

This safety data sheet was created pursuant to the requirements of:
UK REACH Regulations (SI 2019/758 as amended)

Supersedes date 12-Oct-2013

Revision date 26-Sep-2025

Revision Number 4

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

1.1. Product identifier

Product Code(s)	4109
Safety data sheet number	4109
Product Name	SULFUR, POWDERED
Index No	016-094-00-1
EC Number	231-722-6
CAS No	7704-34-9
Synonyms	SULPHUR PDR 120 MESH, SULPHUR PDR 300 MESH, SULPHUR EP, SULPHUR PDR 60 MESH, SULPHUR RM325, GROUND SULPHUR, ZOLF SULPHUR POWDER, SIEVED GROUND SULPHUR, GROUND SULPHUR EF
Pure substance/mixture	Substance
Molecular weight	32

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

Recommended use	Rubber products Manufacture of substance Chemical intermediate Binder Curing Agent Releasing agent Industrial application Professional use For further information, see attached Exposure Scenario
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1.3. Details of the supplier of the safety data sheet

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
GBR

For further information, please contact

E-mail address SDS.EMEA@univarsolutions.com

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

1.4. Emergency telephone number

Emergency Telephone SGS - +32 (0)3 575 55 55 (24h)

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture**

Skin corrosion/irritation	Category 2 - (H315)
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2.2. Label elements

Signal word
Warning

Hazard statements
H315 - Causes skin irritation

Precautionary statements
P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 + P364 - Take off contaminated clothing and wash it before reuse

2.3. Other hazards

No information available.

SECTION 3: Composition/information on ingredients**3.1 Substances**

Chemical name	Weight-%	EC No (EU Index No)	UK REACH registration number	Classification according to GB CLP (SI 2020/1567 as amended)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
SULFUR, POWDERED 7704-34-9	90 - 100%	231-722-6	-	Skin Irrit. 2 (H315)	-	-	-

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

This product does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (UK REACH Article 59)

SECTION 4: First aid measures**4.1. Description of first aid measures**

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a doctor.
Skin contact	Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a doctor.
Self-protection of the first aider	Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

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

Dermal	Causes skin irritation. Erythema (skin redness). Prolonged contact may cause redness and irritation.
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4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors	Treat symptomatically.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media	Dry chemical, CO ₂ , alcohol-resistant foam or water spray.
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products	Carbon oxides. Oxides of sulphur. Hydrogen sulphide.
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5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required.
Other information	Refer to protective measures listed in Sections 7 and 8.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions	Prevent further leakage or spillage if safe to do so.
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6.3. Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse.

General hygiene considerations Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

7.3. Specific end use(s)

Specific use(s)
See section 1 for more information.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Biological occupational exposure limits This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL) - Workers No information available

Derived No Effect Level (DNEL) - General Public No information available.

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering controls No information available.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Use eye protection according to EN 166.

Hand protection Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. Gloves must conform to standard EN 374.

Skin and body protection	Wear suitable protective clothing. Long sleeved clothing.
Respiratory protection	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. Mask filter for respirable fine particles (FFP2).
General hygiene considerations	Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid
Appearance	Dusty powder
Colour	yellow
Odour	Characteristic.
Odour threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Melting point / freezing point	113 - 119 °C	
Initial boiling point and boiling range	444 - 447 °C	
Flammability		No information available.
Flammability Limit in Air		No information available.
Upper flammability or explosive limits		
Lower flammability or explosive limits		
Flash point	188 °C	Closed cup.
Autoignition temperature	240 °C	
Decomposition temperature		No information available.
pH		No information available.
pH (as aqueous solution)		No information available.
Kinematic viscosity		No information available.
Dynamic viscosity	8.0 mPa s	@ 140.0 °C.
Water solubility	Slightly soluble in water	
Solubility(ies)		No information available.
Partition coefficient		No information available.
Vapour pressure		No information available.
Relative density	2.07	20.0 °C.
Bulk density	450 - 600 kg/m ³	
Liquid Density	No information available	No information available
Relative vapour density		No information available.
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	Based on available data the classification criteria are not met.	
Oxidising properties	No information available	

9.2. Other information

Molecular weight	32
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Stable under recommended storage conditions.
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10.2. Chemical stability

Stability	Stable under normal conditions.
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Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

10.3. Possibility of hazardous reactions**Possibility of hazardous reactions** None under normal processing.**10.4. Conditions to avoid****Conditions to avoid** Keep away from open flames, hot surfaces and sources of ignition.**10.5. Incompatible materials****Incompatible materials** None known based on information supplied.**10.6. Hazardous decomposition products****Hazardous decomposition products** Carbon oxides. Oxides of sulphur. Hydrogen sulphide.**SECTION 11: Toxicological information****11.1. Information on toxicological effects****Information on likely routes of exposure****Product Information**

Inhalation	May cause irritation.
Eye contact	May cause temporary eye irritation.
Skin contact	Causes skin irritation.
Ingestion	Gastrointestinal discomfort.

Symptoms related to the physical, chemical and toxicological characteristics**Symptoms** Redness. May cause redness and tearing of the eyes.**Acute toxicity****Numerical measures of toxicity**

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
SULFUR, POWDERED	> 3000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 9.23 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	No information available.
Respiratory or skin sensitisation	No information available.
Germ cell mutagenicity	No information available.

Carcinogenicity No information available.

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity Not considered to be harmful to aquatic life.***

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
SULFUR, POWDERED	-	LC50: =866mg/L (96h, Brachydanio rerio) LC50: <14mg/L (96h, Lepomis macrochirus) LC50: >180mg/L (96h, Oncorhynchus mykiss)	-	-

12.2. Persistence and degradability

Persistence and degradability The product contains inorganic substances which are not biodegradable.

12.3. Bioaccumulative potential

Bioaccumulation Not likely to bioaccumulate.

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB.

Chemical name	PBT and vPvB assessment
SULFUR, POWDERED	The substance is not PBT / vPvB

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products	Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging	Do not reuse empty containers.

SECTION 14: Transport information

IATA

14.1 UN number or ID number	UN1350
14.2 UN proper shipping name	SULPHUR
14.3 Transport hazard class(es)	4.1
14.4 Packing group	III
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	A105, A803
ERG Code	3L

IMDG

14.1 UN number or ID number	UN1350
14.2 UN proper shipping name	SULPHUR
14.3 Transport hazard class(es)	4.1
14.4 Packing group	III
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	242, 967
EmS-No	F-A, S-G
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID

14.1 UN number or ID number	UN1350
14.2 UN proper shipping name	SULPHUR
14.3 Transport hazard class(es)	4.1
14.4 Packing group	III
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	242
Classification code	F3

ADR

14.1 UN number or ID number	UN1350
14.2 UN proper shipping name	SULPHUR
14.3 Transport hazard class(es)	4.1
14.4 Packing group	III
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	242
Classification code	F3
Tunnel restriction code	(E)

SECTION 15: Regulatory information

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

National regulations

Authorisations and/or restrictions on use:

This product does not contain substances subject to authorisation (UK REACH - Annex XIV).

This product does not contain substances subject to restriction (UK REACH - Annex XVII).

Persistent Organic Pollutants

Not applicable

Export Notification requirements

Not applicable

Named dangerous substances per COMAH Regulations 2015 (as amended)

Not applicable

The Ozone-Depleting Substances Regulations 2015

Not applicable

The Biocidal Products Regulations 2001 (as amended)

Not applicable

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)

Not applicable

Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)

Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status
DSL/NDL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECI	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	Contact supplier for inventory compliance status

Legend:

TSCA	- United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDL	- Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS	- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS	- Japan Existing and New Chemical Substances
IECSC	- China Inventory of Existing Chemical Substances
KECL	- Korean Existing and Evaluated Chemical Substances
PICCS	- Philippines Inventory of Chemicals and Chemical Substances
AIIC	- Australian Inventory of Industrial Chemicals
NZIoC	- New Zealand Inventory of Chemicals

15.2. Chemical safety assessment

Chemical Safety Report

A Chemical Safety Assessment has been carried out for this substance

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3

H315 - Causes skin irritation

Legend

SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
+	Sensitisers		

Revision Note ***Indicates updated data since last publication

Classification procedure

Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
 U.S. Environmental Protection Agency ChemView Database
 European Food Safety Authority (EFSA)
 European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
 European Chemicals Agency (ECHA) (ECHA_API)
 Environmental Protection Agency
 Acute Exposure Guideline Level(s) (AEGL(s))
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
 U.S. Environmental Protection Agency High Production Volume Chemicals
 Food Research Journal
 Hazardous Substance Database
 International Uniform Chemical Information Database (IUCLID)
 National Institute of Technology and Evaluation (NITE)
 Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
 NIOSH (National Institute for Occupational Safety and Health)
 National Library of Medicine's ChemID Plus (NLM CIP)
 National Library of Medicine's PubMed database (NLM PUBMED)
 U.S. National Toxicology Program (NTP)
 New Zealand's Chemical Classification and Information Database (CCID)
 Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
 Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
 Organisation for Economic Co-operation and Development Screening Information Data Set
 World Health Organization

Prepared By Jitendra Panchal

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**This material safety data sheet complies with the requirements of UK REACH Regulations (SI 2019/758 as amended)
 Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work**

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
REACH registration number 01.2119487295-27-XXXX
CAS No 7704-34-9
EC No (EU Index No) 231-722-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Manufacture of substance
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC1 - Manufacture of substances
Specific Environmental Release Category ESVOC SpERC 1.1.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC15 - Use as laboratory reagent

Sector(s) of use 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

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC1 - Manufacture of substances

Specific Environmental Release Category - ESVOC SpERC 1.1.v1

Covers concentrations up to 100 %

Amounts used

Type	Annual amount used in the EU
Value	3693365.731
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems) Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Provide extract ventilation to points where emissions occur Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Store substance within a closed system Ensure dedicated sample points are provided Avoid dip sampling Ensure operation is undertaken outdoors or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up

the worker	contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying
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Section 3 - Exposure estimation

Environmental release category(ies) - ERC1 - Manufacture of substances

Specific Environmental Release Category - ESVOC SpERC 1.1.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):
Worker - inhalative, long-term - systemic 4 mg/m³

Calculation method Used ECETOC TRA model
Remarks Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name	SULPHUR
Pure substance/mixture	Substance
REACH registration number	01.2119487295-27-XXXX
CAS No	7704-34-9
EC No (EU Index No)	231-722-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Distribution of substance
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC5 - Industrial use resulting in inclusion into or onto a matrix ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b - Industrial use of reactive processing aids ERC6c - Industrial use of monomers for manufacture of thermoplastics ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers ERC7 - Industrial use of substances in closed systems
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation) PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15 - Use as laboratory reagent
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC5 - Industrial use resulting in inclusion into or onto a matrix
- ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
- ERC6b - Industrial use of reactive processing aids
- ERC6c - Industrial use of monomers for manufacture of thermoplastics
- ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
- ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category - **ESVOC SpERC 1.1b.v1**

Covers concentrations up to 100 %

Amounts used

Type	Annual amount used in the EU
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Value	4074527.906
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems) Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Provide extract ventilation to points where emissions occur Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors

the worker	Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Drum and small package filling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines

Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Store substance within a closed system Ensure dedicated sample points are provided Avoid dip sampling Ensure operation is undertaken outdoors or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC5 - Industrial use resulting in inclusion into or onto a matrix

- ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

- ERC6b - Industrial use of reactive processing aids

- ERC6c - Industrial use of monomers for manufacture of thermoplastics

- ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

- ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category - ESVOC SpERC 1.1b.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic 4 mg/m³

Calculation method Used ECETOC TRA model

Remarks Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.35 mg/m ³	0.088

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
REACH registration number 01.2119487295-27-XXXX
CAS No 7704-34-9
EC No (EU Index No) 231-722-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use as an intermediate
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Specific Environmental Release Category ESVOC SpERC 6.1a.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC15 - Use as laboratory reagent
 PROC22 - Potentially closed processing operations with minerals/metals at elevated temperature; industrial setting
 PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature
Sector(s) of use 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

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Specific Environmental Release Category - ESVOC SpERC 6.1a.v1

Covers concentrations up to 100 %
Amounts used

Type	Annual amount used in the EU
Value	2885705.07
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems) Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Provide extract ventilation to points where emissions occur Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC22 - Potentially closed processing operations with minerals/metals at elevated temperature; industrial setting
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature
Title	General exposures (open systems)
Covers concentrations up to	100 %

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Store substance within a closed system Ensure dedicated sample points are provided Avoid dip sampling Ensure operation is undertaken outdoors or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Specific Environmental Release Category - ESVOC SpERC 6.1a.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic 4 mg/m³

Remarks Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
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PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC22 - Potentially closed processing operations with minerals/metals at elevated temperature; industrial setting	Worker - inhalative, long-term - systemic	3 mg/m ³	0.75
PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature	Worker - inhalative, long-term - systemic	3 mg/m ³	0.75
PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.35 mg/m ³	0.088

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
REACH registration number 01.2119487295-27-XXXX
CAS No 7704-34-9
EC No (EU Index No) 231-722-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Formulation & (re)packing of substances and mixtures
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category ESVOC SpERC 2.2.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
 PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
 PROC15 - Use as laboratory reagent
 PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature
 PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category - ESVOC SpERC 2.2.v1

Covers concentrations up to 100 %
Amounts used

Type	Annual amount used in the EU
Value	1188822.836
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems) Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Provide extract ventilation to points where emissions occur Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Title	Mixing operations (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles
Title	High (mechanical) energy work-up of substances bound in materials and/or articles
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Drum and small package filling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Title	Tabletting, compression, extrusion or pelletisation
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use

Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Store substance within a closed system Ensure dedicated sample points are provided Avoid dip sampling Ensure operation is undertaken outdoors or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

Specific Environmental Release Category - ESVOC SpERC 2.2.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic 4 mg/m³

Calculation method

Used ECETOC TRA model

Remarks

Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC4 - Use in batch and other process (synthesis) where opportunity	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875

for exposure arises			
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	2 mg/m ³	0.5
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	2 mg/m ³	0.5
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature	Worker - inhalative, long-term - systemic	3 mg/m ³	0.75
PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.35 mg/m ³	0.088

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
REACH registration number 01.2119487295-27-XXXX
CAS No 7704-34-9
EC No (EU Index No) 231-722-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in Binder and Release Agents
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Specific Environmental Release Category ESVOC SpERC 4.10a.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC6 - Calendaring operations
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring
 PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category - ESVOC SpERC 4.10a.v1

Covers concentrations up to 100 %
Amounts used

Type	Annual amount used in the EU
Value	216338.722
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and	Ensure operatives are trained to minimise exposures Carefully handle the substance to
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measures to reduce or limit discharges, air emissions	minimise releases Clear spills immediately
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Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems) Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Provide extract ventilation to points where emissions occur Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC6 - Calendaring operations
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Title	Calendaring operations
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Indoor
Operational conditions	Elevated temperature

Process category(ies)	PROC10 - Roller application or brushing
Title	Rolling, brushing
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Elevated temperature

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Title	Treatment of articles by dipping and pouring
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	No specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Title	Tabletting, compression, extrusion or pelletisation
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100 %

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category - ESVOC SpERC 4.10a.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic 4 mg/m³

Calculation method

Used ECETOC TRA model

Remarks

Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
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PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC6 - Calendaring operations	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	1.5 mg/m ³	0.375
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name	SULPHUR
Pure substance/mixture	Substance
REACH registration number	01.2119487295-27-XXXX
CAS No	7704-34-9
EC No (EU Index No)	231-722-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Use in rubber production and processing.
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Specific Environmental Release Category	ESVOC SpERC 4.19.v1
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation) PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) PROC6 - Calendaring operations PROC7 - Industrial spraying PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC13 - Treatment of articles by dipping and pouring PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising PROC15 - Use as laboratory reagent PROC21 - Low energy manipulation of substances bound in materials and/or articles
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
- ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Specific Environmental Release Category - ESVOC SpERC 4.19.v1

Covers concentrations up to 100 %

Amounts used

Type	Annual amount used in the EU
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Value	273627.095
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems) Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Provide extract ventilation to points where emissions occur Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors

the worker	Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Title	Mixing operations (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC6 - Calendaring operations
Title	Calendaring operations
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Indoor
Operational conditions	Elevated temperature

Process category(ies)	PROC7 - Industrial spraying
Title	Spraying
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 95% Provide the operation with a properly sited receiving hood
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Small scale weighing
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee

personal protection, hygiene and health evaluation	training
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Title	Treatment of articles by dipping and pouring
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	No specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Title	Tabletting, compression, extrusion or pelletisation
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	No specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Specific Environmental Release Category - ESVOC SpERC 4.19.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic

4 mg/m³

Calculation method
Remarks

Used ECETOC TRA model
Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC6 - Calendaring operations	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	3 mg/m ³	0.75
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
REACH registration number 01.2119487295-27-XXXX
CAS No 7704-34-9
EC No (EU Index No) 231-722-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in fuel
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC7 - Industrial use of substances in closed systems
Specific Environmental Release Category ESVOC SpERC 7.12a.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems
Specific Environmental Release Category - ESVOC SpERC 7.12a.v1

Covers concentrations up to 100 %
Amounts used

Type	Annual amount used in the EU
Value	9634.326
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems) Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Provide extract ventilation to points where emissions occur Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected
Title	Use in closed process
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Ensure operation is undertaken outdoors or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Store substance within a closed system Ensure dedicated sample points are provided Avoid dip sampling Ensure operation is undertaken outdoors or Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)

Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category - ESVOC SpERC 7.12a.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic 4 mg/m³

Calculation method

Used ECETOC TRA model

Remarks

Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.5 mg/m ³	0.125
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25

PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.35 mg/m ³	0.088
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Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
REACH registration number 01.2119487295-27-XXXX
CAS No 7704-34-9
EC No (EU Index No) 231-722-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in Binder and Release Agents
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category ESVOC SpERC 8.10b.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC6 - Calendaring operations
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring
 PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.10b.v1

Covers concentrations up to 100 %
Amounts used

Type	Annual amount used in the EU
Value	18
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems) Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Process sampling
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Provide extract ventilation to points where emissions occur Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC6 - Calendaring operations
Title	Calendaring operations
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Indoor
Operational conditions	Elevated temperature

Process category(ies)	PROC10 - Roller application or brushing
Title	Rolling, brushing
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Elevated temperature

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Title	Treatment of articles by dipping and pouring
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	No specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Title	Tabletting, compression, extrusion or pelletisation
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers

Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.10b.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic 4 mg/m³

Calculation method

Used ECETOC TRA model

Remarks

Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio
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			(RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC6 - Calendaring operations	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	1.5 mg/m ³	0.375
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	1.5 mg/m ³	0.375
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - inhalative, long-term - systemic	1.5 mg/m ³	0.375
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
REACH registration number 01.2119487295-27-XXXX
CAS No 7704-34-9
EC No (EU Index No) 231-722-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in agrochemicals
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category ESVOC SpERC 8.11a.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC11 - Non industrial spraying
 PROC13 - Treatment of articles by dipping and pouring
Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.11a.v1

Covers concentrations up to 100 %
Amounts used

Type	Annual amount used in the EU
Value	595751.881
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system No other specific measures identified
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling Ensure material transfers are under containment or extract ventilation Avoid splashing
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently
Process category(ies)	PROC11 - Non industrial spraying
Title	Spraying
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Wear a respirator conforming to EN 140 with Type A/P2 filter or better
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Title	Treatment of articles by dipping and pouring
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker	No specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Transfer via enclosed lines
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.11a.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic 4 mg/m³

Calculation method
Remarks

Used ECETOC TRA model
Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	2 mg/m ³	0.5
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	3 mg/m ³	0.75
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
REACH registration number 01.2119487295-27-XXXX
CAS No 7704-34-9
EC No (EU Index No) 231-722-6
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title road and construction products.
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC8d - Wide dispersive outdoor use of processing aids in open systems ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC2 - Formulation of preparations (mixtures) ERC3 - Formulation in materials
Specific Environmental Release Category ESVOC SpERC 8.15.v1
Process category(ies) PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
 PROC10 - Roller application or brushing
 PROC11 - Non industrial spraying
 PROC13 - Treatment of articles by dipping and pouring
Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8d - Wide dispersive outdoor use of processing aids in open systems
 - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix
 - ERC2 - Formulation of preparations (mixtures)
 - ERC3 - Formulation in materials

Specific Environmental Release Category - ESVOC SpERC 8.15.v1

Covers concentrations up to 100 %
Amounts used

Type	Annual amount used in the EU
Value	4486.582
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and	Ensure operatives are trained to minimise exposures Carefully handle the substance to
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measures to reduce or limit discharges, air emissions	minimise releases Clear spills immediately
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Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	5 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Limit the substance content in the product to 5 % Ensure material transfers are under containment or extract ventilation Clear transfer lines prior to de-coupling
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Drum and small package filling
Covers concentrations up to	5 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Limit the substance content in the product to 5 %
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC10 - Roller application or brushing
Title	Rolling, brushing
Covers concentrations up to	5 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Limit the substance content in the product to 5 %
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC11 - Non industrial spraying
Title	Spraying
Covers concentrations up to	5 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Limit the substance content in the product to 5 %
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Title	Treatment of articles by dipping and pouring
Covers concentrations up to	5 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Limit the substance content in the product to 5 %
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	5 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Limit the substance content in the product to 5 % Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8d - Wide dispersive outdoor use of processing aids in open systems

- ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

- ERC2 - Formulation of preparations (mixtures)

- ERC3 - Formulation in materials

Specific Environmental Release Category - ESVOC SpERC 8.15.v1

Predicted No Effect Concentration (PNEC)

Freshwater	2.2 mg/l
Marine water	0.22 mg/l
Soil	0.72 mg/kg d.w.
Impact on Sewage Treatment	43 mg/l
Intermittent release	1.2 mg/l

Remarks No exposure assessment presented for the environment. Qualitative approach used to conclude safe use

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic	4 mg/m ³
Worker - inhalative, short-term - local	2.5 mg/m ³
Worker - inhalative, short-term - systemic	2.5 mg/m ³
Consumer - oral, long-term - systemic	25 mg/kg bw/d

Calculation method Used ECETOC TRA model
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Remarks Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - local	0.01 mg/m ³	0.007
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - local	0.50 mg/m ³	0.333
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - local	1.00 mg/m ³	0.667
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - local	0.50 mg/m ³	0.333
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - local	0.50 mg/m ³	0.333
PROC6 - Calendaring operations	Worker - inhalative, long-term - local	0.50 mg/m ³	0.333
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - local	0.50 mg/m ³	0.333
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - local	0.050 mg/m ³	0.033
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - local	0.50 mg/m ³	0.333
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - local	0.50 mg/m ³	0.333
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - inhalative, long-term - local	1.00 mg/m ³	0.667
PROC19 - Hand-mixing with intimate contact and only PPE available	Worker - inhalative, long-term - local	0.50 mg/m ³	0.333

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name SULPHUR
Pure substance/mixture Substance
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Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Professional use : Explosives
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC8e - Wide dispersive outdoor use of reactive substances in open systems
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8e - Wide dispersive outdoor use of reactive substances in open systems

Covers concentrations up to 100 %

Amounts used

Type	Annual amount used in the EU
Value	306
Units	t(ons)/year

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Ensure operatives are trained to minimise exposures Carefully handle the substance to minimise releases Clear spills immediately
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Ensure dedicated sample points are provided
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Title	Batch process
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	5 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Limit the substance content in the product to 5 % Ensure material transfers are under containment or extract ventilation Clear transfer lines prior to de-coupling
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training
Indoor/Outdoor use	Outdoor
Operational conditions	Elevated temperature

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training
Indoor/Outdoor use	Covers indoor and outdoor use
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Title	General measures applicable to all activities
Covers concentrations up to	100 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8e - Wide dispersive outdoor use of reactive substances in open systems

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - systemic 4 mg/m³

Calculation method

Used ECETOC TRA model

Remarks

Dermal exposure : Qualitative approach used to conclude safe use

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.01 mg/m ³	0.003
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1 mg/m ³	0.25
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	3.5 mg/m ³	0.875

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name	SULPHUR
Pure substance/mixture	Substance
REACH registration number	01.2119487295-27-XXXX
CAS No	7704-34-9
EC No (EU Index No)	231-722-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Use in agrochemicals
Type	Consumer
Main user group	Consumer uses: Private households (= general public = consumers)
Environmental release category(ies)	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category	ESVOC SpERC 8.11b.v1
Product category(ies)	PC12 - Fertilisers PC22 - Lawn and Garden Preparations, including fertilisers PC27 - Plant protection products
Sector(s) of use	SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - **ESVOC SpERC 8.11b.v1**

Covers concentrations up to	100 %
Remarks	No exposure assessment presented for the environment.

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
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Control of consumer exposure

Product categories [PC]	PC12 - Fertilisers
Covers concentrations up to	90 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Amounts used	2500 g/event
Use frequency	Covers use up to 1 days per year
Covers skin contact area up to	857.5 cm ²
Indoor/Outdoor use	Outdoor

Product categories [PC]	PC22 - Lawn and Garden Preparations, including fertilisers
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Covers concentrations up to	90 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Amounts used	37500 g/event
Use frequency	Covers daily exposures up to 8 hours (unless stated differently). Covers use up to 4 events per day
Covers skin contact area up to	6600 cm ²
Indoor/Outdoor use	Outdoor

Product categories [PC]	PC27 - Plant protection products
Covers concentrations up to	90 %
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0.5 kPa
Amounts used	2500 g/event
Use frequency	Covers use up to 1 days per year
Covers skin contact area up to	857.5 cm ²
Indoor/Outdoor use	Outdoor

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
Specific Environmental Release Category - ESVOC SpERC 8.11b.v1

Predicted No Effect Concentration (PNEC)

Remarks No exposure assessment presented for the environment.

Derived No Effect Level (DNEL):

Consumer - oral, long-term - systemic 0.5 mg/kg/day
 Consumer - dermal, long-term - systemic 0.5 mg/kg/day

Calculation method The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC12 - Fertilisers	Consumer - oral, long-term - systemic	0.08 mg/kg/day	0.16
PC12 - Fertilisers	Consumer - dermal, long-term - systemic	0.39 mg/kg/day	0.78
PC22 - Lawn and Garden Preparations, including fertilisers	Consumer - oral, long-term - systemic	0.08 mg/kg/day	0.16
PC22 - Lawn and Garden Preparations, including fertilisers	Consumer - dermal, long-term - systemic	0.39 mg/kg/day	0.78
PC27 - Plant protection products	Consumer - oral, long-term - systemic	0.08 mg/kg/day	0.16
PC27 - Plant protection products	Consumer - dermal, long-term - systemic	0.39 mg/kg/day	0.78

Section 4 - Guidance to check compliance with the exposure scenario

Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.