



MATERIAL SAFETY DATA SHEET

In accordance with Regulation (EU) 453/2010
(Milled sulphur, granulated sulphur)

Developed: 15.12.2005

Revision: 01.08.2011

Version: 1.1CLP

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SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

1.1. Identification of the preparation

Name: **SULPHUR**
Trade name: Milled sulphur, granulated sulphur
CAS No.: 7704-34-9
EC No.: 231-722-6
Index No.: 016-094-00-1
Reg. No.: 01-2119487295-27-XXXX

1.2. Identification of significant applications of the substance or preparation and applications that are not recommended

The product is used as a raw material in the organic and inorganic chemical industry, including the production of sulfuric acid, fertilizers, crop protection chemicals, paper, paper and plastic packaging, explosive materials, carbon electrodes, cutting fluids, rubber vulcanizing, crude oil refining, steel melting, pH control in food industry, disinfection of tools and rooms used for agricultural manufacturing processes.

1.3. Manufacturer information

Manufacturer: "Siarkopol" TARNOBRZEG Chemical Plants Ltd.
Address: ul. Chemiczna 3, 39-400 Tarnobrzeg
Tel./Fax: (00-48-15) 855 57 10 / (00-48-15) 822 97 97
E-mail: sekretariat@zchsiarkopol.pl

1.4. Emergency telephone:

(00-48-15) 855 41 14 or 855 45 48

SECTION 2. HAZARD IDENTIFICATION

2.1. Classification of the substance or preparation

	Classification	Acc to Regulation (EC) No. 1272/2008 (CLP)+ additional classification:	Acc to Council Directive 67/548/EEC.
Hazards			
effects of physical and chemical properties		Not classified. No hazard.	Not classified. No hazard.
for humans		Irritating effects on skin: Skin Irritant. 2 (H315 Causes skin irritation).	Xi, R38 Irritating to skin.
for environment		Not classified. No hazard.	Not classified. No hazard.

2.2. Labeling



GHS Pictograms: GHS07



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Signal Word: **Warning**

Hazard Statement:

H315 Causes skin irritation

Precautionary Statement

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

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

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

2.3. Other hazards

Flammable solid-state substance. During combustion, toxic and irritating gases, vapor and smoke are released. Sulphur dust and vapors form explosive mixtures with air. Sulphur dust may irritate the mucous membranes of the respiratory tract, eyes, as well as the skin and lungs.

SECTION 3. COMPOSITION/INFORMATION ABOUT INGREDIENTS

3.1. Substances

<u>Substance name</u>	<u>Symbol</u>	<u>% by weight</u>	<u>CAS No.</u>	<u>EC No.</u>	<u>Index No.</u>
Sulphur	S	>99	7704-34-9	231-722-6	016-094-00-1

SECTION 4. FIRST-AID MEASURES

4.1. Description of first-aid measures

Inhalation:

Getting the victim into fresh air should be sufficient. Seek medical advice if symptoms persist or when feeling unwell.

Skin contact:

Change contaminated clothing. Carefully wash the contaminated skin with soap and water, then rinse with large amounts of water. Seek medical advice if symptoms persist or in the case of irritation.

Eye contact:

Immediately rinse the eyes with plenty of cool water, under the lids as well. If irritation persists, continue rinsing for 15 minutes, occasionally lifting the eyelids.

Indigestion:

Immediately rinse the mouth out with water, then drink a large amount of water or milk with egg whites. Flush the material in stomach with a 5% sodium bicarbonate solution, administer cathartic.

4.2. Main acute and delayed symptoms and effects of exposure

Not likely to occur.

4.3. Recommendations related to emergency medical aid and the specific handling of the affected person

If SO₂ is released, use respiratory protection.

Show the safety data sheet, label or packaging to the medical personnel providing aid.

Recommendations for doctors: symptomatic treatment.

SECTION 5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Sprayed water, foam, CO₂ and other available extinguishing media.

Extinguishing media to avoid: Direct water jet on the product.

5.2. Specific hazards related to the substance or preparation

Flammable substance. Mixtures with product dust and vapors with air are explosive. Melted sulphur contains some hydrogen sulfide. Fired sulphur results in the release of toxic (when inhaled) and irritating gas – sulphuric dioxide.

Containers exposed to fire or high temperatures should be kept cool with water and removed from the affected



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area if possible.

5.3. Information for fire-fighters

Use spray, droplet and mist water for extinguishing a large fire. Water mist is efficient in rooms.
Use body protection equipment and a self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Individual precautions, personal protective equipment and emergency procedures

Use personal protective equipment – see also section 8 of this safety data sheet. Do not cause uplifting dust.
Provide sufficient ventilation. Avoid inhaling dust.

6.2. Environmental precautions:

Secure drains.

6.3. Methods and materials to avoid contamination expansion and cleaning

Collect scattered material. If the collected material is not suitable for intended use and is classified as waste, proceed in accordance with the provisions of section 13 of this safety data sheet.

6.4. References to other sections

Refer also to sections 8 and 13 of this safety data sheet.

SECTION 7. HANDLING AND STORAGE

7.1. Conditions for safe handling

Do not eat, drink, smoke or take drugs, avoid inhaling vapors, dust, smoke or spray and adhere to personal hygiene requirements when handling sulphur. Use PPE in accordance with the provisions of section 8 of this safety data sheet.

7.2. Conditions for safe storage, including information on any non-compatible products

All storage rooms must be ventilated due to the risk of the formation of explosive mixtures with air. Electrical systems should be explosion-proof. Keep away from naked flame, heat sources and reactive products (strong bases, oxidants).

Large amounts of sulphur are kept in bulk, preferably under cover. Smaller amounts are stored in bags, jars or drums. Avoid contact with pyrophoric iron, copper components, ammonia, nitric acid, metallic dust, chlorates, nitrates, perchlorates, permanganates, anhydrides. Molten sulphur reacts with most oxidants.

7.3. Specific end-use application(-s)

See section 1.2 or attachment to this safety data sheet – exposure scenario, if available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure control parameters

Hydrogen sulfide OEL: 10 mg/m³, STEL: 20 mg/m³, TLV-C: – (in contact with reducing agents)

Sulphur dioxide OEL: 1.3 mg/m³, STEL: 2.7 mg/m³, TLV-C: – (fire and sulphur inflammation)

Regulation of the Minister of Labor and Social Policy of 29 November 2002 on maximum permissible concentration and intensity of agents harmful to health in the working environment (Journal of Laws No. 217, item 1833; 2005. Journal of Laws No. 212, item 1769; 2007. Journal of Laws No. 161, item 1142; 2009. Journal of Laws No. 105, item 873; 2010. Journal of Laws No. 141, item 950).

DNEL: not applicable (non-toxic substance)

PNEC: not applicable (non-toxic substance)

8.2. Exposure controls

Technical measures to prevent exposure:

Provide general and local ventilation to ensure that the concentration of air contaminants below the allowable maximum limits. When substance concentration is known and stable, select PPE with consideration of the substance concentration at the workplace, exposure time and operations performed by the personnel. Where explosive or toxic concentrations of gas, dust and vapor may exist, apply water spraying.

Eye and face protection:

Use safety goggles in the case of excessive dust concentration.

Skin protection:



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Wear fabric gloves, preferably made of cotton, with leather protective sections. Use clothing made of close-weave fabric and safety shoes.

Respiratory protection:

When working in an atmosphere containing sulphur dust and vapor released during combustion processes, use P2 particle filters and acid vapor filters marked with a yellow color and the letter E.

Thermal hazards:

N/A

Environmental exposure control:

Avoid releasing the substance to soils, sewage drains and waters.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

a) Form	: Solid, yellow
b) Smell	: Characteristic
c) Odor threshold	: Not applicable
d) pH	: 6.5% (100 g/l at 20°C)
e) Melting/freezing points	: 112,8°C / not applicable
f) Initial boiling point and boiling range	: 444,6°C
g) Flash point	: 168-207°C
h) Evaporation rate	: Not applicable
i) Combustibility (solid, gas)	: Flammable
j) Upper/lower flammability limit or upper/lower explosive limit	: 20+/-1,2 g/m ³ (lower limit, dust cloud)
k) Vapor pressure	: 133,3 Pa (at 183°C)
l) Vapor density	: Not applicable
m) Relative density	: 2.07 g/cm ³ at 20°C
n) Solubility	: Non-soluble in water. Soluble in carbon disulfide, chloroform, benzene, toluene.
o) N-octanol/water partition coefficient (Pow)	: Not applicable
p) Self-ignition temperature	: 215°C
q) Decomposition temperature	: Not applicable
r) Viscosity	: 10-11cP (119°C)
s) Explosive properties	: Sulphur dust forms explosive mixtures with air. Sulphur poses the risk of explosion in reactions with nitrates, chlorates, perchlorates and permanganates.
t) Oxidizing properties	: Molten sulphur reacts with most oxidants.

9.2. Other information

Surface tension	: 1200-1350 kg/m ³ (granulated sulphur)
	: 550-750 kg/m ³ (milled sulphur)

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity

The product is reactive.

10.2. Chemical stability

The substance is stable during storage and handling under normal ambient conditions, nominal temperature and pressure.

10.3. Dangerous reactions

Avoid contact with pyrophoric iron, copper components, ammonia, nitric acid, metallic dust, chlorates, nitrates, perchlorates, permanganates, anhydrides.

10.4. Conditions to avoid

Avoid contact with naked flame and other strong heat sources.

10.5. Materials to avoid



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Avoid contact with pyrophoric iron, copper components, ammonia, nitric acid, metallic dust, chlorates, nitrates, perchlorates, permanganates, anhydrides. Molten sulphur reacts with most oxidants. Sulphur is corrosive to metals.

10.6. Hazardous decomposition products

No hazardous decomposition products identified. Combustion products released under fire conditions. See section 5 of this safety data sheet.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:

LD50: >2000 mg/kg BM (oral, rat)
LD50: >2000 mg/kg BM (skin, rabbit)
LC50: >5430 mg/m³ (inhalation, rat, 4h)

Caustic/irritating effects on skin:

Sulphur dust irritates the skin.

Severe disturbances to eyes/irritating effects on eyes:

Sulphur dust irritates the skin. The product may be irritating to eyes and results in reddening or even pain.

Allergic effects on respiratory system or skin:

Based on the available information, classification criteria are not met.

Mutagenic effects on reproductive cells:

Based on the available information, classification criteria are not met.

Carcinogenic effects:

Based on the available information, classification criteria are not met.

Reproductive effects:

Based on the available information, classification criteria are not met.

Toxic effects on specific organs – one-time exposure:

Based on the available information, classification criteria are not met.

Inhaling vapors results in shortening breath with coughing. Vapors released from molten sulphur may be absorbed by the lungs very quickly. When swallowed, nausea and vomiting occur, or, in more severe cases hand and leg shaking and dizziness may result.

Toxic effects on specific organs – repeated exposure:

Based on the available information, classification criteria are not met.

Persons under repeated exposure to the inhalation of air containing a large amount of sulphur vapors and dust may suffer from sensitization of mucous membranes, headaches and dizziness, excitement or sedation, digestive disorders, dryness and cracking of the skin.

Hazards related to aspiration:

Based on the available information, classification criteria are not met.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity:

Aquatic environment:

Examination of acute and chronic toxicity on invertebrates, algae and fish: no data.

Sediment:

Examination of toxic effects on species in sediment: no data.

Land environment:

Examination of toxic effects on invertebrates: no data.

Examination of toxic effects on plants: no data.

Examination of toxic effects on earthworms: no data.



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12.2. Persistence and biodegradability

Sulphur: as a result of microbiological decomposition in soil, unbound sulphur is oxidized to sulfate (aerobic conditions) or reduced to sulfide (anaerobic conditions).

12.3. Bioaccumulation

No data.

12.4. Mobility in soil

No data.

12.5. PBT and vPvB assessment results

No data.

12.6. Other hazardous effects

A small amount of sulphur left on the ground does not pose a significant threat to the environment, as the amount is gradually reduced: it is used on the ground surface both by microorganisms and plants; it is transformed to sulphur dioxide in contact with air or sulphuric acid (IV) in contact with moisture, or, under some conditions, to sulphur trioxide and sulphuric acid (VI) or it is reduced to sulfides.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste disposal methods

Wastes related to the use of sulphur may include: contaminated sulphur, used sulphur packaging.

Such wastes should be adequately managed each time (recycling or disposal) in accordance with applicable national regulations on wastes (particularly hazardous wastes) and local agreements between the user of sulphur and administration (e.g. decisions by respective Province Governors).

Waste codes: 060199 (wastes not otherwise specified), 060499 (wastes not otherwise specified), 060699 (wastes not otherwise specified).

There are no limitations for reusing contaminated sulphur, provided that the technology allows recovery. Recovery or disposal of product wastes must adhere to applicable regulations. Recommended disposal method: **incineration**.

Contaminated sulphur product packaging may be reused for the same purpose and becomes wastes only when it is not reusable anymore (including damaged packaging). In such cases, such packaging wastes may be returned to the supplier of sulphur or disposed and/or reused in accordance with the above rules. There are no specific recommendations for methods of disposal of used sulphur product packaging.

The Act of 27 April 2001 on wastes (Journal of Laws of 2010 No. 185, item 1243, including further amendments).

The Act of 11 May 2001 on packaging and packaging waste (Journal of Laws No. 63, item 628; including further amendments).

Regulation of the Minister of Environment of 27 September 2001 on waste catalogue (Journal of Laws No. 112, item 1206, including further amendments).

SECTION 14. TRANSPORT INFORMATION

Milled sulphur is subject to the regulations on the carriage of dangerous IMDG (maritime transport).

14.1. UN number	1350
14.2. Proper shipping name (UN)	Sulphur
14.3. Transportation hazard class	4.1
14.4. Packaging group	III
14.5. Environmental hazards	No hazard to environment
14.6. Special precautions for users	None
14.7. Bulk transport in accordance to MARPOL Annex II 73/78 and IBC Code	No data

- *Milled sulphur is not covered by ADR/RID provisions based on the classification certificate No. 078/IPO-BC/2011 issued by the Institute of Industrial Organic Chemistry in Warsaw on 27.05.2011.*



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- *Granulated sulphur is not covered by ADR/RID/IMDG provisions based on the specific/special regulation No. 242.*

SECTION 15. REGULATORY INFORMATION

15.1. Health, safety and environmental protection regulations related specifically to the substance or preparation.

The Act of 25 February 2011 on chemical substances and their mixtures (Journal of Laws of 2011, No. 63, item 322)
Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (corrected in Official Journal L 136 of 29.05.2007; including with further amendments)

Commission Regulation (UE) No. 453/2010 of 20 May 2010 amending Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Official Journal L 133 of 31.05.2010).

Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006 (Official Journal L No. 353 of 31.12.2008; including further amendments).

Regulation of the Minister of Health of 2 September 2003 on the criteria and method of classification of chemical substances and preparations (Journal of Laws of 2003, No. 171, item 1666; 2004, No. 243, item 2440; 2007, No. 174, item 1222; 2009, No. 43, item 353).

Regulation of the Minister of Health and Social Policy 26 September 1997 on general principles of work safety and hygiene (consolidated text of Journal of Laws of 2003, No. 169, item 1650; 2007, No. 49, item 330; 2008, No. 108, item 690).

Regulation of the Minister of Economy of 8 July 2010 on minimal requirements of the safety and health protection at work related with a potential risk of occurrence of an explosive atmosphere in the workplace (Journal of Laws of 2010, No. 138, item 931).

The Act of 24 August 1991 on fire protection (consolidated text enclosed to the Journal of Laws of 2009, No. 178, item 1380; 2010, No. 57, item 353).

The Act of 31 March 2004 on the transport of dangerous goods by rail (Journal of Laws of 2004, No. 97, item 962; 2005, No. 141, item 1184; 2006, No. 249, item 1834; 2007, No. 176, item 1238).

The Act of 28 October 2002 on road transport of hazardous goods (Journal of Laws of 2002, No. 199, item 1671; including further amendments).

15.2. Chemical safety assessment

The manufacturer has performed the assessment of the substance chemical safety.

SECTION 16. OTHER INFORMATION

Modifications introduced in this revision:

Verification of the applicable regulations, a new Company address and new IPO classification certificate. Modified sections: 1, 13, 14, 15, 16.

List of abbreviations used in this safety data sheet:

OEL	Occupational Exposure Limit
STEL	Short-Term Exposure Limit
TLV-C	Threshold Limit Value - Ceiling
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
LD ₅₀	Median lethal dosage, at which the death of 50% of the tested animals is observed
LC ₅₀	Median lethal concentration, at which the death of 50% of the tested animals is observed
vPvB	Very Persistent and Very Bioaccumulative (substance)
PBT	Persistent, Bioaccumulative and Toxic (substance)
RID	Regulations concerning the international carriage of dangerous goods by rail
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
IMDG	International Maritime Dangerous Goods Code

Literature and resources:

Regulations referred to in sections 2 – 15 of this material safety data sheet.
Information provided by Siarkopol TARNOBRZEG Chemical Plants Ltd.



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The full list of applicable R-phrases, hazard phrases, S-phrases and precaution phrases, which has not been provided in sections 2 - 15 of this material safety data sheet.

Not applicable.

Recommendations related to personnel training:

Personnel handling the sulphur should be trained in safe substance handling and first aid in case of contact with the skin, contamination of the eyes, indigestion and inhalation of vapors or dust.

Exposure scenarios: constitute an attachment to this material safety data sheet.

Disclaimer: Product users are responsible for implementing all measures to comply with the requirements of national laws. Information contained in this safety data sheet describes requirements for the safe use of the product. Product users are fully responsible for determining if the product is suitable for particular applications. Information contained in this safety data sheet should not be considered as an assessment of safety at the user's workplace. This material safety data sheet may not be treated a guarantee of substance performance and quality.



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ENCLOSURES TO MSDS – EXPOSURE SCENARIOS

Section 1 Exposure scenario (1)	
Title	
Manufacturing of substance – industrial	
Use descriptors	
Sector(s) of Use (SoU)	3, 8, 9
Process Categories (PROC)	1, 2, 3, 4, 8a, 8b, 15
Environmental Release Categories (ERC)	1, 4
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance or use as a process chemical or extraction agent should be performed in closed loop or secured systems. This applies to accidental exposure during recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment method	
Please Section 3	
Section 2 Operational Conditions and Risk Management Measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing scenarios	
Specific Risk Management Measures (RMM) and Operating Conditions (OC)	
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize exposures and to report any skin problems that may develop.
General exposures (closed systems)	No other specific measures identified.
General exposures (closed systems) with sample collection	No other specific measures identified.
General exposures (closed systems), batch process, with sample collection	No other specific measures identified.
Process sampling	No other specific measures identified.
General exposures (open systems)	No other specific measures identified.
Laboratory activities	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Equipment cleaning and	No other specific measures identified.



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maintenance	
Bulk product storage	No other specific measures identified.
Section 2.2 Control of environmental exposure	
Not applicable	
Section 3 Exposure estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2. Environment	
Not applicable	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.	
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.	
4.2. Environment	
Not applicable	

Section 1 Exposure scenario (2)	
Title	
Use of Substance as intermediate – industrial	
Use descriptors	
Sector(s) of Use (SoU)	3, 8, 9
Process Categories (PROC)	1, 2, 3, 4, 8a, 8b, 15, 22, 23
Environmental Release Categories (ERC)	6a
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 6.1a.v1
Processes, tasks, activities covered	
Use of substance as intermediate (does not apply to Strictly Controlled Conditions - SCC). Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment method	
Please Section 3	
Section 2 Operational Conditions and Risk Management Measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing scenarios	Specific Risk Management Measures (RMM) and Operating Conditions (OC)
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin



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	contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize exposures and to report any skin problems that may develop.
General exposures (closed systems)	No other specific measures identified.
General exposures (closed systems) with sample collection	No other specific measures identified.
General exposures (closed systems), batch process, with sample collection	No other specific measures identified.
Process sampling	No other specific measures identified.
General exposures (open systems)	No other specific measures identified.
Laboratory activities	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Equipment cleaning and maintenance	No other specific measures identified.
Bulk product storage	No other specific measures identified.
Section 2.2 Control of environmental exposure	
Not applicable	
Section 3 Exposure estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2. Environment	
Not applicable	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.	
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.	
4.2. Environment	
Not applicable	

Section 1 Exposure scenario (3)	
Title	
Distribution of substance – industrial	
Use descriptors	
Sector(s) of Use (SoU)	3
Process Categories (PROC)	1, 2, 3, 4, 8a, 8b, 9, 15
Environmental Release Categories (ERC)	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	
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.	
Assessment method	
Please Section 3	
Section 2 Operational Conditions and Risk Management Measures	
Section 2.1 Control of worker exposure	



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Product characteristics	
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing scenarios	Specific Risk Management Measures (RMM) and Operating Conditions (OC)
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize exposures and to report any skin problems that may develop.
General exposures (closed systems)	No other specific measures identified.
General exposures (closed systems) with sample collection	No other specific measures identified.
General exposures (closed systems), batch process, with sample collection	No other specific measures identified.
Process sampling	No other specific measures identified.
General exposures (open systems)	No other specific measures identified.
Laboratory activities	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Small package filling	No other specific measures identified.
Equipment cleaning and maintenance	No other specific measures identified.
Bulk product storage	No other specific measures identified.
Section 2.2 Control of environmental exposure	
Not applicable	
Section 3 Exposure estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2. Environment	
Not applicable	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.	
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.	
4.2. Environment	
Not applicable	

Section 1 Exposure scenario (4)



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Title	
Formulation (mixing) and (re)packing of substances and mixtures – industrial	
Use descriptors	
Sector(s) of Use (SoU)	3, 10
Process Categories (PROC)	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15, 23, 24
Environmental Release Categories (ERC)	2
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 2.2.v1
Processes, tasks, activities covered	
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.	
Assessment method	
Please Section 3	
Section 2 Operational Conditions and Risk Management Measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing scenarios	Specific Risk Management Measures (RMM) and Operating Conditions (OC)
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize exposures and to report any skin problems that may develop.
General exposures (closed systems)	No other specific measures identified.
General exposures (closed systems) with sample collection	No other specific measures identified.
General exposures (closed systems), batch process, with sample collection	No other specific measures identified.
Process sampling	No other specific measures identified.
General exposures (open systems)	No other specific measures identified.
Mixing operations (open systems)	No other specific measures identified.
Milling, grinding and similar activities.	No other specific measures identified.
Small package filling	No other specific measures identified.
Granulating	No other specific measures identified.
Laboratory activities	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Equipment cleaning and maintenance	No other specific measures identified.
General exposures (open systems) elevated temperature	No other specific measures identified.
Bulk product storage	No other specific measures identified.



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Section 2.2 Control of environmental exposure

Not applicable

Section 3 Exposure estimation

3.1. Health

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

3.2. Environment

Not applicable

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.

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.

4.2. Environment

Not applicable

Section 1 Exposure scenario (5)

Title

Use of Substance as release agents or binders – industrial

Use descriptors

Sector(s) of Use (SoU)	3
Process Categories (PROC)	1, 2, 3, 4, 6, 8a, 8b, 10, 13, 14
Environmental Release Categories (ERC)	4
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 4.10a.v1

Processes, tasks, activities covered

Covers the use as binders and release agents including material transfers, mixing and application (including spraying and brushing) and handling of waste.

Assessment method

Please Section 3

Section 2 Operational Conditions and Risk Management Measures

Section 2.1 Control of worker exposure

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios

Specific Risk Management Measures (RMM) and Operating Conditions (OC)

General measures (skin irritants) Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely.



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	Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize 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.
General exposures (closed systems)	No other specific measures identified.
General exposures (closed systems) with sample collection	No other specific measures identified.
General exposures (closed systems), batch process, with sample collection	No other specific measures identified.
General exposures (open systems)	No other specific measures identified.
Mixing operations (open systems)	No other specific measures identified.
Roller, spreader and flow application	No other specific measures identified.
Dripping, immersion and pouring	No other specific measures identified.
Article formation in mould	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Equipment cleaning and maintenance	No other specific measures identified.

Section 2.2 Control of environmental exposure

Not applicable

Section 3 Exposure estimation

3.1. Health

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

3.2. Environment

Not applicable

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.

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.

4.2. Environment

Not applicable

Section 1 Exposure scenario (6)

Title

Use of Substance as release agents or binders – professional

Use descriptors

Sector(s) of Use (SoU)	22
Process Categories (PROC)	1, 2, 3, 4, 6, 8a, 8b, 10, 13, 14
Environmental Release Categories (ERC)	8a, 8d
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 8.10b.v1

Processes, tasks, activities covered

Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing) and handling of waste.

Assessment method

Please Section 3



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Section 2 Operational Conditions and Risk Management Measures

Section 2.1 Control of worker exposure

Product characteristics	
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing scenarios	
Specific Risk Management Measures (RMM) and Operating Conditions (OC)	
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize 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.
General exposures (closed systems)	No other specific measures identified.
General exposures (closed systems) with sample collection	No other specific measures identified.
General exposures (closed systems), batch process, with sample collection	No other specific measures identified.
General exposures (open systems)	No other specific measures identified.
Mixing operations (open systems)	No other specific measures identified.
Roller, spreader and flow application	No other specific measures identified.
Dripping, immersion and pouring	No other specific measures identified.
Article formation in mould	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Equipment cleaning and maintenance	No other specific measures identified.

Section 2.2 Control of environmental exposure

Not applicable

Section 3 Exposure estimation

3.1. Health

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

3.2. Environment

Not applicable

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.

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.



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Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

Not applicable

Section 1 Exposure scenario (7)

Title

Use of Substance in agrochemicals – professional

Use descriptors

Sector(s) of Use (SoU)	22
Process Categories (PROC)	1, 4, 8a, 8b, 11, 13
Environmental Release Categories (ERC)	8a, 8d
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 8.11a.v1

Processes, tasks, activities covered

Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging, including equipment clean-downs and disposal.

Assessment method

Please Section 3

Section 2 Operational Conditions and Risk Management Measures

Section 2.1 Control of worker exposure

Product characteristics

Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.

Contributing scenarios

Specific Risk Management Measures (RMM) and Operating Conditions (OC)

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize 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.
General exposures (closed systems)	No other specific measures identified.
General exposures (open systems)	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Spraying	No other specific measures identified.
Dripping, immersion and pouring	No other specific measures identified.
Equipment cleaning and maintenance	No other specific measures identified.

Section 2.2 Control of environmental exposure

Not applicable

Section 3 Exposure estimation



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3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
3.2. Environment
Not applicable
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.
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.
4.2. Environment
Not applicable

Section 1 Exposure scenario (8)	
Title	
Use of Substance in agrochemicals– consumer	
Use descriptors	
Sector(s) of Use (SoU)	21
Product Categories (PC)	12, 22, 27
Environmental Release Categories (ERC)	8a, 8d
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 8.11b.v1
Processes, tasks, activities covered	
Covers the consumer use in agrochemicals in liquid and solid forms.	
Assessment method	
Please Section 3	
Section 2 Operational Conditions and Risk Management Measures	
Section 2.1 Control of consumer exposure	
Product characteristics	
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Unless otherwise stated, covers concentrations up to 100%.
Amounts used	Unless otherwise stated, covers use amounts up to 37500 g; covers skin contact area up to 6600 cm ²
Frequency and duration of use/exposure	Unless otherwise stated, covers use frequency up to 4 times per day; covers exposure up to 8 hours per event.
Other operational conditions affecting exposure	Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m ³ room; assumes use with typical ventilation.
Contributing scenarios	
Specific Risk Management Measures (RMM) and Operating Conditions (OC)	
PC12: Fertilizers	OC Unless otherwise stated, covers concentrations up to 90%; covers use up to 1 days/year; covers use up to 1 time/on day of use; covers skin contact area up to 857.50 cm ² ; for each use event, assumes swallowed amount of 0.3 g; for each use event, covers use amounts up to 2500 g; covers outdoor use.
	RMM No specific RMMs identified beyond those OCs stated.
PC22: Lawn and garden preparations, including fertilizers	OC Products containing Sulphur 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). The products are provided as prill (pellets) in bags of 1 kg. Recommended application frequency: 1 per year.



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	RMM	No specific RMMs identified beyond those OCs stated.
PC27: Plant protection products	OC	Unless otherwise stated, covers concentrations up to 90%; covers use up to 1 day/year; covers use up to 1 time/on day of use; covers skin contact area up to 857.50 cm ² ; for each use event, assumes swallowed amount of 0.3 g; for each use event, covers use amounts up to 2500 g; covers outdoor use.
	RMM	No specific RMMs identified beyond those OCs stated.
Section 2.2 Control of environmental exposure		
Not applicable		
Section 3 Exposure estimation		
3.1. 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 sources, then they are indicated.		
3.2. Environment		
Not applicable		
Section 4 Guidance to check compliance with the Exposure Scenario		
4.1. 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.		
4.2. Environment		
Not applicable		

Section 1 Exposure scenario (9)	
Title	
Use of Substance in rubber production and processing – industrial	
Use descriptors	
Sector(s) of Use (SoU)	3, 10, 11
Process Categories (PROC)	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 13, 14, 15, 21
Environmental Release Categories (ERC)	1, 4, 6d
Specific Environmental Release Categories (SPERC)	ESVOC SpERC 4.19.v1
Processes, tasks, activities covered	
Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, vulcanising, cooling and finishing.	
Assessment method	
Please Section 3	
Section 2 Operational Conditions and Risk Management Measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.



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Contributing scenarios	Specific Risk Management Measures (RMM) and Operating Conditions (OC)
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize 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.
General exposures (closed systems)	No other specific measures identified.
General exposures (closed systems) with sample collection	No other specific measures identified.
General exposures (closed systems), batch process, with sample collection	No other specific measures identified.
General exposures (open systems)	No other specific measures identified.
Mixing operations (open systems)	No other specific measures identified.
Calendering (including Banburys); vulcanisation; cooling cured articles	No other specific measures identified.
Spraying	No other specific measures identified.
Small scale weighing	No other specific measures identified.
Dripping, immersion and pouring	No other specific measures identified.
Pressing uncured rubber blanks	No other specific measures identified.
Finishing operations	No other specific measures identified.
Laboratory activities	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Equipment cleaning and maintenance	No other specific measures identified.

Section 2.2 Control of environmental exposure

Not applicable

Section 3 Exposure estimation

3.1. Health

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

3.2. Environment

Not applicable

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.

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.

4.2. Environment

Not applicable

Section 1 Exposure scenario (10)

Title

Use of Substance in explosives manufacture and use – professional

Use descriptors



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Sector(s) of Use (SoU)	22
Process Categories (PROC)	1, 3, 5, 8a, 8b
Environmental Release Categories (ERC)	8e
Specific Environmental Release Categories (SPERC)	Not applicable
Processes, tasks, activities covered	
Covers exposures arising from the manufacture and use of slurry explosives (including materials transfer and equipment cleaning).	
Assessment method	
Please Section 3	
Section 2 Operational Conditions and Risk Management Measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Solid at STP, liquid at elevated operating temperature, vapour pressure < 0,5 kPa.
Concentration of substance in product	Covers percentage substance in the product up to 100% (unless stated otherwise).
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated otherwise).
Human factors not influenced by risk management	Not applicable
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing scenarios	
Specific Risk Management Measures (RMM) and Operating Conditions (OC)	
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimize exposures and to report any skin problems that may develop.
General exposures (closed systems)	No other specific measures identified.
General exposures (closed systems), batch process, with sample collection	No other specific measures identified.
Mixing operations (open systems)	No other specific measures identified.
Bulk transfers, dedicated facility	No other specific measures identified.
Equipment cleaning and maintenance	No other specific measures identified.
Section 2.2 Control of environmental exposure	
Not applicable	
Section 3 Exposure estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2. Environment	
Not applicable	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterization.	
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	



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managed to at least equivalent levels.

4.2. Environment

Not applicable

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