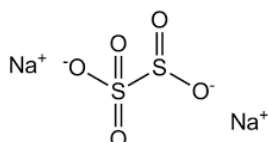


SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Substance name	: SODIUM METABISULPHITE
Chemical name	: sodium metabisulphite
IUPAC name	: disodium disulphite
EC Index-No.	: 016-063-00-2
EC-No.	: 231-673-0
CAS-No.	: 7681-57-4
REACH registration No	: 01-2119531326-45-0022
Type of product	: Pure substance
Formula	: Na ₂ S ₂ O ₅
Chemical structure	:



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

1.2.1. Relevant identified uses

Main use category	: Industrial use, Professional use, Consumer use
Use of the substance/mixture	: Drug manufacture, food additive, water treatment, textile manufacture
Function or use category	: Bleaching agents, Fertilisers, Food/feedstuff additives, Laboratory chemicals, Photochemicals, Reducing agents, Process regulators, Tanning agents

Title	Use descriptors
Manufacture of sodium metabisulfite and industrial use of sodium metabisulfite in the chemical industry (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU8, SU9, SU16, SU20, PC1, PC2, PC3, PC4, PC7, PC8, PC9a, PC9b, PC13, PC14, PC15, PC17, PC20, PC23, PC24, PC25, PC26, PC28, PC30, PC31, PC32, PC34, PC35, PC37, PC38, PC39, PC40, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6d, ERC7, ERC8b
Photographic industry (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU6b, SU7, PC30, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC8b
Textile/Leather industry (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU5, PC23, PC31, PC34, PC35, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6b, ERC7, ERC8c
Rubber/Plastic industry (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU7, SU11, SU12, PC1, PC32, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC6b

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Paper and pulp industry/Bleaching (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU6b, PC18, PC26, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC4, ERC6a, ERC6b
Industrial use of sodium metabisulfite in the wood and furniture industry (ES Ref.: ES-5)	SU6a, SU18, PROC4, PROC5, PROC6, PROC8b, PROC21, PROC24, ERC5, ERC6b
Food industry (processing aid for fructose and sugar production, starch industry) (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU4, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC2, ERC3, ERC4, ERC6a, ERC6b, ERC6c, ERC6d
Water treatment/Mining/Offshore/Metal industry/Surface treatment) (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU2a, SU2b, SU14, SU15, SU17, SU23, PC2, PC7, PC9a, PC14, PC15, PC17, PC20, PC24, PC25, PC37, PC38, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC2, ERC4, ERC6b, ERC7, ERC8b, ERC8e, ERC9a, ERC9b
Fibre industry (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU5, SU11, SU12, PC0, PC32, PC34, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC4, ERC6b, ERC6c
Additive for cement (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	SU13, SU19, PC9b, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC2, ERC3, ERC4, ERC5, ERC6b, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC10a
Agriculture and fertiliser industry	SU1, PC12, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC4, ERC8e
Industrial use of sodium metabisulfite in cosmetic industry (ES Ref.: ES-1) (ES Ref.: ES-2) (ES Ref.: ES-3) (ES Ref.: ES-4)	PC39, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, PROC19, PROC26, ERC2, ERC7
Photographic sector (ES Ref.: ES-6) (ES Ref.: ES-7) (ES Ref.: ES-8) (ES Ref.: ES-9)	PC30, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC8b
Textile/Leather sector (ES Ref.: ES-6) (ES Ref.: ES-7) (ES Ref.: ES-8) (ES Ref.: ES-9)	PC23, PC31, PC34, PC35, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6b, ERC7, ERC8c
Paper and pulp/Bleaching sector (ES Ref.: ES-6) (ES Ref.: ES-7) (ES Ref.: ES-8) (ES Ref.: ES-9)	PC18, PC26, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC4, ERC6a, ERC6b

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Professional use of wood products or furniture containing sodium metabisulfite (ES Ref.: ES-10)	SU6a, SU18, PROC21, PROC24, ERC11a, ERC11b
Use in food (ES Ref.: ES-6) (ES Ref.: ES-7) (ES Ref.: ES-8) (ES Ref.: ES-9)	PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC1, ERC2, ERC3, ERC4, ERC6a, ERC6b, ERC6c, ERC6d
Water treatment/Mining/Offshore/Metal sector/Surface treatment (ES Ref.: ES-6) (ES Ref.: ES-7) (ES Ref.: ES-8) (ES Ref.: ES-9)	PC2, PC7, PC9a, PC14, PC15, PC17, PC20, PC24, PC25, PC37, PC38, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC2, ERC4, ERC6b, ERC7, ERC8b, ERC8e, ERC9a, ERC9b
Use in cement (ES Ref.: ES-6) (ES Ref.: ES-7) (ES Ref.: ES-8) (ES Ref.: ES-9)	PC9b, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC2, ERC3, ERC4, ERC5, ERC6b, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC10a
Agriculture and fertiliser sector	PC12, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26, ERC4, ERC8e
Consumer use of sodium metabisulfite in photographic applications (ES Ref.: ES-11)	PC30, ERC8b

Full text of use descriptors: see section 16

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

1.4. Emergency telephone number

Emergency number : +90 226 357 2266

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Acute toxicity (oral), Category 4 H302

Serious eye damage/eye irritation, Category 1 H318

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Harmful if swallowed. Causes serious eye damage.

SODIUM METABISULPHITE

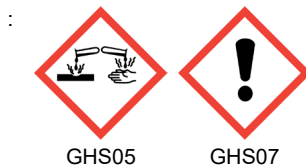
Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

2.2. Label elements

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

Hazard pictograms (CLP)



Signal word (CLP)

Hazard statements (CLP)

Precautionary statements (CLP)

- : Danger
- : H302 - Harmful if swallowed.
- : H318 - Causes serious eye damage.
- : P264 - Wash with water thoroughly after handling.
- : P270 - Do not eat, drink or smoke when using this product.
- : P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
- : P301+P312 - IF SWALLOWED: Call a POISON CENTRE or doctor if you feel unwell.
- : P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
- : P310 - Immediately call a POISON CENTER or doctor.
- : P321 - Specific treatment (see supplemental first aid instruction on this label).
- : P330 - Rinse mouth.
- : P362 - Take off contaminated clothing.
- : P501A - Dispose of this material and its container to hazardous or special waste collection point.
- : EUH031 - Contact with acids liberates toxic gas.

EUH-statements

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type

: Mono-constituent

Name	Product identifier	Conc. (% w/w)	Classification according to Regulation (EC) No. 1272/2008 [CLP]
SODIUM METABISULPHITE	CAS-No.: 7681-57-4 EC-No.: 231-673-0 EC Index-No.: 016-063-00-2 REACH-no: 01-2119531326-45-0022	≤ 98	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general

First-aid measures after inhalation

First-aid measures after skin contact

- : If you feel unwell, seek medical advice (show the label where possible).
- : Remove person to fresh air and keep comfortable for breathing. Give oxygen or artificial respiration if necessary. If symptoms persist call a doctor.
- : Wash skin with plenty of water. If irritation persists, consult a doctor.

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

First-aid measures after eye contact	: Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
First-aid measures after ingestion	: Rinse mouth. Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects after inhalation	: Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure.
Symptoms/effects after eye contact	: Serious damage to eyes. redness, itching, tears.
Symptoms/effects after ingestion	: Gastrointestinal complaints.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Dry powder.
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5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire	: Toxic fumes may be released.
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5.3. Advice for firefighters

Precautionary measures fire	: Approach from upwind.
Firefighting instructions	: Eliminate all ignition sources if safe to do so. Fight fire with normal precautions from a reasonable distance. Exercise caution when fighting any chemical fire. Keep upwind. Do not enter fire area without proper protective equipment, including respiratory protection.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	: Wear suitable protective clothing, gloves and eye or face protection.
Emergency procedures	: Do not attempt to take action without suitable protective equipment. Avoid contact with skin and eyes. Evacuate unnecessary personnel. Ventilate spillage area. Notify fire brigade and environmental authorities.

6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	: Mechanically recover the product. Shovel or sweep up and put in a closed container for disposal.
Other information	: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	: Ensure good ventilation of the work station.
Precautions for safe handling	: Ensure good ventilation of the work station. Avoid contact with skin and eyes. Wear personal protective equipment. Do not eat, drink or smoke when using this product.
Hygiene measures	: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Store in a well-ventilated place. Keep cool. Store in original container.
Incompatible materials	: Oxidation agents. acids.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

SODIUM METABISULPHITE (7681-57-4)	
Belgium - Occupational Exposure Limits	
Local name	Sodium (métabisulfite de) # Natriummetabisulfiet
OEL TWA	5 mg/m ³
Regulatory reference	Koninklijk besluit/Arrêté royal 21/01/2020
Denmark - Occupational Exposure Limits	
Local name	Natriumpyrosulfit (Natriummetabisulfit)
OEL TWA [1]	5 mg/m ³
Regulatory reference	BEK nr 1458 af 13/12/2019

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

SODIUM METABISULPHITE (7681-57-4)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	225 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	8.6 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	66 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	1 mg/l
PNEC aqua (marine water)	0.1 mg/l
PNEC (STP)	
PNEC sewage treatment plant	75.4 mg/l

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station. Avoid contact with skin, eyes and clothing. In the event that dust and/or fine particles are generated with this product, it is prudent to minimize prolonged inhalation exposure to these forms not to exceed the occupational exposure limit.

8.2.2. Personal protection equipment

Personal protective equipment:

Safety glasses. Gloves. Protective clothing. Gas mask.

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Safety glasses. EN 166

8.2.2.2. Skin protection

Skin and body protection:

Skin protection appropriate to the conditions of use should be provided. Complete protective clothing.

Skin and body protection	
Type	Standard
Protective clothing	EN 14605, EN 13034

Hand protection:

Protective gloves. Gloves must be replaced after each use and whenever signs of wear or perforation appear. Please follow the instructions related to the permeability and the penetration time provided by the manufacturer. The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed

Hand protection					
Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Chemical resistant gloves (according to European standard EN 374 or equivalent)	Nitrile rubber (NBR)	6 (> 480 minutes)	0.6	-	EN ISO 374

8.2.2.3. Respiratory protection

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. Dust formation: dust mask. EN 143

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Granular solid.
Colour	: White.
Odour	: Pungent, sulfur dioxide.
Odour threshold	: No data available
pH	: 4.3
pH solution	: 1 %
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: Not applicable
Boiling point	: No data available
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Flammability (solid, gas)	: Not flammable
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 1.4 – 1.48 g/cm ³ at 20 °C
Solubility	: Water: 39 %
Partition coefficient n-octanol/water (Log Pow)	: -3.7
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: Not applicable

9.2. Other information

No additional information available

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 under normal conditions.

10.3. Possibility of hazardous reactions

Contact with acids liberates toxic gas. Sulfur dioxide.

10.4. Conditions to avoid

Heat.

10.5. Incompatible materials

Strong acids. Strong oxidizing agents.

10.6. Hazardous decomposition products

Could decompose explosively when heated or involved in a fire. Sulphur oxides.

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity (oral)	: Harmful if swallowed.
Acute toxicity (dermal)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation)	: Not classified (Based on available data, the classification criteria are not met)

SODIUM METABISULPHITE (7681-57-4)

LD50 oral rat	1540 mg/kg (OECD 401)
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat	> 5.5 mg/l air Animal: rat, Animal sex: male, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity)

Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met) pH: 4.3
Serious eye damage/irritation	: Causes serious eye damage. pH: 4.3
Additional information	: (OECD 405 method)
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met)
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure	: Not classified (Based on available data, the classification criteria are not met)
STOT-repeated exposure	: Not classified (Based on available data, the classification criteria are not met)
Aspiration hazard	: Not classified (Not relevant)

SODIUM METABISULPHITE (7681-57-4)

Viscosity, kinematic	Not applicable
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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Hazardous to the aquatic environment, short-term (acute)	: Not classified (Based on available data, the classification criteria are not met)
Hazardous to the aquatic environment, long-term (chronic)	: Not classified (Based on available data, the classification criteria are not met)
Not rapidly degradable	

SODIUM METABISULPHITE (7681-57-4)

LC50 - Fish [1]	150 – 220 mg/l Oncorhynchus mykiss (rainbow trout)
EC50 - Crustacea [1]	89 mg/l Daphnia magna (Water flea)
EC50 72h - Algae [1]	43.8 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
NOEC (chronic)	> 10 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

NOEC chronic fish	≥ 316 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio) Duration: '34 d'
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12.2. Persistence and degradability

SODIUM METABISULPHITE (7681-57-4)	
Persistence and degradability	Not applicable for inorganic products.

12.3. Bioaccumulative potential

SODIUM METABISULPHITE (7681-57-4)	
Partition coefficient n-octanol/water (Log Pow)	-3.7
Bioaccumulative potential	Not applicable for inorganic products.

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions. Recycle the material as far as possible.
Product/Packaging disposal recommendations	: If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. When recycling of the product is not possible, disposal to landfill or incineration in accordance with all applicable government laws and regulations is recommended. Contact waste disposal services.
Ecology - waste materials	: Avoid release to the environment.

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

ADR	IMDG	IATA	ADN	RID
14.3. Transport hazard class(es)				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available				

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

Inland waterway transport

Not regulated

Rail transport

Not regulated

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

Not listed on REACH Annex XVII

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Not listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

Germany

Employment restrictions	: Observe restrictions according Act on the Protection of Working Mothers (MuSchG). Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG).																									
Water hazard class (WGK)	: WGK 1, Slightly hazardous to water (Classification according to AwSV; ID No. 376).																									
Storage class (LGK, TRGS 510)	: LGK 13 - Non-combustible solids.																									
Joint storage table	: <table><tr><td>LGK 1</td><td>LGK 2A</td><td>LGK 2B</td><td>LGK 3</td><td>LGK 4.1A</td></tr><tr><td>LGK 4.1B</td><td>LGK 4.2</td><td>LGK 4.3</td><td>LGK 5.1A</td><td>LGK 5.1B</td></tr><tr><td>LGK 5.1C</td><td>LGK 5.2</td><td>LGK 6.1A</td><td>LGK 6.1B</td><td>LGK 6.1C</td></tr><tr><td>LGK 6.1D</td><td>LGK 6.2</td><td>LGK 7</td><td>LGK 8A</td><td>LGK 8B</td></tr><tr><td>LGK 10</td><td>LGK 11</td><td>LGK 12</td><td>LGK 13</td><td>LGK 10-13</td></tr></table>	LGK 1	LGK 2A	LGK 2B	LGK 3	LGK 4.1A	LGK 4.1B	LGK 4.2	LGK 4.3	LGK 5.1A	LGK 5.1B	LGK 5.1C	LGK 5.2	LGK 6.1A	LGK 6.1B	LGK 6.1C	LGK 6.1D	LGK 6.2	LGK 7	LGK 8A	LGK 8B	LGK 10	LGK 11	LGK 12	LGK 13	LGK 10-13
LGK 1	LGK 2A	LGK 2B	LGK 3	LGK 4.1A																						
LGK 4.1B	LGK 4.2	LGK 4.3	LGK 5.1A	LGK 5.1B																						
LGK 5.1C	LGK 5.2	LGK 6.1A	LGK 6.1B	LGK 6.1C																						
LGK 6.1D	LGK 6.2	LGK 7	LGK 8A	LGK 8B																						
LGK 10	LGK 11	LGK 12	LGK 13	LGK 10-13																						
Joint storage not permitted for	: LGK 1, LGK 6.2, LGK 7.																									
Joint storage with restrictions permitted for	: LGK 4.1A, LGK 5.1C.																									
Joint storage permitted for	: LGK 2A, LGK 2B, LGK 3, LGK 4.1B, LGK 4.2, LGK 4.3, LGK 5.1A, LGK 5.1B, LGK 5.2, LGK 6.1A, LGK 6.1B, LGK 6.1C, LGK 6.1D, LGK 8A, LGK 8B, LGK 10, LGK 11, LGK 12, LGK 13, LGK 10-13.																									
Hazardous Incident Ordinance (12. BImSchV)	: Is not subject of the Hazardous Incident Ordinance (12. BImSchV)																									

Denmark

Danish National Regulations	: Young people below the age of 18 years are not allowed to use the product
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15.2. Chemical safety assessment

A chemical safety assessment has been carried out
2016-06-13 CSR-PI-5.5.3

SECTION 16: Other information

Indication of changes:

General revision.

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Abbreviations and acronyms:	
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

Data sources : Classification according to Regulation (EC) No. 1272/2008 [CLP]. ECHA (European Chemicals Agency).
Supplier's safety documents.

Training advice : Normal use of this product shall imply use in accordance with the instructions on the packaging.

Full text of H- and EUH-statements:	
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
H302	Harmful if swallowed.
H318	Causes serious eye damage.
EUH031	Contact with acids liberates toxic gas.

Full text of use descriptors	
ERC1	Manufacture of the substance
ERC10a	Widespread use of articles with low release (outdoor)
ERC11a	Widespread use of articles with low release (indoor)
ERC11b	Widespread use of articles with high or intended release (indoor)

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
ERC8c	Widespread use leading to inclusion into/onto article (indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
PC0	Other
PC1	Adhesives, sealants
PC12	Fertilizers
PC13	Fuels
PC14	Metal surface treatment products
PC15	Non-metal-surface treatment products
PC17	Hydraulic Fluids
PC18	Ink and Toners
PC2	Adsorbents
PC20	Metal surface treatment products
PC23	Leather treatment products
PC24	Lubricants, greases, release products
PC25	Metal working fluids
PC26	Paper and board treatment products
PC28	Perfumes, fragrances
PC3	Air care products
PC30	Photo-chemicals
PC31	Polishes and wax blends
PC32	Polymer preparations and compounds

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

PC34	Textile dyes, and impregnating products
PC35	Washing and cleaning products
PC37	Water treatment chemicals
PC38	Welding and soldering products, flux products
PC39	Cosmetics, personal care products
PC4	Anti-Freeze and De-icing products
PC40	Extraction agents
PC7	Base metals and alloys
PC8	Biocidal products
PC9a	Coatings and paints, thinners, paint removers
PC9b	Fillers, putties, plasters, modelling clay
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC12	Use of blowing agents in manufacture of foam
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC20	Use of functional fluids in small devices
PROC21	Low energy manipulation and handling of substances bound in/on materials or articles
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC25	Other hot work operations with metals
PROC26	Handling of solid inorganic substances at ambient temperature
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC6	Calendering operations
PROC7	Industrial spraying
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU1	Agriculture, forestry, fishery
SU11	Manufacture of rubber products
SU12	Manufacture of plastics products, including compounding and conversion
SU13	Manufacture of other non-metallic mineral products, e.g. plasters, cement
SU14	Manufacture of basic metals, including alloys
SU15	Manufacture of fabricated metal products, except machinery and equipment
SU16	Manufacture of computer, electronic and optical products, electrical equipment
SU17	General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU18	Manufacture of furniture
SU19	Building and construction work
SU20	Health services
SU23	Electricity, steam, gas water supply and sewage treatment
SU2a	Mining, (including offshore industries)
SU2b	Offshore industries
SU4	Manufacture of food products
SU5	Manufacture of textiles, leather, fur
SU6a	Manufacture of wood and wood products
SU6b	Manufacture of pulp, paper and paper products
SU7	Printing and reproduction of recorded media
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

Safety Data Sheet (SDS), EU

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable

SODIUM METABISULPHITE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Annex to the safety data sheet

Product exposure scenario(s)		
#	ES Type	ES title
1	Worker	Manufacture and industrial uses of slurries/pastes of sodium metabisulfite
2	Worker	Manufacture and industrial uses of low dusty solids/powders of sodium metabisulfite
3	Worker	Manufacture and industrial uses of medium dusty solids/powders of sodium metabisulfite
4	Worker	Manufacture and industrial uses of high dusty solids/powders of sodium metabisulfite
5	Worker	Industrial use of sodium metabisulfite in the wood and furniture industry
6	Worker	Professional uses of slurries/pastes of sodium metabisulfite as such or in preparation
7	Worker	Professional uses of low dusty solids/powders of sodium metabisulfite as such or in preparation
8	Worker	Professional uses of medium dusty solids/powders of sodium metabisulfite as such or in preparation
9	Worker	Professional uses of high dusty solids/powders of sodium metabisulfite as such or in preparation
10	Worker	Professional use of wood products or furniture containing sodium metabisulfite
11	Consumer	Consumer use of sodium metabisulfite in photographic applications (wide dispersive use scenario)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

1. ES-1 - Industrial, Manufacture; Manufacture and industrial uses of slurries/pastes of sodium metabisulfite

1.1. Title section

Manufacture and industrial uses of slurries/pastes of sodium metabisulfite

ES Ref.: ES-1
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC1, ERC2, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a
Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19
Processes, tasks, activities covered	Manufacture and industrial uses of slurries/pastes of sodium metabisulfite. Use of Na ₂ S ₂ O ₅ in chemical industry, photographic industry, textile/leather industry, rubber industry, paper, pulp and bleaching industry, food industry, water treatment, mining and metal industry, for distribution/trader and formulator purposes, in fiber, additive for cement, heparin extraction, pharma industry/ cosmetic industry, detergents/cleaners.	
Assessment method	MEASE EUSES	

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
ERC8c	Widespread use leading to inclusion into/onto article (indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ERC10a	Widespread use of articles with low release (outdoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

1.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19)

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
PROC7	Industrial spraying
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC12	Use of blowing agents in manufacture of foam
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	Slurry, paste
	≤ 98 %

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Local exhaust ventilation - efficiency of at least [%]:	78 %
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

Information for contributing exposure scenario				
ERC 4 (Worst case).Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.				
Release route		Release rate		Release estimation method
Release fraction to air from process (initial release prior to RMM):		99 %		Treat air emission to provide a typical removal efficiency of 99%.
Release fraction to wastewater from process (initial release prior to RMM):		99 %		Required Removal Efficiency (wastewater): 99%
Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

1.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19)

Information for contributing exposure scenario			
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.001 mg/m ³	< 0.001	PROC (RCR) PROC 1-0.001 mg/m ³ (<0.001) PROC 2-0.001 mg/m ³ (<0.001) PROC 3-0.01 mg/m ³ (0.001) PROC 4-0.05 mg/m ³ (0.005) PROC 5-0.05 mg/m ³ (0.005) PROC 7-4.4 mg/m ³ (0.44) PROC 8a-0.05 mg/m ³ (0.005) PROC 8b-0.01 mg/m ³ (0.001) PROC 9-0.01 mg/m ³ (0.001) PROC 10-0.05 mg/m ³ (0.005) PROC 12-0.001 mg/m ³ (<0.001) PROC 13-0.01 mg/m ³ (0.001) PROC 14-0.01 mg/m ³ (0.001) PROC 15-0.01 mg/m ³ (0.001) PROC 16-0.01 mg/m ³ (0.001) PROC 17-0.1 mg/m ³ (0.01) PROC 18-0.1 mg/m ³ (0.01) PROC 19-0.05 mg/m ³ (0.005)
Sum RCR - Long-term - systemic effects		< 0.001	

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

1.4.1. Environment

Guidance - Environment	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html) The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool . The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO ₃ ²⁻ after reacting/oxidizing in the process.
Website	www.ebrc.de/mease.html http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool

1.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

2. ES-2 - Industrial, Manufacture; Manufacture and industrial uses of low dusty solids/powders of sodium metabisulfite

2.1. Title section

Manufacture and industrial uses of low dusty solids/powders of sodium metabisulfite

ES Ref.: ES-2
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a
Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26
Processes, tasks, activities covered	Manufacture and industrial uses of low dusty solids/powders of sodium metabisulfite Use of Na ₂ S ₂ O ₅ in chemical industry, photographic industry, textile/leather industry, rubber industry, paper, pulp and bleaching industry, food industry, water treatment, mining and metal industry, for distribution/trader and formulator purposes, in fiber, additive for cement, heparin extraction, pharma industry/ cosmetic industry, detergents/cleaners.	
Assessment method	MEASE EUSES	

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
ERC8c	Widespread use leading to inclusion into/onto article (indoor)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ERC10a	Widespread use of articles with low release (outdoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %
Dustiness	Solid, low dustiness

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

2.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26)

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 and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC21	Low energy manipulation and handling of substances bound in/on materials or articles
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC25	Other hot work operations with metals
PROC26	Handling of solid inorganic substances at ambient temperature

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	solid/powder (all other applicable PROCs) solid/powder/molten (PROC 22, 23 & 25)
	≤ 98 %
Dustiness	Solid, low dustiness

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Local exhaust ventilation - efficiency of at least [%]:	78 %
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

Information for contributing exposure scenario		
ERC 4 (Worst case), Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.		
Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	99 %	Treat air emission to provide a typical removal efficiency of 99%.

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Release fraction to wastewater from process (initial release prior to RMM):		99 %	Required Removal Efficiency (wastewater): 99%	
Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	
Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

2.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26)

Information for contributing exposure scenario			
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.01 mg/m ³	0.001	PROC (RCR) PROC 1-0.01 mg/m3 (0.001) PROC 2-0.01 mg/m3 (0.001) PROC 3-0.1 mg/m3 (0.01) PROC 4-0.5 mg/m3 (0.05) PROC 5-0.5 mg/m3 (0.05) PROC 7-1 mg/m3 (0.1) PROC 8a-0.5 mg/m3 (0.05) PROC 8b-0.1 mg/m3 (0.01) PROC 9-0.1 mg/m3 (0.01) PROC 10-0.5 mg/m3 (0.05) PROC 13-0.1 mg/m3 (0.01) PROC 14-0.1 mg/m3 (0.01) PROC 15-0.1 mg/m3 (0.01) PROC 16-0.1 mg/m3 (0.01) PROC 17-1 mg/m3 (0.1) PROC 18-1 mg/m3 (0.1) PROC 19-0.5 mg/m3 (0.05) PROC 21-0.5 mg/m3 (0.05) PROC 22-7 mg/m3 (0.7)
Sum RCR - Long-term - systemic effects		0.001	

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

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

2.4.1. Environment

Guidance - Environment	<p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html)</p> <p>The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool. The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO₃2- after reacting/oxidizing in the process.</p>
Website	<p>www.ebrc.de/mease.html</p> <p>http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool</p>

2.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

3. ES-3 - Industrial, Manufacture; Manufacture and industrial uses of medium dusty solids/powders of sodium metabisulfite

3.1. Title section

Manufacture and industrial uses of medium dusty solids/powders of sodium metabisulfite

ES Ref.: ES-3
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a

Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26

Processes, tasks, activities covered	Manufacture and industrial uses of medium dusty solids/powders of sodium metabisulfite Use of Na ₂ S ₂ O ₅ in chemical industry, photographic industry, textile/leather industry, rubber industry, paper, pulp and bleaching industry, food industry, water treatment, mining and metal industry, for distribution/trader and formulator purposes, in fiber, additive for cement, heparin extraction, pharma industry/ cosmetic industry, detergents/cleaners.
Assessment method	MEASE EUSES

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

ERC8c	Widespread use leading to inclusion into/onto article (indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ERC10a	Widespread use of articles with low release (outdoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %
Dustiness	Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

3.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26)

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 and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC13	Treatment of articles by dipping and pouring

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC25	Other hot work operations with metals
PROC26	Handling of solid inorganic substances at ambient temperature

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	solid/powder (all other applicable PROCs) solid/powder/molten (PROC 22, 23 & 25)
	≤ 98 %
Dustiness	Solid, medium dustiness

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Local exhaust ventilation - efficiency of at least [%]:	78 % (PROC 7, 17 & 18)
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

Information for contributing exposure scenario		
ERC 4 (Worst case), Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.		
Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	99 %	Treat air emission to provide a typical removal efficiency of 99%.

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Release fraction to wastewater from process (initial release prior to RMM):		99 %	Required Removal Efficiency (wastewater): 99%	
Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	
Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

3.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26)

Information for contributing exposure scenario			
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.01 mg/m ³	0.001	PROC (RCR) PROC 1-0.01 mg/m ³ (0.001) PROC 2-0.5 mg/m ³ (0.05) PROC 3-1 mg/m ³ (0.1) PROC 4-5 mg/m ³ (0.5) PROC 5-5 mg/m ³ (0.5) PROC 6-5 mg/m ³ (0.5) PROC 7-4.4 mg/m ³ (0.44) PROC 8a-5 mg/m ³ (0.5) PROC 8b-5 mg/m ³ (0.5) PROC 9-5 mg/m ³ (0.5) PROC 10-5 mg/m ³ (0.5) PROC 13-1 mg/m ³ (0.1) PROC 14-1 mg/m ³ (0.1) PROC 15-0.5 mg/m ³ (0.05) PROC 16-5 mg/m ³ (0.5) PROC 17-4.4 mg/m ³ (0.44) PROC 18-4.4 mg/m ³ (0.44) PROC 19-5 mg/m ³ (0.5) PROC 22-7 mg/m ³ (0.7) PROC 23-2 mg/m ³ (0.2) PROC 24-5.5 mg/m ³ (0.55) PROC 25-2 mg/m ³ (0.2) PROC 26-4 mg/m ³ (0.4)
Sum RCR - Long-term - systemic effects		0.001	

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

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

3.4.1. Environment

Guidance - Environment	<p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html)</p> <p>The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool. The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO₃2- after reacting/oxidizing in the process.</p>
Website	<p>www.ebrc.de/mease.html</p> <p>http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool</p>

3.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

4. ES-4 - Industrial, Manufacture; Manufacture and industrial uses of high dusty solids/powders of sodium metabisulfite

4.1. Title section

Manufacture and industrial uses of high dusty solids/powders of sodium metabisulfite

ES Ref.: ES-4
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a

Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26

Processes, tasks, activities covered	Manufacture and industrial uses of high dusty solids/powders of sodium metabisulfite Use of Na ₂ S ₂ O ₅ in chemical industry, photographic industry, textile/leather industry, rubber industry, paper, pulp and bleaching industry, food industry, water treatment, mining and metal industry, for distribution/trader and formulator purposes, in fiber, additive for cement, heparin extraction, pharma industry/ cosmetic industry, detergents/cleaners.
Assessment method	MEASE EUSES

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

ERC8c	Widespread use leading to inclusion into/onto article (indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ERC10a	Widespread use of articles with low release (outdoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %
Dustiness	Solid, high dustiness

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

4.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26)

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 and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC13	Treatment of articles by dipping and pouring

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC25	Other hot work operations with metals
PROC26	Handling of solid inorganic substances at ambient temperature

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	solid/powder (all other applicable PROCs) solid/powder/molten (PROC 22, 23 & 25)
	≤ 98 %
Dustiness	Solid, high dustiness

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Local exhaust ventilation - efficiency of at least [%]:	78 % (PROC 4, 5, 6, 7, 8a, 8b, 9, 10, 14, 16, 17, 18 & 26)
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing. Wear a half mask respirator with type FFP1 filter (APF=4) (PROC 7, 8a, 17, 18 & 19)	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

Information for contributing exposure scenario
ERC 4 (Worst case).Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Release route		Release rate	Release estimation method	
Release fraction to air from process (initial release prior to RMM):		99 %	Treat air emission to provide a typical removal efficiency of 99%.	
Release fraction to wastewater from process (initial release prior to RMM):		99 %	Required Removal Efficiency (wastewater): 99%	
Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	
Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

4.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26)

Information for contributing exposure scenario
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.01 mg/m ³	0.001	PROC (RCR) PROC 1-0.01 mg/m ³ (0.001) PROC 2-1 mg/m ³ (0.1) PROC 3-1 mg/m ³ (0.1) PROC 4-5.5 mg/m ³ (0.55) PROC 5-5.5 mg/m ³ (0.55) PROC 6-5.5 mg/m ³ (0.55) PROC 7-5.5 mg/m ³ (0.55) PROC 8a-2.75 mg/m ³ (0.275) PROC 8b-5.5 mg/m ³ (0.55) PROC 9-4.4 mg/m ³ (0.44) PROC 10-2.2 mg/m ³ (0.22) PROC 13-5 mg/m ³ (0.5) PROC 14-2.2 mg/m ³ (0.22) PROC 15-5 mg/m ³ (0.5) PROC 16-2.2 mg/m ³ (0.22) PROC 17-2.75 mg/m ³ (0.275) PROC 18-2.75 mg/m ³ (0.275) PROC 19-6.25 mg/m ³ (0.625) PROC 22-7 mg/m ³ (0.7) PROC 23-2 mg/m ³ (0.2) PROC 24-5.5 mg/m ³ (0.55) PROC 25-2 mg/m ³ (0.2) PROC 26-2.2 mg/m ³ (0.22)
Sum RCR - Long-term - systemic effects		0.001	

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

4.4.1. Environment

Guidance - Environment	<p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html)</p> <p>The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool. The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO₃2- after reacting/oxidizing in the process.</p>
Website	www.ebrc.de/mease.html http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool

4.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

5. ES-5 - Industrial; Industrial use of sodium metabisulfite in the wood and furniture industry

5.1. Title section

Industrial use of sodium metabisulfite in the wood and furniture industry

ES Ref.: ES-5
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC5, ERC6b
Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC4, PROC5, PROC6, PROC8b, PROC21, PROC24
Processes, tasks, activities covered		Industrial use of sodium metabisulfite in the wood and furniture industry.
Assessment method		MEASE EUSES

5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC5, ERC6b)

ERC5	Use at industrial site leading to inclusion into/onto article
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

5.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC4, PROC5, PROC6, PROC8b, PROC21, PROC24)

PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC6	Calendering operations
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC21	Low energy manipulation and handling of substances bound in/on materials or articles
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	Solid (PROC 6, 21 & 24) Solid / powder (PROC 4, 5 & 8b) ≤ 98 %

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Local exhaust ventilation - efficiency of at least [%]:	78 % (PROC 4, 5 & 8b)
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC5, ERC6b)

Information for contributing exposure scenario				
ERC 4 (Worst case), Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.				
Release route		Release rate		Release estimation method
Release fraction to air from process (initial release prior to RMM):		99 %		Treat air emission to provide a typical removal efficiency of 99%.
Release fraction to wastewater from process (initial release prior to RMM):		99 %		Required Removal Efficiency (wastewater): 99%
Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

5.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC4, PROC5, PROC6, PROC8b, PROC21, PROC24)

Information for contributing exposure scenario			
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m ³	0.05	PROC (RCR) PROC 4-5.5 mg/m ³ (0.55) PROC 5-5.5 mg/m ³ (0.55) PROC 6-5 mg/m ³ (0.5) PROC 8b-5.5 mg/m ³ (0.55) PROC 21-0.5 mg/m ³ (0.05) PROC 24-5.5 mg/m ³ (0.55)
Sum RCR - Long-term - systemic effects		0.05	

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

5.4.1. Environment

Guidance - Environment	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html) The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool . The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO ₃ 2- after reacting/oxidizing in the process.
Website	www.ebrc.de/mease.html http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool

5.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

6. ES-6 - Professional; Professional uses of slurries/pastes of sodium metabisulfite as such or in preparation

6.1. Title section

Professional uses of slurries/pastes of sodium metabisulfite as such or in preparation

ES Ref.: ES-6
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a
Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20
Processes, tasks, activities covered	Professional uses of slurries/pastes of sodium metabisulfite as such or in preparation Use of Na ₂ S ₂ O ₅ in chemical industry, photographic industry, textile/leather industry, rubber industry, paper, pulp and bleaching industry, food industry, water treatment, mining and metal industry, for distribution/trader and formulator purposes, in fiber, additive for cement, heparin extraction, pharma industry/ cosmetic industry, detergents/cleaners	
Assessment method	MEASE EUSES	

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
ERC8c	Widespread use leading to inclusion into/onto article (indoor)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ERC10a	Widespread use of articles with low release (outdoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

6.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20)

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 and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC12	Use of blowing agents in manufacture of foam
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC20	Use of functional fluids in small devices

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	Solid (PROC 6, 21 & 24) Solid / powder (PROC 4, 5 & 8b)
	≤ 98 %

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing. Wear a half mask respirator with type P1 filter (APF=4) (PROC 11)	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

Information for contributing exposure scenario				
ERC 4 (Worst case), Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.				
Release route		Release rate		Release estimation method
Release fraction to air from process (initial release prior to RMM):		99 %		Treat air emission to provide a typical removal efficiency of 99%.
Release fraction to wastewater from process (initial release prior to RMM):		99 %		Required Removal Efficiency (wastewater): 99%
Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

6.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20)

Information for contributing exposure scenario			
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.001 mg/m ³	< 0.001	PROC (RCR) PROC 2-0.001 mg/m ³ (<0.001) PROC 3-0.01 mg/m ³ (0.001) PROC 4-0.1 mg/m ³ (0.01) PROC 5-0.1 mg/m ³ (0.01) PROC 8a-0.05 mg/m ³ (0.005) PROC 8b-0.05 mg/m ³ (0.005) PROC 9-0.05 mg/m ³ (0.005) PROC 10-0.05 mg/m ³ (0.005) PROC 11-5 mg/m ³ (0.5) PROC 12-0.001 mg/m ³ (<0.001) PROC 13-0.05 mg/m ³ (0.005) PROC 14-0.1 mg/m ³ (0.01) PROC 15-0.01 mg/m ³ (0.001) PROC 16-0.5 mg/m ³ (0.05) PROC 17-1 mg/m ³ (0.1) PROC 18-0.5 mg/m ³ (0.05) PROC 19-0.05 mg/m ³ (0.005) PROC 20-0.001 mg/m ³ (<0.001)
Sum RCR - Long-term - systemic effects		< 0.001	

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

6.4.1. Environment

Guidance - Environment	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html) The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool . The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO ₃ 2- after reacting/oxidizing in the process.
Website	www.ebrc.de/mease.html http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool

6.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

7. ES-7 - Professional; Professional uses of low dusty solids/powders of sodium metabisulfite as such or in preparation

7.1. Title section

Professional uses of low dusty solids/powders of sodium metabisulfite as such or in preparation

ES Ref.: ES-7
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a

Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26

Processes, tasks, activities covered	Professional uses of low dusty solids/powders of sodium metabisulfite as such or in preparation. Use of Na ₂ S ₂ O ₅ in chemical industry, photographic industry, textile/leather industry, rubber industry, paper, pulp and bleaching industry, food industry, water treatment, mining and metal industry, for distribution/trader and formulator purposes, in fiber, additive for cement, heparin extraction, pharma industry/ cosmetic industry, detergents/cleaners.
Assessment method	MEASE EUSES

7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

ERC8c	Widespread use leading to inclusion into/onto article (indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ERC10a	Widespread use of articles with low release (outdoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %
Dustiness	Solid, low dustiness

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

7.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26)

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
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC21	Low energy manipulation and handling of substances bound in/on materials or articles
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC25	Other hot work operations with metals
PROC26	Handling of solid inorganic substances at ambient temperature

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	solid/powder (all other applicable PROCs)
	solid/powder/molten (PROC 22, 23 & 25)
	≤ 98 %
Dustiness	Solid, low dustiness

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing. Wear a half mask respirator with type P1 filter (APF=4) (PROC 17 & 22)	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

Information for contributing exposure scenario		
ERC 4 (Worst case), Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.		
Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	99 %	Treat air emission to provide a typical removal efficiency of 99%.
Release fraction to wastewater from process (initial release prior to RMM):	99 %	Required Removal Efficiency (wastewater): 99%

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	
Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

7.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC25, PROC26)

Information for contributing exposure scenario			
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.01 mg/m ³	0.001	PROC (RCR) PROC 2-0.01 mg/m ³ (0.001) PROC 3-0.1 mg/m ³ (0.01) PROC 4-1 mg/m ³ (0.1) PROC 5-1 mg/m ³ (0.1) PROC 6-1 mg/m ³ (0.1) PROC 8a-0.5 mg/m ³ (0.05) PROC 8b-0.5 mg/m ³ (0.05) PROC 9-0.5 mg/m ³ (0.05) PROC 10-0.5 mg/m ³ (0.05) PROC 11-1 mg/m ³ (0.1) PROC 13-0.5 mg/m ³ (0.05) PROC 14-1 mg/m ³ (0.1) PROC 15-0.1 mg/m ³ (0.01) PROC 16-5 mg/m ³ (0.5) PROC 17-2.5 mg/m ³ (0.25) PROC 18-5 mg/m ³ (0.5) PROC 19-0.5 mg/m ³ (0.05) PROC 21-0.5 mg/m ³ (0.05) PROC 22-2.5 mg/m ³ (0.25) PROC 23-5 mg/m ³ (0.5) PROC 24-5.5 mg/m ³ (0.55) PROC 25-4 mg/m ³ (0.4) PROC 26-3 mg/m ³ (0.3)
Sum RCR - Long-term - systemic effects		0.001	

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

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

7.4.1. Environment

Guidance - Environment	<p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html)</p> <p>The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool. The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO₃2- after reacting/oxidizing in the process.</p>
Website	<p>www.ebrc.de/mease.html</p> <p>http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool</p>

7.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

8. ES-8 - Professional; Professional uses of medium dusty solids/powders of sodium metabisulfite as such or in preparation

8.1. Title section

Professional uses of medium dusty solids/powders of sodium metabisulfite as such or in preparation

ES Ref.: ES-8
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a

Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26

Processes, tasks, activities covered	Professional uses of medium dusty solids/powders of sodium metabisulfite as such or in preparation Use of Na ₂ S ₂ O ₅ in chemical industry, photographic industry, textile/leather industry, rubber industry, paper, pulp and bleaching industry, food industry, water treatment, mining and metal industry, for distribution/trader and formulator purposes, in fiber, additive for cement, heparin extraction, pharma industry/ cosmetic industry, detergents/cleaners.
Assessment method	MEASE EUSES

8.2. Conditions of use affecting exposure

8.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

ERC8c	Widespread use leading to inclusion into/onto article (indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ERC10a	Widespread use of articles with low release (outdoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %
Dustiness	Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

8.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26)

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
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC25	Other hot work operations with metals
PROC26	Handling of solid inorganic substances at ambient temperature

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	solid/powder (all other applicable PROCs)
	solid/powder/molten (PROC 22, 23 & 25)
	≤ 98 %
Dustiness	Solid, medium dustiness

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing. Wear a half mask respirator with type P1 filter (APF=4) (PROC 11, 16, & 22)	
Wear a half mask respirator with type P2 filter (APF=10) (PROC 17 & 18)	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

8.3. Exposure estimation and reference to its source

8.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

Information for contributing exposure scenario		
ERC 4 (Worst case), Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.		
Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	99 %	Treat air emission to provide a typical removal efficiency of 99%.
Release fraction to wastewater from process (initial release prior to RMM):	99 %	Required Removal Efficiency (wastewater): 99%

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	
Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

8.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26)

Information for contributing exposure scenario			
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m ³	0.05	PROC (RCR) PROC 2-1 mg/m3 (0.1) PROC 3-1 mg/m3 (0.1) PROC 4-5 mg/m3 (0.5) PROC 5-5 mg/m3 (0.5) PROC 6-5 mg/m3 (0.5) PROC 8a-5 mg/m3 (0.5) PROC 8b-5 mg/m3 (0.5) PROC 9-5 mg/m3 (0.5) PROC 10-5 mg/m3 (0.5) PROC 11-5 mg/m3 (0.5) PROC 13-5 mg/m3 (0.5) PROC 14-5 mg/m3 (0.5) PROC 15-0.5 mg/m3 (0.05) PROC 16-5 mg/m3 (0.5) PROC 17-5 mg/m3 (0.5) PROC 18-5 mg/m3 (0.5) PROC 19-5 mg/m3 (0.5) PROC 22-2.5 mg/m3 (0.25) PROC 23-5 mg/m3 (0.5) PROC 24-5.5 mg/m3 (0.55) PROC 25-4 mg/m3 (0.4) PROC 26-8 mg/m3 (0.8)
Sum RCR - Long-term - systemic effects		0.05	

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

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

8.4.1. Environment

Guidance - Environment	<p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html)</p> <p>The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool. The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO₃2- after reacting/oxidizing in the process.</p>
Website	<p>www.ebrc.de/mease.html</p> <p>http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool</p>

8.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

9. ES-9 - Professional; Professional uses of high dusty solids/powders of sodium metabisulfite as such or in preparation

9.1. Title section

Professional uses of high dusty solids/powders of sodium metabisulfite as such or in preparation

ES Ref.: ES-9
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a

Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26

Processes, tasks, activities covered	Professional uses of high dusty solids/powders of sodium metabisulfite as such or in preparation Use of Na ₂ S ₂ O ₅ in chemical industry, photographic industry, textile/leather industry, rubber industry, paper, pulp and bleaching industry, food industry, water treatment, mining and metal industry, for distribution/trader and formulator purposes, in fiber, additive for cement, heparin extraction, pharma industry/ cosmetic industry, detergents/cleaners.
Assessment method	MEASE EUSES

9.2. Conditions of use affecting exposure

9.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

ERC8c	Widespread use leading to inclusion into/onto article (indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ERC10a	Widespread use of articles with low release (outdoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %
Dustiness	Solid, high dustiness

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

9.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26)

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
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC25	Other hot work operations with metals
PROC26	Handling of solid inorganic substances at ambient temperature

Product (article) characteristics

Physical form of product	Solid
Concentration of substance in product	solid/powder (all other applicable PROCs) solid/powder/molten (PROC 22, 23 & 25) ≤ 98 %
Dustiness	Solid, high dustiness

Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	1 h/day (PROC 11, 17 & 18)
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Technical and organisational conditions and measures

Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	
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Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection and gloves. Protective clothing. Wear a half mask respirator with type P1 filter (APF=4) (PROC 9, 10, 22 & 26) Wear a half mask respirator with type P2 filter (APF=10) (PROC 4, 5, 6, 8a, 8b, 11, 14, 16, 17, 18 & 19)	
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Other conditions affecting workers exposure

The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift
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9.3. Exposure estimation and reference to its source

9.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a)

Information for contributing exposure scenario		
ERC 4 (Worst case). Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.		
Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	99 %	Treat air emission to provide a typical removal efficiency of 99%.

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Release fraction to wastewater from process (initial release prior to RMM):		99 %	Required Removal Efficiency (wastewater): 99%	
Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	
Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

9.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC25, PROC26)

Information for contributing exposure scenario			
Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m ³	0.05	PROC (RCR) PROC 2-5 mg/m3 (0.5) PROC 3-5 mg/m3 (0.5) PROC 4-5 mg/m3 (0.5) PROC 5-5 mg/m3 (0.5) PROC 6-5 mg/m3 (0.5) PROC 8a-5 mg/m3 (0.5) PROC 8b-5 mg/m3 (0.5) PROC 9-5 mg/m3 (0.5) PROC 10-2.5 mg/m3 (0.25) PROC 11-5 mg/m3 (0.5) PROC 13-5 mg/m3 (0.5) PROC 14-5 mg/m3 (0.5) PROC 15-5 mg/m3 (0.5) PROC 16-5 mg/m3 (0.5) PROC 17-4 mg/m3 (0.4) PROC 18-4 mg/m3 (0.4) PROC 19-5 mg/m3 (0.5) PROC 22-2.5 mg/m3 (0.25) PROC 23-5 mg/m3 (0.5) PROC 24-5.5 mg/m3 (0.55) PROC 25-4 mg/m3 (0.4) PROC 26-5 mg/m3 (0.5)
Sum RCR - Long-term - systemic effects		0.05	

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

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

9.4.1. Environment

Guidance - Environment	<p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html)</p> <p>The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool. The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO₃2- after reacting/oxidizing in the process.</p>
Website	<p>www.ebrc.de/mease.html</p> <p>http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool</p>

9.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

10. ES-10 - Professional; Professional use of wood products or furniture containing sodium metabisulfite

10.1. Title section

Professional use of wood products or furniture containing sodium metabisulfite

ES Ref.: ES-10
ES Type: Worker
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC11a, ERC11b
Worker		Use descriptors
CS-2	Contributing scenario controlling worker exposure	PROC21, PROC24
Processes, tasks, activities covered	Professional use of wood products or furniture containing sodium metabisulfite.	
Assessment method	MEASE EUSES	

10.2. Conditions of use affecting exposure

10.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC11a, ERC11b)

ERC11a	Widespread use of articles with low release (indoor)
ERC11b	Widespread use of articles with high or intended release (indoor)
Assessment method	EUSES

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	28667 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 31852 kg/day
Emission Days (days/year)	300 days/yr

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant	99 % Efficiency of at least:

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

10.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC21, PROC24)

PROC21	Low energy manipulation and handling of substances bound in/on materials or articles
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	8 h/day

Technical and organisational conditions and measures	
Avoid inhalation of the product. Regular cleaning of equipment, work area and clothing	

Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection and gloves. Protective clothing	

Other conditions affecting workers exposure	
The shift breathing volume during all process steps reflected in the PROCs is assumed to be	10 m ³ per shift

10.3. Exposure estimation and reference to its source

10.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC11a, ERC11b)

Information for contributing exposure scenario				
ERC 4 (Worst case), Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.				
Release route		Release rate		Release estimation method
Release fraction to air from process (initial release prior to RMM):		99 %		Treat air emission to provide a typical removal efficiency of 99%.
Release fraction to wastewater from process (initial release prior to RMM):		99 %		Required Removal Efficiency (wastewater): 99%
Release fraction to soil from process (initial release prior to RMM):		1 %		
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	2.52 mg/l	1 mg/l	0.9	
Marine water	0.57 mg/l	0.1 mg/l	0.2	
Sewage treatment plant	25.2 mg/l	75.4 mg/l	0.4	STP (marine): 57.06 mg/l RCR: 0.9

10.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC21, PROC24)

Information for contributing exposure scenario	
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SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Due to the negligible dermal absorption of sodium metabisulfite, the dermal route is not a relevant exposure path for sodium metabisulfite and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m ³	0.05	PROC (RCR) PROC 21-0.5 mg/m ³ (0.05) PROC 24-5.5 mg/m ³ (0.55)
Sum RCR - Long-term - systemic effects		0.05	

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

10.4.1. Environment

Guidance - Environment	<p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The quantitative risk characterization for this worker exposure (long-term systemic effects) and has been calculated by MEASE tool, available at the following link: (www.ebrc.de/mease.html)</p> <p>The quantitative risk characterization for this environmental exposure (long-term systemic effects) and has been calculated by EUSES tool. The Metal EUSES calculator for DUs can be freely downloaded from http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool. The metal speciation box can be left blank. 0 can be filled in for all partition coefficients and PECs regional. Make sure that the tonnage is the tonnage of SO₃2- after reacting/oxidizing in the process.</p>
Website	<p>www.ebrc.de/mease.html</p> <p>http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool</p>

10.4.2. Health

No data available

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

11. ES-11 - Consumer; Consumer use of sodium metabisulfite in photographic applications (wide dispersive use scenario)

11.1. Title section

Consumer use of sodium metabisulfite in photographic applications (wide dispersive use scenario)

ES Ref.: ES-11
ES Type: Consumer
Version: 1.0

Author: Soydan Yalçın
Issue date: 18/01/2021

Environment		Use descriptors
CS-1	Contributing scenario controlling environmental exposure	ERC8b

Consumer		Use descriptors
CS-2	Contributing scenario consumer end-use	PC30

Processes, tasks, activities covered	Consumer use of sodium metabisulfite in photographic applications	
Assessment method	MEASE EUSES	

11.2. Conditions of use affecting exposure

11.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC8b)

ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
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Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	19.5 kg/day
Maximum allowable site tonnage (MSafe)	Environment: 1950 kg/day
Emission Days (days/year)	365 days/yr (ERC 8b default)

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	18000 m³/d

11.2.2. Control of consumer exposure: Contributing scenario consumer end-use (PC30)

PC30	Photo-chemicals
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Product (article) characteristics	
Physical form of product	Solid
Concentration of substance in product	≤ 98 %

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

11.3. Exposure estimation and reference to its source

11.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC8b)

Information for contributing exposure scenario				
Due to the physicochemical properties of the substance (adsorption to solid particles not relevant, low stability and rapid oxidation of reduced inorganic sulfur compounds under aerobic conditions) no relevant PNECs can be derived for sediment, terrestrial and air compartment.				
Release route		Release rate		Release estimation method
Release fraction to air from process (initial release prior to RMM):		0.1 %		(ERC 8b default)
Release fraction to wastewater from process (initial release prior to RMM):		2 %		(ERC 8b default)
Release fraction to soil from process (initial release prior to RMM):		0 %		(ERC 8b default)
Protection target	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	16.4 mg/l	1 mg/l	0.01	
Marine water	1.64	0.1 mg/l	< 0.01	
Sewage treatment plant	0.16 mg/l	75.4 mg/l	< 0.01	

11.3.2. Consumer exposure Contributing scenario consumer end-use (PC30)

Information for contributing exposure scenario				
Since sodium metabisulfite is classified as irritating to eyes (eye dam.1) a qualitative assessment has been performed for exposure to the eye.				
Contributing scenario	Eye Exposure Estimate Based on qualitative Risk assessment	Inhalation Exposure Estimate Based on qualitative or quantitative risk assessment (RCR)	Oral Exposure Estimate	Dermal Exposure Estimate
Pouring of liquid concentrate	If appropriate goggles are worn no exposure to the eyes needs to be expected. However, splashes into the eyes cannot be excluded if no protective goggles are worn during the task described. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.	Qualitative assessment has been conducted. Inhalation exposure is disregarded as no mists or aerosols are generated during these tasks and gaseous releases are low (indicated by the high water solubility and low vapour pressures of the pure substances).	Oral exposure does not occur as part of the intended Product use.	No local effects are known after dermal exposure. Furthermore, dermal absorption is considered negligible and there are no data available which indicate systemic toxicity following this route. Thus, dermal exposure is not assessed in this exposure scenario.

SODIUM METABISULPHITE

Annex to the safety data sheet: Exposure scenario

Reference number: 522013 CAS-No.: 7681-57-4 Product form: Substance Physical state: Solid Substance type: Mono-constituent

Pouring of powder formulation	If risk reduction measures are taken into account no human exposure is expected. Dust from loading of the mixture cannot be excluded if no protective goggles are used. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.	Quantitative assessment has been conducted using the following equation: Inhalation exposure = $A * n * C / RV$ A = amount of dust released per task C = concentration in powder formulation (up to 20%) Small task: $2.4 \mu\text{g}/\text{m}^3$ ($2.4 * 10^{-4}$) Large task: $24 \mu\text{g}/\text{m}^3$ ($2.4 * 10^{-3}$)		
Tank processing	Potential exposure to the prepared solutions is only possible during filling and disposal. If appropriate goggles are worn no exposure to the eyes needs to be expected. However, splashes into the eyes cannot be excluded if no protective goggles are worn during filling and disposal. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.	Qualitative assessment has been conducted. Inhalation exposure is disregarded as no mists or aerosols are generated during these tasks and gaseous releases are low (indicated by the high water solubility and low vapour pressures of the pure substances).		
Tray processing of films	If appropriate goggles are worn no exposure to the eyes needs to be expected. However, splashes into the eyes cannot be excluded if no protective goggles are worn during the task described. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.	Qualitative assessment has been conducted. Inhalation exposure is disregarded as no mists or aerosols are generated during these tasks and gaseous releases are low (indicated by the high water solubility and low vapour pressures of the pure substances).		

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

11.4.1. Environment

Guidance - Environment	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. The Metal EUSES calculator for DUs can be freely downloaded from http://www.archeconsulting.be/Metal-CSA-toolbox/du-scaling-tool . The metal box can be left blank. 0 can be filled in for all partition coefficients and PECs regional.
Website	http://www.archeconsulting.be/Metal-CSA-toolbox/du-scaling-tool

11.4.2. Health

No data available