	Grenseverdi (OEL TWA) [2]	5 ppm
Norway	Takverdi (OEL C) [1]	14 mg/m ³
Norway	Takverdi (OEL C) [2]	10 ppm
Switzerland	MAK (OEL TWA) [1]	7,1 mg/m ³
Switzerland	MAK (OEL TWA) [2]	5 ppm
Switzerland	KZGW (OEL STEL)	14,2 mg/m ³
Switzerland	KZGW (OEL STEL) [ppm]	10 ppm
Australia	OES TWA [1]	14 mg/m ³
Australia	OES TWA [2]	10 ppm
Australia	OES STEL	21 mg/m ³
Australia	OES STEL [ppm]	15 ppm
Canada (Quebec)	VECD (OEL STEL)	21 mg/m ³
Canada (Quebec)	VECD (OEL STEL) [ppm]	15 ppm
Canada (Quebec)	VEMP (OEL TWA)	14 mg/m ³
Canada (Quebec)	VEMP (OEL TWA) [ppm]	10 ppm
USA - ACGIH	ACGIH OEL TWA [ppm]	1 ppm
USA - ACGIH	ACGIH OEL STEL [ppm]	5 ppm
USA - IDLH	IDLH [ppm]	100 ppm

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Hydrogen sulphide (H2S) (7783-06-4)		
USA - NIOSH	NIOSH REL C	15 mg/m ³
USA - NIOSH	NIOSH REL C [ppm]	10 ppm
USA - OSHA	OSHA PEL C [ppm]	20 ppm

Additional information : Recommended monitoring procedures : Personal monitoring. Concentration measurement in air. Personal air monitoring. Room air monitoring


8.2. Exposure controls

Engineering measure(s)	: Provide adequate ventilation. Use with local exhaust ventilation. Take precautionary measures against static discharges. Use only explosion-proof equipment. Organisational measures to prevent /limit releases, dispersion and exposure. See Section 7 for information on safe handling.
Personal protective equipment	: The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Hand protection	: Wear chemically resistant gloves (tested to EN374) . Suitable material: rubber gloves. NBR (Nitrile rubber). The selection of specific gloves for a specific application and time of use in a working area, should also take into account other factors on the working space, such as (but not limited to): other chemicals that are possibly used, physical requirements (protection against cutting/drilling, skill, thermal protection), and the instructions/specification of the supplier of gloves.
Eye protection	: Use suitable eye protection (EN166): Safety glasses. face shield
Body protection	: Wear suitable protective clothing. Overalls, apron and boots recommended.
Respiratory protection	: In case of insufficient ventilation, wear suitable respiratory equipment. Half-face mask (DIN EN 140). full face mask (DIN EN 136). Filter type: ABEK/P (EN14387). Self-contained open-circuit compressed air breathing apparatus (EN 137)
Thermal hazard protection	: Use dedicated equipment. Heat resistant gloves (EN407).
Environmental exposure controls	: Do not allow to enter into surface water or drains. Comply with applicable Community environmental protection legislation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Solid. (Molten form).
Colour	: Yellow.
Odour	: Characteristic.
Odour threshold	: No data available
pH	: Not applicable
pH solution	: Not available
Relative evaporation rate (butylacetate=1)	: No data available
Melting / freezing point	: 112 – 120 °C
Freezing point	: No data available
Initial boiling point and boiling range	: 444 – 447 °C
Flash point	: 207 °C Closed cup
Auto-ignition temperature	: 232 °C

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Decomposition temperature	: No data available
Flammability	: Flammable
Vapour pressure	: 0,1333 Pa (20°C)
Vapour density	: 3,64 (Air=1)
Relative density	: 1,811
Solubility	: No additional information available.
Partition coefficient n-octanol/water	: No data available
Kinematic viscosity	: No additional information available
Dynamic viscosity	: No additional information available
Explosive properties	: Not applicable. The study does not need to be conducted because there are no chemical groups associated with explosive properties present in the molecule.
Oxidising properties	: Not applicable. The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with oxidising properties.
Explosive limits	: 35 – 1400 g sulfur dust/m3 air
Particle size	: Not available
Particle size distribution	: Not available
Particle shape	: Not available
Particle aspect ratio	: Not available
Particle aggregation state	: Not available
Particle agglomeration state	: Not available
Particle specific surface area	: Not available
Particle dustiness	: Not available

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Combustible. Reference to other sections: 10.4 & 10.5.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions


at high temperatures :H2S.

10.4. Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight. See Section 7 for information on safe handling.

10.5. Incompatible materials

oxidising substances. Acids. Alkali. See Section 7 for information on safe handling.

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10.6. Hazardous decomposition products

Reference to other sections 5.2.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Not classified (Based on available data, the classification criteria are not met)

sulfur (7704-34-9)	
LD50/oral/rat	> 2000 mg/kg bodyweight
LD50/dermal/rat	> 2000 mg/kg bodyweight
LD50/dermal/rabbit	> 2000 mg/kg
LC50/inhalation/4h/rat	> 5430 mg/m ³
LC50 Inhalation - Rat (Vapours)	5,43 mg/l/4h

Hydrogen sulphide (H2S) (7783-06-4)	
LC50/inhalation/4h/rat	0,99 mg/l (Exposure time: 1h)
LC50/inhalation/4h/rat (ppm)	501 ppm/4h

Skin corrosion/irritation : Causes skin irritation.
pH: Not applicable

Serious eye damage/irritation : Not classified (Based on available data, the classification criteria are not met)
pH: Not applicable

Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)

STOT-repeated exposure : Not classified (Based on available data, the classification criteria are not met)

sulfur (7704-34-9)	
NOAEL, subchronic, oral, Rat	1000 mg/kg bw/day
NOAEL, subacute, Dermal, Rat	400 mg/kg bw/day

Aspiration hazard : Not classified (Based on available data, the classification criteria are not met)

MOLTEN SULFUR (7704-34-9)	
Kinematic viscosity	No additional information available

Other information : Symptoms related to the physical, chemical and toxicological characteristics.
For further information see section 4.


11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

11.2.2 Other information

Other information : Symptoms related to the physical, chemical and toxicological characteristics, For further information see section 4

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SECTION 12: Ecological information

12.1. Toxicity

Environmental properties : Ecological injuries are not known or expected under normal use.

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

sulfur (7704-34-9)	
LC50 - Fish [1]	866 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
LC50 - Fish [2]	< 14 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])

Hydrogen sulphide (H2S) (7783-06-4)	
LC50 - Fish [1]	0,0448 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
LC50 - Fish [2]	0,016 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 - Crustacea [1]	0,022 mg/l

12.2. Persistence and degradability

MOLTEN SULFUR (7704-34-9)	
Persistence and degradability	Expected to be biodegradable.

12.3. Bioaccumulative potential

MOLTEN SULFUR (7704-34-9)	
Partition coefficient n-octanol/water	No data available
Bioaccumulative potential	Low.


Hydrogen sulphide (H2S) (7783-06-4)	
BCF - Fish [1]	(no bioaccumulation expected)
Partition coefficient n-octanol/water	0,45 (at 25 °C)

12.4. Mobility in soil

MOLTEN SULFUR (7704-34-9)	
Mobility in soil	No data available
Ecology - soil	No data available.

12.5. Results of PBT and vPvB assessment

MOLTEN SULFUR (7704-34-9)	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	

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12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

12.7. Other adverse effects

Other adverse effects : No data available

SECTION 13: Disposal considerations





13.1. Waste treatment methods

Product/Packaging disposal recommendations : Avoid release to the environment. Dispose of empty containers and wastes safely. See Section 7 for information on safe handling. Refer to manufacturer/supplier for information on recovery/recycling. Recycling is preferred to disposal or incineration. If recycling is not possible, eliminate in accordance with local valid waste disposal regulations. Handle contaminated packages in the same way as the substance itself. Dispose of contaminated materials in accordance with current regulations. Never use pressure to empty container. Do not puncture or incinerate.

European waste catalogue (2001/573/EC, 75/442/EEC, 91/689/EEC) : This material and its container must be disposed of as hazardous waste. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities


SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN


ADR	IMDG	IATA	ADN	RID
14.1. UN number				
2448	2448	2448	2448	2448
14.2. UN proper shipping name				
SULPHUR, MOLTEN	SULPHUR, MOLTEN	Sulphur, molten	SULPHUR, MOLTEN	SULPHUR, MOLTEN
Transport document description				
UN 2448 SULPHUR, MOLTEN, 4.1, III, (E)	UN 2448 SULPHUR, MOLTEN, 4.1, III	UN 2448 Sulphur, molten, 4.1	UN 2448 SULPHUR, MOLTEN, 4.1, III	UN 2448 SULPHUR, MOLTEN, 4.1, III
14.3. Transport hazard class(es)				
4.1	4.1	4.1	4.1	4.1
		Not applicable		
14.4. Packing group				
III	III	Not applicable	III	III
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

Special precautions for user : No data available

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- Overland transport

Classification code (ADR) : F3
 Special provisions : 538
 Limited quantities (ADR) : 0
 Excepted quantities (ADR) : E0
 Portable tank and bulk container instructions (ADR) : T1
 Portable tank and bulk container special provisions (ADR) : TP3
 Tank code (ADR) : LGBV(+)
 Tank special provisions (ADR) : TU27, TE4, TE6
 Vehicle for tank carriage : AT
 Transport category (ADR) : 3
 Hazard identification number (Kemler No.) : 44
 Orange plates : 
 Tunnel restriction code : E
 EAC code : 1Y

- Transport by sea


Limited quantities (IMDG) : 0
 Excepted quantities (IMDG) : E0
 IBC packing instructions (IMDG) : IBC01
 Tank instructions (IMDG) : T1
 Tank special provisions (IMDG) : TP3
 EmS-No. (Fire) : F-A
 EmS-No. (Spillage) : S-H
 Stowage category (IMDG) : C
 Segregation (IMDG) : SG17
 Properties and observations (IMDG) : Melting point: 119°C. Molten sulphur may contain hydrogen sulphide which is highly poisonous in low concentrations. When involved in a fire, evolves toxic, very irritating and suffocating gas. Forms explosive and extremely sensitive mixtures with oxidizing substances. Shipped molten above its melting point.

- Air transport

PCA Limited quantities (IATA) : Forbidden
 PCA limited quantity max net quantity (IATA) : Forbidden
 PCA packing instructions (IATA) : Forbidden
 PCA max net quantity (IATA) : Forbidden
 CAO packing instructions (IATA) : Forbidden
 CAO max net quantity (IATA) : Forbidden
 ERG code (IATA) : 3L

- Inland waterway transport

Classification code (ADN) : F3

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Special provisions (ADN) : 538
 Limited quantities (ADN) : 0
 Excepted quantities (ADN) : E0
 Carriage permitted (ADN) : T
 Equipment required (ADN) : PP
 Number of blue cones/lights (ADN) : 0

- Rail transport

Classification code (RID) : F3
 Special provisions (RID) : 538
 Limited quantities (RID) : 0
 Excepted quantities (RID) : E0
 Portable tank and bulk container instructions (RID) : T1
 Portable tank and bulk container special provisions (RID) : TP3
 Tank codes for RID tanks (RID) : LGBV(+)
 Special provisions for RID tanks (RID) : TU27, TE4, TE6
 Transport category (RID) : 3
 Hazard identification number (RID) : 44

14.7. Maritime transport in bulk according to IMO instruments

Code: IBC : No data available.
 IBC product name : Sulphur (molten)
 Ship type : Type 3
 Pollution category : Z

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:


40. Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.	Hydrogen sulphide (H2S)
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MOLTEN SULFUR is not on the REACH Candidate List
 MOLTEN SULFUR is not on the REACH Annex XIV List

15.1.2. National regulations

France

No ICPE	Installations classées Désignation de la rubrique	Code Régime	Rayon
na	Not Applicable	na	na

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Germany

Regulatory reference : WGK 1, Slightly hazardous to water (Classification according to AwSV; ID No. 753)

Hazardous Incident Ordinance (12. BImSchV) : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

Waterbezwaarlijkheid : B (5) - Weinig schadelijk voor in het water levende organismen B(5)

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

SZW-lijst van reprotoxische stoffen – Borstvoeding : The substance is not listed

SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : The substance is not listed

SZW-lijst van reprotoxische stoffen – Ontwikkeling : The substance is not listed


15.2. Chemical safety assessment

For this substance a chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

1.1	EC Index	Added	
2.3	ED text	Added	
4.2	Inhalation	Modified	
4.3	Indication of any immediate medical attention and special treatment needed	Added	
5			
5.2	Hazardous decomposition products in case of fire	Added	
5.3	Protection during firefighting	Added	
5.3	Other information	Added	
7.2	Heat and ignition sources	Added	
7.2	Special rules on packaging	Added	
9.2	Information with regard to physical hazard classes	Added	
9.2	Other safety characteristics	Added	
10.4	Conditions to avoid	Modified	
11.2	Adverse health effects caused by endocrine disrupting properties	Added	

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12.6	Adverse effects on the environment caused by endocrine disrupting properties	Added	
14			
14.7	Maritime transport in bulk according to IMO instruments	Added	
15			
15.1	Installations classées	Added	
16			

Abbreviations and acronyms:

	DNEL = Derived No Effect Level
	DMEL = Derived Minimal Effect level
	PNEC = Predicted No Effect Concentration
	OEL-STEL = Occupational Exposure Limits - Short Term Exposure Limits (STELs)
	TWA = time weighted average
	LC50 = Median lethal concentration
	LD50 = Median lethal dose
	LL50 = Median lethal level
	EC50 = Median Effective Concentration
	EL50 = Median effective level
	ErC50 = EC50 in terms of reduction of growth rate
	ErL50 = EL50 in terms of reduction of growth rate
	NOEL = no-observed-effect level
	NOEC = No observed effect concentration
	NOELR = No observed effect loading rate
	NOAEC = No observed adverse effect concentration
	NOAEL = No observed adverse effect level
	EWC = European waste catalogue
	NA = Not applicable
	N.O.S. = Not Otherwise Specified
	VOC = Volatile organic compounds
	mg/kg BW = mg/kg bodyweight
	QSAR = Quantitative structure-activity relationship (QSAR)
	ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin
	ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route
	CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC
	IATA = International Air Transport Association
	IMDG = International Maritime Dangerous Goods Code
	LEL = Lower Explosive Limit/Lower Explosion Limit
	UEL = Upper Explosion Limit/Upper Explosive Limit
	REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
	WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)
	ABM = Algemene beoordelingsmethodiek
	BTT = Breakthrough time (maximum wearing time)
	NOEL: no-observed-effect level
	STOT = Specific Target Organ Toxicity

Sources of key data used to compile the : European Chemicals Bureau.
datasheet

Training advice : Training staff on good practice. Manipulations are to be done only by qualified and authorised persons.


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Full text of H- and EUH-statements:

Acute Tox. 2 (Inhalation)	Acute toxicity (inhal.), Category 2
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Flam. Gas 1A	Flammable gases, Category 1A
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H315	Causes skin irritation.
H330	Fatal if inhaled.
H400	Very toxic to aquatic life.
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Skin Irrit. 2	Skin corrosion/irritation, Category 2

Full text of use descriptors


ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ESVOC SPERC 1.1.v1	Manufacture of substance: Industrial (SU3)
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
ESVOC SPERC 2.2.v1	Formulation & packing of preparations and mixtures: Industrial (SU10)
ESVOC SPERC 4.10a.v1	Use as binders and release agents: Industrial (SU3)
ESVOC SPERC 4.19.v1	Rubber production and processing: Industrial (SU10)
ESVOC SPERC 6.1a.v1	Manufacture of substances: Industrial (SU8, SU9)
ESVOC SPERC 7.12a.v1	Use as a fuel: Industrial (SU3)
ESVOC SPERC 8.10b.v1	Use as binders and release agents: Professional (SU22)
ESVOC SPERC 8.11a.v1	Agrochemical uses: Professional (SU22)
ESVOC SPERC 8.11b.v1	Agrochemical uses: Consumer (SU21)
ESVOC SPERC 8.15.v1	Road and Construction applications: Professional (SU22)
PC11	Explosives
PC12	Fertilizers

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PC22	Lawn and Garden Preparations, including fertilizers
PC27	Plant protection products
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC21	Low energy manipulation and handling of substances bound in/on materials or articles
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC6	Calendering operations
PROC7	Industrial spraying
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU10	Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU11	Manufacture of rubber products
SU21	Consumer uses: Private households (= general public = consumers)
SU22	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
SU3	Industrial uses: Uses of substances as such or in preparations* at industrial sites
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878
Classification according to Regulation (EC) No. 1272/2008 [CLP]
Labelling according to Regulation (EC) No. 1272/2008 [CLP]

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information may not be applicable.