SAFETY DATA SHEET

Sulphur tablets

Document: DE-SDS-SULPHUR-TABLETS | Revision 1.2 | 20 March 2026 | English
Technical source: Burgas SDS 901711 v01 (6 February 2023).

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

1.1. Product identifier

Name of the substance	Sulphur
Trade name of the substance	SULFUR TECHNICAL GRADE AS TABLETS
Identification number	016-094-00-1 (Index number)
Registration number	01-2119487295-27-0040
Synonyms	None.

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

Identified uses	Industrial, professional and consumer use. A complete list of registered uses for this product can be found in the table of content of the exposure scenario for communication, available as an annex to the eSDS.
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Supplier / distributor: Drakensberg Energy Europe EOOD | UIC 208760847
1st office, 5th floor, 9–11 Knyaginya Maria Luisa Blvd.
Vazrazhdane, 1000 Sofia, Bulgaria
Business telephone: +27 82 902 0083
SDS contact: gonnie@drakensbergenergy.com
Manufacturer: LUKOIL Neftohim Burgas AD, Burgas 8104, Bulgaria

1.4. Emergency telephone numbers
Bulgaria / EU emergency services: 112 (24 hours).
National Toxicology Centre, N. I. Pirogov, Sofia: +359 2 9154 233.
At destination, also contact the local emergency / poison service and activate the client site or vessel emergency response plan. Give this SDS to responders.
The business mobile above is not a medical emergency advisory service.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Sulphur

Hazard pictograms



Signal word Warning

Hazard statements

H315	Causes skin irritation.

Precautionary statements

Prevention

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

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Response

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

Storage Not assigned.

Disposal Not assigned.

Supplemental information on the label None.

2.3. Other hazards This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.
The substance is not included in the list established in accordance with REACH Article 59(1) for having endocrine disrupting properties.
The substance is not considered to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: Composition/information on ingredients

3.1. Substances

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Sulphur	100	7704-34-9 231-722-6	01-2119487295-27-0040	016-094-00-1	

Classification: Skin Irrit. 2;H315

Composition comments The full text for all H-statements is displayed in section 16.
All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4: First aid measures

General information Get medical attention if any discomfort develops.

4.1. Description of first aid measures

Inhalation Move to fresh air. Get medical attention if any discomfort continues.

Skin contact Immediately remove contaminated clothing. Wash with soap and water. Continue to rinse for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye contact Do not rub eyes. Remove any contact lenses. Flush eyes thoroughly with water, taking care to rinse under eyelids. If irritation persists, continue flushing for 15 minutes, rinsing from time to time under eyelids. If discomfort continues, consult a physician.

Ingestion Immediately rinse mouth and drink plenty of water. Do not induce vomiting. Get medical attention if irritation develops and persists.

4.2. Most important symptoms and effects, both acute and delayed Skin irritation. May cause eye irritation. Symptoms include itching, burning, redness, and tearing of eyes. Central nervous system depression.

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

SECTION 5: Firefighting measures

General fire hazards The product is not flammable.

5.1. Extinguishing media

Suitable extinguishing media Dry chemical, foam, water, sand.

Unsuitable extinguishing media No restrictions known.

5.2. Special hazards arising from the substance or mixture Combustion products include sulfur dioxide/sulfur oxides.

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5.3. Advice for firefighters

Special protective equipment for firefighters	Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.
Special fire fighting procedures	Move containers from fire area if you can do it without risk. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Ensure adequate ventilation. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear protective clothing as described in section 8 of this safety data sheet.
For emergency responders	Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protection as recommended in section 8 of the SDS.
6.2. Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
6.3. Methods and material for containment and cleaning up	Clean up in accordance with all applicable regulations. Should not be released into the environment. Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean contaminated surface thoroughly. Large Spills: Prevent product from entering drains. Do not allow material to contaminate ground water system. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Ensure that waste and contaminated materials are collected and removed from the work area as soon as possible in a suitably labelled container.
6.4. Reference to other sections	For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling	Use only with adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Use work methods which minimise dust production. Wash thoroughly after handling. Risk of dust explosion: Ground container and transfer equipment to eliminate static electric sparks. Use Personal Protective Equipment recommended in section 8 of the SDS. Observe good industrial hygiene practices.
7.2. Conditions for safe storage, including any incompatibilities	Store in tightly closed original container in a dry, cool and well-ventilated place. Store away from incompatible materials. Keep container tightly closed and sealed until ready for use.
7.3. Specific end use(s)	For detailed information, see section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Agent / reference	8-hour TWA	15-minute STEL / note
Sulphur dust — source engineering-control reference	10 mg/m³ total dust	Manufacturer recommendation; not a Bulgarian statutory exposure limit

Statutory chemical-agent entries: Bulgarian Ordinance No 13, consolidated 2026 edition. Benzene: Bulgarian Ordinance No 10 and Directive (EU) 2022/431. The refinery DNELs/PNECs and other protective measures remain in Section 8 and the exposure annexes. An exposure limit is not a boundary between safe and harmful exposure. Control inhalation and skin contact and use the lower applicable risk-management value.

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Biological limit values	No biological exposure limits noted for the ingredient(s).
Recommended monitoring procedures	Follow standard monitoring procedures.
Derived no effect levels (DNELs)	Not available.
Predicted no effect concentrations (PNECs)	Not available.

8.2. Exposure controls

Appropriate engineering controls	Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of dust. If no exposure limits are stated, follow the recommended exposure limit of 10 mg/m3 for total nuisance dust. Use explosion-proof ventilation equipment.

Individual protection measures, such as personal protective equipment

General information	Use personal protective equipment as required. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.
Eye/face protection	Wear goggles/face shield. Eye protection should meet standard EN 166.
Skin protection	
- Hand protection	Wear suitable gloves tested to EN374.
- Other	Wear suitable protective clothing.
Respiratory protection	In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter (type P2). Seek advice from local supervisor.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practices. Wash hands after handling. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements.
Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid.
Form	Solid.
Colour	Yellow.
Odour	Characteristic.
Melting point/freezing point	> 113 - < 120 °C (> 235,4 - < 248 °F)
Boiling point or initial boiling point and boiling range	444,6 °C (832,28 °F)
Flammability	Fine particles may form explosive mixtures with air.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not applicable.
Explosive limit – upper (%)	Not applicable.
Flash point	168 °C (334,4 °F) Closed cup
Auto-ignition temperature	Not determined.
Decomposition temperature	Not determined.
pH	Not applicable.
Kinematic viscosity	Not applicable.
Kinematic viscosity temperature	Not applicable.
Solubility	
Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water) (log value)	Not applicable.
Vapour pressure	Not applicable.
Density and/or relative density	
Density	2,07 g/cm3 (20 °C (68 °F))
Vapour density	Not applicable.
Particle characteristics	Not determined.

9.2. Other information

9.2.1. Information with regard to physical hazard classes	No relevant additional information available.
9.2.2. Other safety characteristics	
Molecular formula	S
Molecular weight	32,06 g/mol
Specific gravity	> 1,8002 - < 2,6 2,0702

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Stable at normal conditions.
10.3. Possibility of hazardous reactions	Hazardous polymerisation does not occur.
10.4. Conditions to avoid	Moisture. Contact with incompatible materials.
10.5. Incompatible materials	Strong oxidising agents. Fluoride. Chlorine.
10.6. Hazardous decomposition products	No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information	Occupational exposure to the substance or mixture may cause adverse effects.

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Information on likely routes of exposure

Inhalation	Inhalation of dusts may cause respiratory irritation.
Skin contact	Causes skin irritation.
Eye contact	Dust in the eyes will cause irritation.
Ingestion	May cause discomfort if swallowed.
Symptoms	Causes skin irritation. Symptoms include itching, burning, redness, and tearing of eyes. Central nervous system depression.

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

Acute toxicity

Product	Species	Test Results
Sulphur (CAS 7704-34-9)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
LC50	Rat	> 5,43 g/m3, 4 Hours
Oral		
LD50	Rat	> 2000 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.
Respiratory sensitisation	Based on available data, the classification criteria are not met.
Skin sensitisation	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Based on available data, the classification criteria are not met.
Specific target organ toxicity - single exposure	Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Not applicable.
Mixture versus substance information	No information available.

11.2. Information on other hazards

Endocrine disrupting properties	This substance does not have endocrine disrupting properties with respect to human health, as it does not meet the assessment criteria laid out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605.
Other information	No other specific acute or chronic health impact noted.

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SECTION 12: Ecological information

12.1. Toxicity	Based on available data, the classification criteria are not met for hazardous to the aquatic environment, acute hazard. Based on available data, the classification criteria are not met for hazardous to the aquatic environment, long term.
12.2. Persistence and degradability	The product is not biodegradable.
12.3. Bioaccumulative potential	The product is not bioaccumulating.
Partition coefficient n-octanol/water (log Kow)	Not available.
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	No data available.
Mobility in general	The product is insoluble or slightly soluble in water.
12.5. Results of PBT and vPvB assessment	This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.
12.6. Endocrine disrupting properties	This substance does not have endocrine disrupting properties with respect to the environment, as it does not meet the assessment criteria laid out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605.
12.7. Other adverse effects	No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods	
Residual waste	Dispose in accordance with local regulations.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

14.1–14.5. Road and sea transport classification
For sulphur in the stated formed-tablet shape, ADR/RID/ADN and IMDG Special Provision 242 exempt the product from the dangerous-goods provisions. No UN number, hazard class or packing group is assigned to this exempt form. It is not a marine pollutant. The exemption does not cover powdered, crushed, lump or molten sulphur. Air carriage is outside this supply scope.

14.6. Special precautions
Minimise impact, abrasion and crushing to prevent dust. Keep away from ignition sources and strong oxidising agents. Use the dust and skin protection in Section 8. The formed-shape exemption does not remove handling, workplace or environmental precautions.

14.7. Maritime transport in bulk according to IMO instruments
Bulk cargo shipping name: SULPHUR (formed, solid). IMSBC Group C; transport class and subsidiary hazard not applicable. Follow the current IMSBC cargo schedule. Segregate from strong oxidisers. Prepare clean, dry holds with protective coatings; do not wash with seawater. Trim the cargo and protect machinery and accommodation from particles. Seal hatches tightly. Use surface ventilation as needed; monitor and drain bilges. Apply enclosed-space entry precautions. Clean holds with fresh water after discharge. Cargo-handling personnel require protective clothing, goggles and suitable dust protection.

References: ADR 2025 / IMDG Code Amendment 42-24, Special Provision 242; IMSBC Code, SULPHUR (formed, solid) schedule.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations specific to the product
This supplier edition uses the REACH Regulation (EC) No 1907/2006, Annex II as amended by Regulation (EU) 2020/878, and the CLP Regulation (EC) No 1272/2008, as amended. Classification and composition are retained from the identified refinery SDS.

Bulgaria: apply Ordinance No 13 on protection against chemical agents at work, and Ordinance No 10 on carcinogens, mutagens and reprotoxic substances, as amended. The occupational limits and control references used in this edition appear in Section 8.1 and its continuation. Apply workplace risk assessment, exposure minimisation, appropriate medical surveillance and relevant national waste and environmental rules.

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Observe national provisions implementing Directive 94/33/EC for young workers and Directive 92/85/EEC for pregnant, recently delivered or breastfeeding workers, including the required workplace risk assessment and restrictions.

Transport instruments for road and sea carriage are identified in Section 14. This English edition accompanies international trade; a Bulgarian-language SDS is required for supply on the Bulgarian market.

15.2. Chemical safety assessment
The refinery source states that a chemical safety assessment has been carried out for the substance.

SECTION 16: Other information

List of abbreviations	PBT: Persistent, bioaccumulative and toxic. vPvB: Very Persistent and very Bioaccumulative. LC50: Lethal Concentration, 50%. LL50: Lethal level, 50%. EL50: Effective level, 50%. CEN: European Committee for Standardization (Comité Européen de Normalisation).
References	Chemical safety report.
Information on evaluation method leading to the classification of mixture	The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.
Full text of any statements, which are not written out in full under sections 2 to 15	H315 Causes skin irritation.
Training information	Follow training instructions when handling this material.

This information concerns the identified product and its safe handling. Product-source attribution and the supplier revision record appear in Section 16.

Document control

Supplier edition 1.2 | 20 March 2026 | English | Bulgaria

Product scope. Technical sulphur formed as tablets, approximately 2–4 mm; CAS 7704-34-9; refinery REACH registration 01-2119487295-27-0040. Molten, powdered, crushed and lump sulphur are outside this document's product scope.

Technical source. LUKOIL Neftohim Burgas AD, SDS 901711, version 01, 6 February 2023. Refinery source. The source technical data and exposure annexes, where provided, are retained.

Changes in this supplier edition. EU supplier and emergency contacts; English document control and product identification; Bulgarian exposure-limit references and national regulatory information; formed-sulphur road and bulk-sea transport provisions.

Emergency reference: Bulgarian Ministry of Environment and Water. Workplace limits: Ordinance No 13; Ordinance No 10. Transport: 2026 maritime-code amendments.

The SDS describes health, safety and environmental precautions for the identified product. It is not a batch quality certificate. Read it together with the applicable cargo documents and exposure-scenario conditions.

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Annex to the extended Safety Data Sheet (eSDS)

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1 - Exposure Scenario Worker

1. Manufacture of substance

List of use descriptors

Sector(s) of Use

SU3: Industrial uses
SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
SU9: Manufacture of fine chemicals

Name of contributing environmental scenario and corresponding ERC

ERC1: Manufacture of the substance
ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

List of names of contributing worker scenarios and corresponding PROCs

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4: Chemical production where opportunity for exposure arises
PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities
PROC15: Use as laboratory reagent

Further explanations

Other Process or activity

Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling / recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

2.1.1. Contributing scenario controlling environmental exposure for Manufacture of the substance

Product characteristics

Physical state

Solid.

Amounts used

Not applicable.

Frequency and duration of use

Batch process

Not applicable.

Continuous process

Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:

Not applicable.

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Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Organisational measures to prevent/limit release from site	Not available.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %.
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa

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vapour pressure	-
Process temperature	Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Amounts used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented.

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified.
Organizational measures to prevent/limit releases, dispersion and exposure	No other specific measures identified.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) 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.

3. Exposure Estimation

Environment

Not applicable.

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

Health

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

2 - Exposure Scenario Worker

1. Use as an intermediate

List of use descriptors

Sector(s) of Use	SU3: Industrial uses SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals

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Name of contributing environmental scenario and corresponding ERC	ERC6a: Use of intermediate
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC15: Use as laboratory reagent PROC22: Manufacturing and processing of minerals and/or metals at substantially elevated temperature PROC23: Open processing and transfer operations at substantially elevated temperature
Further explanations	
Other Process or activity	Use of substance as an intermediate. Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

2.1.1. Contributing scenario controlling environmental exposure for Use of intermediate

Product characteristics

Physical state	Solid.
Amounts used	Not applicable.
Frequency and duration of use	
Batch process	Not applicable.
Continuous process	Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:	Not applicable.
Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Organisational measures to prevent/limit release from site	Not available.

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Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %.
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa
vapour pressure	-
Process temperature	Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Amounts used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified.

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Organizational measures to prevent/limit releases, dispersion and exposure	No other specific measures identified.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) 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.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Not relevant.				

Health

	Exposure level	RCR	Method	Remarks

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

Health

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

3 - Exposure Scenario Worker

1. Distribution of substance

List of use descriptors

Sector(s) of Use	SU3: Industrial uses
Name of contributing environmental scenario and corresponding ERC	ERC1: Manufacture of the substance ERC2: Formulation into mixture ERC3: Formulation into solid matrix ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC5: Use at industrial site leading to inclusion into/onto article ERC6a: Use of intermediate ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article) ERC7: Use of functional fluid at industrial site

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List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Further explanations	
Other Process or activity	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities.

2.1.1. Contributing scenario controlling environmental exposure for Manufacture of the substance

Product characteristics

Physical state	Solid.
Amounts used	Not applicable.
Frequency and duration of use	
Batch process	Not applicable.
Continuous process	Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:	Not applicable.
Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Organisational measures to prevent/limit release from site	Not available.

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Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %.
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa
vapour pressure	-
Process temperature	Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Amounts used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified.

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Organizational measures to prevent/limit releases, dispersion and exposure	No other specific measures identified.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) 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.

3. Exposure Estimation

Environment

Not available.

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

Health

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

4 - Exposure Scenario Worker

1. Formulation & (re)packing of substances and mixtures

List of use descriptors

Sector(s) of Use	SU3: Industrial uses SU10: Formulation [mixing] of preparations and/or re-packaging
Name of contributing environmental scenario and corresponding ERC	ERC2: Formulation into mixture
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC14: Tabletting, compression, extrusion, pelettisation, granulation PROC15: Use as laboratory reagent PROC23: Open processing and transfer operations at substantially elevated temperature PROC24: High (mechanical) energy work-up of substances bound in/on materials and/or articles
Further explanations	
Other Process or activity	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities.

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2.1.1. Contributing scenario controlling environmental exposure for Formulation into mixture

Product characteristics

Physical state	Solid.
Amounts used	
	Not applicable.
Frequency and duration of use	
Batch process	Not applicable.
Continuous process	Not applicable.
Environment factors not influenced by risk management	
Local freshwater dilution factor:	Not applicable.
Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Organisational measures to prevent/limit release from site	Not available.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)	
Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment	
Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment	
Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

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2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %.
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa
vapour pressure	-
Process temperature	Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Amounts used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified.
Organizational measures to prevent/limit releases, dispersion and exposure	No other specific measures identified.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) 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.

3. Exposure Estimation

Environment

Not applicable.

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

Health

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

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5 - Exposure Scenario Worker

1. Use in binder and release agents

List of use descriptors

Sector(s) of Use	SU3: Industrial uses
Name of contributing environmental scenario and corresponding ERC	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC6: Calendering operations PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Tabletting, compression, extrusion, pelettisation, granulation
Further explanations	
Other Process or activity	Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing) and handling of waste.

2.1.1. Contributing scenario controlling environmental exposure for Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

Product characteristics

Physical state	Solid.
Amounts used	Not applicable.

Frequency and duration of use

Batch process	Not applicable.
Continuous process	Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:	Not applicable.
Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.

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Organisational measures to prevent/limit release from site	Not available.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %.
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa
vapour pressure	-
Process temperature	Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Amounts used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified.

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Organizational measures to prevent/limit releases, dispersion and exposure	No other specific measures identified.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) 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.

3. Exposure Estimation

Environment

Not available.

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

Health

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

6 - Exposure Scenario Worker

1. Use in agrochemicals

List of use descriptors

Sector(s) of Use	SU22: Professional uses
Name of contributing environmental scenario and corresponding ERC	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC4: Chemical production where opportunity for exposure arises PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC11: Non-industrial spraying PROC13: Treatment of articles by dipping and pouring
Further explanations	
Other Process or activity	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.

2.1.1. Contributing scenario controlling environmental exposure for Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

Product characteristics

Physical state	Solid.

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Amounts used

Not applicable.

Frequency and duration of use

Batch process	Not applicable.
Continuous process	Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:	Not applicable.
Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Organisational measures to prevent/limit release from site	Not available.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

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2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %.
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa
vapour pressure	-
Process temperature	Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Amounts used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified.
Organizational measures to prevent/limit releases, dispersion and exposure	No other specific measures identified.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) 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.

3. Exposure Estimation

Environment

Not relevant.

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

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Health

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

7 - Exposure Scenario Consumer

1. Use in agrochemicals

List of use descriptors

Sector(s) of Use	SU21: Consumer uses
Name of contributing environmental scenario and corresponding ERC	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
List of names of contributing consumer scenarios and corresponding PROCs	PC12: Fertilizers PC22: Lawn and garden preparations, including fertilizers PC27: Plant protection products
Further explanations	
Other Process or activity	Covers the consumer use of agrochemicals in liquid and solid forms.

2.1.1. Contributing scenario controlling environmental exposure for Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

Product characteristics

Physical state	Solid.
Amounts used	Not applicable.

Frequency and duration of use

Batch process	Not applicable.
Continuous process	Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:	Not applicable.
Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

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Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

2.2.1. Contributing exposure scenario controlling consumer exposure for Fertilizers

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %. PC12, PC27: Covers concentrations up to 90% PC22: Products containing Sulfur in high percentages (assume 90%) are sold for acidification of soil, to treat certain plant diseases (e.g. scab on potatoes) and as worm-deterrent (http://www.progreen.co.uk/index.php?c=61&p=132).
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa
vapour pressure	-
Process temperature	Assumes activities are at ambient temperature (unless stated differently).

Amounts used

Covers use up to	37500 g Unless otherwise stated.
Covers skin contact area up to	6600 cm^2 Unless otherwise stated.
For each use event, covers use amounts up to	2500 g (PC12, PC27)
Covers skin contact area up to	857,5 cm^2 (PC12, PC27)
For each use event, assumes swallowed amount of	0,3 g (PC12, PC27)

Frequency and duration of use

	Duration	Frequency of use	Remarks
Unless otherwise stated.	<= 8	<= 4 times per day	(Duration unit = hour)
PC12, PC22, PC27	1	<= 1 days per year	events per day

Human factors not influenced by risk management

Other given operational conditions affecting consumer exposure

Area of use	Room size	Temperature	Ventilation rate	Remarks
Assumes a room volume of maximum	20 m^3	Typical ventilation		Indoor use
PC12, PC22, PC27				Outdoor use

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Conditions and measures related to information and behavioral advice to consumers

Not available.

Conditions and measures related to personal protection, hygiene and health evaluations	No specific risk management measure identified beyond those operational conditions stated.

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3. Exposure Estimation

Environment

Not applicable.

Health

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC report #107 and the chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these source, then they are indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

Health

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

8 - Exposure Scenario Worker

1. Use in rubber production and processing

List of use descriptors

Sector(s) of Use	SU3: Industrial uses SU10: Formulation [mixing] of preparations and/or re-packaging SU11: Manufacture of rubber products
Name of contributing environmental scenario and corresponding ERC	ERC1: Manufacture of the substance ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC13: Treatment of articles by dipping and pouring PROC14: Tabletting, compression, extrusion, pelettisation, granulation PROC15: Use as laboratory reagent PROC21: Low energy manipulation and handling of substances bound in/on materials and/or articles

Further explanations

Other Process or activity	Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, calendaring, vulcanising, cooling and finishing as well as maintenance.

2.1.1. Contributing scenario controlling environmental exposure for Manufacture of the substance

Product characteristics

Physical state	Solid.

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Amounts used

Not applicable.

Frequency and duration of use

Batch process	Not applicable.
Continuous process	Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:	Not applicable.
Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Organisational measures to prevent/limit release from site	Not available.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

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2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %.
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa
vapour pressure	-
Process temperature	Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Amounts used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified.
Organizational measures to prevent/limit releases, dispersion and exposure	No other specific measures identified.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) 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.

3. Exposure Estimation

Environment

Not applicable.

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

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Health

Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Risk management measures are based on qualitative risk characterisation.
Available hazard data do not enable the derivation of a DNEL for carcinogenic 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.

9 - Exposure Scenario Worker

1. Use in explosives

List of use descriptors	
Sector(s) of Use	SU22: Professional uses
Name of contributing environmental scenario and corresponding ERC	ERC8e: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5: Mixing or blending in batch processes PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities
Further explanations	
Other Process or activity	Covers exposures arising from the manufacture and use of slurry explosives (including materials transfer, mixing and charging) and equipment cleaning.

2.1.1. Contributing scenario controlling environmental exposure for Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)

Product characteristics

Physical state	Solid.
Amounts used	
	Not applicable.
Frequency and duration of use	
Batch process	Not applicable.
Continuous process	Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:	Not applicable.
Local marine water dilution factor:	Not applicable.
Other factors	Not applicable.

Other given operational conditions affecting environmental exposure

Not applicable.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Not applicable.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.

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Sediment	Not available.
Organisational measures to prevent/limit release from site	Not available.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Not applicable.
Discharge rate	Not applicable.
Treatment effectiveness	Not applicable.
Sludge treatment technique	Not applicable.
Measures to limit air emissions	Not applicable.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Not available.
Treatment effectiveness	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	Not available.
Treatment effectiveness	Not applicable.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 %.
Physical form of the product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa
vapour pressure	-
Process temperature	Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Amounts used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	No other specific measures identified.

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Organizational measures to prevent/limit releases, dispersion and exposure	No other specific measures identified.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) 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.

3. Exposure Estimation

Environment

Not applicable.

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment

Not applicable.

Health

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

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