SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING.

1.1 Product identifier.

Product Name:	SODIUM METABISULFITE F.G.
Product Code:	178A1A
Chemical Name:	sodium metabisulphite
Index No:	016-063-00-2
CAS No:	7681-57-4
EC No:	231-673-0
Registration No:	01-2119531326-45-XXXX

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

Food additive
Industrial generic

Uses advised against:
Uses other than those recommended.

1.3 Details of the supplier of the safety data sheet.

Company:	**Barcelonesa de Drogas y Productos Químicos, S.A.**
Address:	Crom, 14 - P.I. FAMADES
City:	Cornellà del Llobregat
Province:	Barcelona
Telephone:	93 377 02 08
Fax:	93 377 42 49
E-mail:	barcelonesa@barcelonesa.com
Web:	www.grupbarcelonesa.com

1.4 Emergency telephone number: +34 933 770 208 (Only available during office hours; Monday-Friday; 09:00-18:00)

SECTION 2: HAZARDS IDENTIFICATION.

2.1 Classification of the substance or mixture.
In accordance with Regulation (EU) No 1272/2008:
Acute Tox. 4 : Harmful if swallowed.
Eye Dam. 1 : Causes serious eye damage.

2.2 Label elements.
Labelling in accordance with Regulation (EU) No 1272/2008:
Pictograms:

Signal Word:
Danger
Hazard statements:

H302	Harmful if swallowed.
H318	Causes serious eye damage.

Precautionary statements:

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P103	Read carefully and follow all instructions.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

-Continued on next page.-

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P501 Dispose of contents/container to …

EUH statements:
EUH031 Contact with acids liberates toxic gas.

2.3 Other hazards.

The substance is not PBT
The substance is not vPvB
Substance does not have endocrine disrupting properties.

In normal use conditions and in its original form, the product itself does not involve any other risk for health and the environment.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS.

3.1 Substances.

Identifiers	Name	Concentrate	(*)Classification - Regulation (EC) No 1272/2008	
			Classification	Specifics concentration limits and Acute toxicity estimate
Index No: 016-063-00-2 CAS No: 7681-57-4 EC No: 231-673-0	sodium metabisulphite	3 - 100 %	Acute Tox. 4 *, H302 - Eye Dam. 1, H318	-

** See Regulation (EC) No. 1272/2008, Annex VI, section 1.2.*

3.2 Mixtures.
Not Applicable.

SECTION 4: FIRST AID MEASURES.

4.1 Description of first aid measures.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

Inhalation.
Take the victim into open air; keep them warm and calm. If breathing is irregular or stops, perform artificial respiration.

Eye contact.
Wash eyes with plenty of clean and cool water for at least 10 minutes while pulling eyelids up, and seek medical assistance. Dont let the person to rub the affected eye.

Skin contact.
Remove contaminated clothing. Wash skin vigorously with water and soap or a suitable skin cleaner. NEVER use solvents or thinners.

Ingestion.
If accidentally ingested, seek immediate medical attention. Keep calm. NEVER induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed.
Corrosive Product, contact with eyes or skin can cause burns; ingestion or inhalation can cause internal damage, if this occurs immediate medical assistance is required.
Harmful Product, prolonged exposure due to inhalation may cause anaesthetic effects and the need for immediate medical assistance.
Contact with eyes may cause irreversible damage.

4.3 Indication of any immediate medical attention and special treatment needed.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious. Do not induce vomiting. If the person vomits, clear the respiratory tract.

-Continued on next page.-

SECTION 5: FIREFIGHTING MEASURES.

The product is NOT classified as flammable, in case of fire the following measures should be taken:

5.1 Extinguishing media.
Suitable extinguishing media:
Extinguisher powder or CO2. In case of more serious fires, also alcohol-resistant foam and water spray.

Unsuitable extinguishing media:
Do not use a direct stream of water to extinguish. In the presence of electrical voltage, you cannot use water or foam as extinguishing media.

5.2 Special hazards arising from the substance or mixture.
Special risks.
Exposure to combustion or decomposition products can be harmful to your health.

5.3 Advice for firefighters.
Use water to cool tanks, cisterns, or containers close to the heat source or fire. Take wind direction into account. Prevent the products used to fight the fire from going into drains, sewers, or waterways.

Fire protection equipment.
According to the size of the fire, it may be necessary to use protective suits against the heat, individual breathing equipment, gloves, protective goggles or facemasks, and boots.

SECTION 6: ACCIDENTAL RELEASE MEASURES.

6.1 Personal precautions, protective equipment and emergency procedures.
For exposure control and individual protection measures, see section 8.

6.2 Environmental precautions.
Product not classified as hazardous for the environment, avoid spillage as much as possible.

6.3 Methods and material for containment and cleaning up.
Contain and collect spillage with inert absorbent material (earth, sand, vermiculite, Kieselguhr...) and clean the area immediately with a suitable decontaminant.
Deposit waste in closed and suitable containers for disposal, in compliance with local and national regulations (see section 13).

6.4 Reference to other sections.
For exposure control and individual protection measures, see section 8.
For later elimination of waste, follow the recommendations under section 13.

SECTION 7: HANDLING AND STORAGE.

7.1 Precautions for safe handling.
For personal protection, see section 8.
In the application area, smoking, eating, and drinking must be prohibited.
Follow legislation on occupational health and safety.
Never use pressure to empty the containers. They are not pressure-resistant containers. Keep the product in containers made of a material identical to the original.

7.2 Conditions for safe storage, including any incompatibilities.
Store according to local legislation. Observe indications on the label. Store the containers between 0 and 40 º C, in a dry and well-ventilated place, far from sources of heat and direct solar light. Keep far away from ignition points. Keep away from oxidising agents and from highly acidic or alkaline materials. Do not smoke. Prevent the entry of non-authorised persons. Once the containers are open, they must be carefully closed and placed vertically to prevent spills.

The product is not affected by Directive 2012/18/EU (SEVESO III).

7.3 Specific end use(s).

-Continued on next page.-

Not available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

8.1 Control parameters.

Work exposure limit for:

Name	CAS No.	Country	Limit value	ppm	mg/m³
sodium metabisulphite	7681-57-4	United Kingdom [1]	**Eight hours**		5
			Short term		
		Éire [2]	**Eight hours**		
			Short term		

[1] According Limit Value (IOELV) list in 2nd Indicative Occupational Exposure adobted by Health and Safety Executive.
[2] According Code of Practice for the Safety, Health and Welfare at Work (Chemicals Agents) Regulations adopted by Health and Safety Authority (HSA).
The product does NOT contain substances with Biological Limit Values.
Concentration levels DNEL/DMEL:

Name	DNEL/DMEL	Type	Value
sodium metabisulphite CAS No: 7681-57-4 EC No: 231-673-0	DNEL (Workers)	Inhalation, Chronic, Systemic effects	225 (mg/m³)

DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.
DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.

8.2 Exposure controls.

Measures of a technical nature:
Provide adequate ventilation, which can be achieved by using good local exhaust-ventilation and a good general exhaust system.

Concentration:	**100 %**
Uses:	**Food additive** **Industrial generic**
Breathing protection:	
PPE:	Filter mask for protection against gases and particles.
Characteristics:	«CE» marking, category III. The mask must have a wide field of vision and an anatomically designed form in order to be sealed and watertight.
CEN standards:	EN 136, EN 140, EN 405
Maintenance:	Should not be stored in places exposed to high temperatures and damp environments before use. Special attention should be paid to the state of the inhalation and exhalation valves in the face adaptor.
Observations:	Read carefully the manufacturer's instructions regarding the equipment's use and maintenance. Attach the necessary filters to the equipment according to the specific nature of the risk (Particles and aerosols: P1-P2-P3, Gases and vapours: A-B-E-K-AX), changing them as advised by the manufacturer.
Filter Type needed:	A2
Hand protection:	
PPE:	Protective gloves against chemicals.
Characteristics:	«CE» marking, category III.
CEN standards:	EN 374-1, En 374-2, EN 374-3, EN 420
Maintenance:	Keep in a dry place, away from any sources of heat, and avoid exposure to sunlight as much as possible. Do not make any changes to the gloves that may alter their resistance, or apply paints, solvents or adhesives.
Observations:	Gloves should be of the appropriate size and fit the user's hand well, not being too loose or too tight. Always use with clean, dry hands.

Material:	PVC (polyvinyl chloride)	Breakthrough time (min.):	> 480	Material thickness (mm):	0,35

Eye protection:
If the product is handled correctly, no individual protection equipment is necessary.
Skin protection:

-Continued on next page.-

PPE:	Protective clothing.
Characteristics:	«CE» marking, category II. Protective clothing should not be too tight or loose in order not to obstruct the user's movements.
CEN standards:	EN 340
Maintenance:	In order to guarantee uniform protection, follow the washing and maintenance instructions provided by the manufacturer.
Observations:	The protective clothing should offer a level of comfort in line with the level of protection provided in terms of the hazard against which it protects, bearing in mind environmental conditions, the user's level of activity and the expected time of use.
PPE:	Work footwear.
Characteristics:	«CE» marking, category II.
CEN standards:	EN ISO 13287, EN 20347
Maintenance:	This product adapts to the first user's foot shape. That is why, as well as for hygienic reasons, it should not be used by other people.
Observations:	Work footwear for professional use includes protection elements aimed at protecting users against any injury resulting from an accident

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.

9.1 Information on basic physical and chemical properties.
Physical state: Solid
Colour: Blanco
Odour: Slightly spicy
Odour threshold: Not applicable/Not available due to the nature/properties of the product
Melting point: 150 ºC
Freezing point: Not applicable/Not available due to the nature/properties of the product
Boiling point or initial boiling point and boiling range: Not applicable/Not available due to the nature/properties of the product
Flammability: Not applicable/Not available due to the nature/properties of the product
Lower explosion limit: Not applicable/Not available due to the nature/properties of the product
Upper explosion limit: Not applicable/Not available due to the nature/properties of the product
Flash point: Not applicable/Not available due to the nature/properties of the product
Auto-ignition temperature: Not applicable/Not available due to the nature/properties of the product
Decomposition temperature: >150 ºC
pH: 3,5 -5,00 (1%)
Kinematic viscosity: Not applicable/Not available due to the nature/properties of the product
Solubility: En Diclorometano, tolueno, n-hexano, acetona, acetato de etilo < 0,01 g/L. En Metanol 62 g/L.
Hydrosolubility: agua: 39 %
Liposolubility: Not applicable/Not available due to the nature/properties of the product
Partition coefficient n-octanol/water (log value): -3.7 log P(o/w)
Vapour pressure: Not applicable/Not available due to the nature/properties of the product
Absolute density: Not applicable/Not available due to the nature/properties of the product
Relative density: 2.36
Relative vapour density: Not applicable/Not available due to the nature/properties of the product
Particle characteristics: Not applicable/Not available due to the nature/properties of the product

9.2 Other information
Viscosity: Not applicable/Not available due to the nature/properties of the product
Explosive properties: Not applicable/Not available due to the nature/properties of the product
Oxidizing properties: Not applicable/Not available due to the nature/properties of the product
Dropping point: Not applicable/Not available due to the nature/properties of the product
Blink: Not applicable/Not available due to the nature/properties of the product

SECTION 10: STABILITY AND REACTIVITY.

10.1 Reactivity.
Contact with acids liberates toxic gas.

10.2 Chemical stability.
Unstable in contact with:
- Bases.

10.3 Possibility of hazardous reactions.
Neutralization can occur on contact with bases.

-Continued on next page.-

10.4 Conditions to avoid.
- Avoid contact with bases.

10.5 Incompatible materials.
Avoid the following materials:
- Bases.

10.6 Hazardous decomposition products.
Depending on conditions of use, can be generated the following products:
- Corrosive vapors or gases.

SECTION 11: TOXICOLOGICAL INFORMATION.

11.1 Information on hazard classes as defined in Regulation (EC) Nº 1272/2008.
Splatters in the eyes can cause irritation and reversible damage.

Toxicological information.

Name	Acute toxicity			
	Type	Test	Kind	Value
sodium metabisulphite CAS No: 7681-57-4 EC No: 231-673-0	Oral	LD50	Rat	2480 mg/kg bw [1] [1] National Technical Information Service U.S. Department of Commerce (NTIS), FDA 71-22, PB 221 825 (1972)
	Dermal			
	Inhalation			

a) acute toxicity;
Product classified:
Acute toxicity (Oral), Category 4: Harmful if swallowed.

b) skin corrosion/irritation;
Not conclusive data for classification.

c) serious eye damage/irritation;
Product classified:
Serious eye damage, Category 1: Causes serious eye damage.

d) respiratory or skin sensitisation;
Not conclusive data for classification.

e) germ cell mutagenicity;
Not conclusive data for classification.

f) carcinogenicity;
Not conclusive data for classification.

g) reproductive toxicity;
Not conclusive data for classification.

h) STOT-single exposure;
Not conclusive data for classification.

i) STOT-repeated exposure;
Not conclusive data for classification.

j) aspiration hazard;
Not conclusive data for classification.

11.2 Information on other hazards.
Endocrine disrupting properties
This product does not contain components with endocrine-disrupting properties with effects on human health.

-Continued on next page.-

Other information
There is no information available on other adverse health effects.

SECTION 12: ECOLOGICAL INFORMATION.

12.1 Toxicity.

Name	Ecotoxicity			
	Type	Test	Kind	Value
sodium metabisulphite CAS No: 7681-57-4 EC No: 231-673-0	Fish	LC50	Oryzias latipes	100 mg/L (96 h) [1] [1] Ministry of Environment(MOE), Korea (2001), The Toxicity of Disodium disulphite to Fish(tested by KRICT)
	Aquatic invertebrates	EC100	Daphnia magna	125 mg/L (48 h) [1] [1] BASF AG, Dept. of ecology, unpublished data (0897/88) 10, May, 1989.
	Aquatic plants	EC90	Scenedesmus subspicatus (Desmodesmus subspicatus)	60 mg/L (72 h) [1] [1] BASF AG, Dept. of ecology, unpublished data (0897/88) 21, July, 1989.

12.2 Persistence and degradability.
No information is available regarding the biodegradability
No information is available on the degradability
No information is available about persistence and degradability of the product.

12.3 Bioaccumulative potential.
No information is available regarding the bioaccumulation.

12.4 Mobility in soil.
No information is available about the mobility in soil.
The product must not be allowed to go into sewers or waterways.
Prevent penetration into the ground.

12.5 Results of PBT and vPvB assessment.
No information is available about the results of PBT and vPvB assessment of the product.

12.6 Endocrine disrupting properties.
This product doesn't contain components with environmental endocrine disrupting properties.

12.7 Other adverse effects.
No information is available about other adverse effects for the environment.

SECTION 13: DISPOSAL CONSIDERATIONS.

13.1 Waste treatment methods.
Do not dump into sewers or waterways. Waste and empty containers must be handled and eliminated according to current, local/national legislation.
Follow the provisions of Directive 2008/98/EC regarding waste management.

SECTION 14: TRANSPORT INFORMATION.

Transportation is not dangerous. In case of road accident causing the product's spillage, proceed in accordance with point 6.

-Continued on next page.-

14.1 UN number or ID number.
Transportation is not dangerous.

14.2 UN proper shipping name.
Description:
ADR/RID: Not classified as hazardous for transport.
IMDG: Not classified as hazardous for transport.
ICAO/IATA: Not classified as hazardous for transport.

14.3 Transport hazard class(es).
Transportation is not dangerous.

14.4 Packing group.
Transportation is not dangerous.

14.5 Environmental hazards.
Transportation is not dangerous.
Transport by ship, FEm – Emergency sheets (F – Fire, S - Spills): Not applicable.

14.6 Special precautions for user.
Transportation is not dangerous.

14.7 Maritime transport in bulk according to IMO instruments.
Transportation is not dangerous.

SECTION 15: REGULATORY INFORMATION.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.
The product is not affected by the Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.

The product is not affected by Directive 2012/18/EU (SEVESO III).
The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.
The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.

Kind of pollutant to water (Germany): WGK 1: Slightly hazardous to water. (Autoclassified according to the AwSV Regulations)

15.2 Chemical safety assessment.
No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.
Available Product Exposure Scenario.

SECTION 16: OTHER INFORMATION.

Classification codes:

Acute Tox. 4 : Acute toxicity (Oral), Category 4
Eye Dam. 1 : Serious eye damage, Category 1

Changes regarding to the previous version:

- Changes in the composition of the product (SECTION 3.2).
- Addition of personal protective equipment (SECTION 8.2).
- Modifications of the personal protective equipment (SECTION 8.2).
- Modification in the values of the physical and chemical properties (SECTION 9).
- Addition of ecological information values (SECTION 12.3).
- Addition of abbreviations and acronyms (SECTION 16).

-Continued on next page.-

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Physical hazards	On basis of test data
Health hazards	Calculation method
Environmental hazards	Calculation method

It is advisable to carry out basic training with regard to health and safety at work in order to handle this product correctly.

Information on the TSCA Inventory (Toxic Substances Control Act) USA:

CAS No	Name	State
7681-57-4	sodium metabisulphite	Registered

Available Product Exposure Scenario.

Abbreviations and acronyms used:
AwSV: Facility Regulations for handling substances that are hazardous for the water.
CEN: European Committee for Standardization.
DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.
DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.
EC50: Half maximal effective concentration.
PPE: Personal protection equipment.
LC50: Lethal concentration, 50%.
LD50: Lethal dose, 50%.
WGK: Water hazard classes.

Key literature references and sources for data:
http://eur-lex.europa.eu/homepage.html
http://echa.europa.eu/
Regulation (EU) 2020/878.
Regulation (EC) No 1907/2006.
Regulation (EU) No 1272/2008.

The information given in this Safety Data Sheet has been drafted in accordance with COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemical substances and mixtures (REACH).

The information in this Safety Data Sheet on the Preparation is based on current knowledge and on current EC and national laws, as far as the working conditions of the users is beyond our knowledge and control. The product must not be used for purposes other than those that are specified without first having written instructions on how to handle. It is always the responsibility of the user to take the appropriate measures in order to comply with the requirements established by current legislation. The information contained in this Safety Sheet only states a description of the safety requirements for the preparation, and it must not be considered as a guarantee of its properties.

-End of safety data sheet.-

ANNEX TO THE EXTENDED SAFETY DATA SHEET (eSDS)

EXPOSURE SCENARIOS

PRODUCT NAME	:	Sodium metabisulphite
CAS NUMBER	:	7681-57-4
CE NUMBER	:	231-673-0
REACH Reg. No.	:	01-2119531326-45-XXXX

Exposure scenario 1: Production of substances and industrial uses (form/state: sludge and pasta)

List of use descriptors

Sectors of use [SU]:

SU1: Agriculture, forestry, fishing
SU2a: Extractive industries (not including offshore industries)SU2b: Offshore industries
SU3: Industrial uses
SU4: Food industries
SU5: Textile, leather and fur industry
SU6a: Manufactures of wood and wood products
SU6b: Manufacture of pulp, paper and paper articlesSU7: Graphic arts and reproduction of recorded media
SU8: Large-scale bulk chemical manufacturing (including petroleum products)
SU9: Manufacture of fine chemical products
SU10: Formulation [mixture] of preparations and/or repackaging (not including alloys)SU11: Manufacture of rubber products
SU12: Manufacture of plastic products, including composition and conversion
SU13: Manufacture of other miscellaneous non-metallic mineral products, for example,plaster or cement
SU14: Manufacture of basic metals, including alloys
SU15: Manufacture of metal products, except machinery and equipment
SU16: Manufacture of computer equipment, electronic and optical material and electrical equipment
SU17: Manufacture of machinery, equipment, vehicles, other transport equipment, etc.commonly used
SU18: Furniture manufacturing
SU19: Construction of buildings and construction works
SU20: Health services
SU23: Electricity, steam, gas and water supply and wastewater treatment

ANNEX: EXPOSURE SCENARIOS

Product Category:

PC1: Adhesives, sealants
PC2: Adsorbents
PC3: Air sanitizing products
PC4: Antifreeze and de-icing productsPC7: Basic metals and alloys
PC8: Biocidal products (for example, disinfectants or pest control)PC9a: Coatings and paints, solvents, strippers
PC9b: Fillers, putties, plaster, modeling clay PC12: Fertilizers
PC13: Fuels
PC14: Metallic surface treatment products PC15: Non-metallic surface treatment products PC17: Hydraulic fluids
PC18: Inks and toners
PC19: Intermediate (precursor)
PC20: Technological aids such as pH regulators, flocculating agents,precipitants and neutralizers
PC23: Products for tanning
PC24: Lubricants, greases and release agentsPC25: Liquids for metallurgy
PC26: Inks for paper and cardboard, finishing and impregnating products: includedbleaches and other technological aids
PC28: Perfumes, fragrances
PC30: Photochemical substances
PC31: Polymeric preparations and components
PC32: Polymeric preparations and components
PC34: Dyes for fabrics and finishing and impregnation productsPC35: Washing and cleaning products
PC37: Chemicals for water treatmentPC38: Solder products and flux products
PC39: Cosmetics and personal care products PC40: Extraction solvents

App

Contributing scenarios:

ANNEX: EXPOSURE SCENARIOS

Contributing scenarios:

Contributing Exposure Scenario 1

Use in closed process, unlikely exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, unlikely exposure

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.001 mg/m³

Risk Characterization Ratio (RCR):

inhalation: < 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Use in closed and continuous processes with occasional controlled exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC2: Use in closed and continuous processes with occasional controlled exposure

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.001 mg/m³

Risk Characterization Ratio (RCR):

inhalation: < 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Use in closed batch processes (synthesis or formulation) (worker)

List of use descriptors

Process categories [PROC]:

PROC3: Use in closed batch processes (synthesis or formulation)

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

Industrial spraying (worker)

List of use descriptors

Process categories [PROC]:

PROC7: Industrial spraying

Funcionament condition

Product characteristics:

Pasta
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4.4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.44

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in non-specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8a: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in non-specialized facilities

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 8

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 9

Transfer of substances or preparations in small containers (specialized filling lines, including weighing) (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substances or mixtures to small containers (lines ofspecialized filling, including weighing)

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 10

Application by roller or brush (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Application by roller or brush

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 11

Use of foaming agents for the manufacture of foams (worker)

List of use descriptors

Process categories [PROC]:

PROC12: Use of foaming agents for the manufacture of foams

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.001 mg/m³

Risk Characterization Ratio (RCR):

inhalation: <0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 12

Treatment of articles by dipping and pouring (worker)

List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 13

Production of preparations or articles by tabletting, compression, extrusion, pelletizing (worker)

List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletizing

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 14

Use as a laboratory reagent (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as a laboratory reagent

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 15

Use of materials as fuels, limited foreseeable exposure to products that have not undergone combustion (worker)

List of use descriptors

Process categories [PROC]:

PROC16: Use of materials as fuels, limited foreseeable exposure toproducts that have not undergone combustion

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 16

Lubrication under high energy conditions and in partially open processes (worker)

List of use descriptors

Process categories [PROC]:

PROC17: Lubrication under high energy conditions and in partially open processes

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 17

Grease application under high energy conditions (worker)

List of use descriptors

Process categories [PROC]:

PROC18: Application of fats in high energy conditions

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 18

Manual mixtures with direct exposure and only protected by personal protective clothing (worker)

List of use descriptors

Process categories [PROC]:

PROC19: Manual mixing with close contact and use only of personal protection equipment

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not applicable

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 19

Production of substances and industrial uses (form/state: sludge and paste) (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of substances ERC2: Formulation in mixture ERC3: Formulation in materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure scenario 2: Production of substances and industrial uses (form/state: solid, dust - low dustiness)

List of use descriptors

Sectors of use [SU]:

SU1: Agriculture, forestry, fishing
SU2a: Extractive industries (not including offshore industries)SU2b: Offshore industries
SU3: Industrial uses
SU4: Food industries
SU5: Textile, leather and fur industry
SU6a: Manufactures of wood and wood products
SU6b: Manufacture of pulp, paper and paper articlesSU7: Graphic arts and reproduction of recorded media
SU8: Large-scale bulk chemical manufacturing (including petroleum products)
SU9: Manufacture of fine chemical products
SU10: Formulation [mixture] of preparations and/or repackaging (not including alloys)SU11: Manufacture of rubber products
SU12: Manufacture of plastic products, including composition and conversion
SU13: Manufacture of other miscellaneous non-metallic mineral products, for example,plaster or cement
SU14: Manufacture of basic metals, including alloys
SU15: Manufacture of metal products, except machinery and equipment
SU16: Manufacture of computer equipment, electronic and optical material and electrical equipment
SU17: Manufacture of machinery, equipment, vehicles, other transport equipment, etc.commonly used
SU18: Furniture manufacturing
SU19: Construction of buildings and construction works
SU20: Health services
SU23: Electricity, steam, gas and water supply and wastewater treatment

ANNEX: EXPOSURE SCENARIOS

Product Category:

PC1: Adhesives, sealants
PC2: Adsorbents
PC3: Air sanitizing products
PC4: Antifreeze and de-icing productsPC7: Basic metals and alloys
PC8: Biocidal products (for example, disinfectants or pest control)PC9a: Coatings and paints, solvents, strippers
PC9b: Fillers, putties, plaster, modeling clay PC12: Fertilizers
PC13: Fuels
PC14: Metallic surface treatment products PC15: Non-metallic surface treatment products PC17: Hydraulic fluids
PC18: Inks and toners
PC19: Intermediate (precursor)
PC20: Technological aids such as pH regulators, flocculating agents,precipitants and neutralizers
PC23: Products for tanning
PC24: Lubricants, greases and release agentsPC25: Liquids for metallurgy
PC26: Inks for paper and cardboard, finishing and impregnating products: includedbleaches and other technological aids
PC28: Perfumes, fragrances
PC30: Photochemical substances
PC31: Polymeric preparations and components
PC32: Polymeric preparations and components
PC34: Dyes for fabrics and finishing and impregnation productsPC35: Washing and cleaning products
PC37: Chemicals for water treatmentPC38: Solder products and flux products
PC39: Cosmetics and personal care products PC40: Extraction solvents

App

Contributing scenarios:

ANNEX: EXPOSURE SCENARIOS

Contributing scenarios:

Contributing Exposure Scenario 1

Use in closed process, unlikely exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, unlikely exposure

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

ANNEX: EXPOSURE SCENARIOS

Concentration of the substance in the mixture:
not restricted
Duration and frequency of use:
480 minutes

Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 0.01 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:
system closed
Operating conditions and risk management measures:
Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.
Conditions and measures in relation to personal protection, hygiene and health testing:
Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Use in closed and continuous processes with occasional controlled exposure (worker)

List of use descriptors

Process categories [PROC]:
PROC2: Use in closed and continuous processes with occasional controlled exposure

Funcionament condition

Product characteristics:
solid, powder
exposure assessment: low
Concentration of the substance in the mixture:
not restricted
Duration and frequency of use:
480 minutes
Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 0.01 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:
system closed
Operating conditions and risk management measures:
Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.
Conditions and measures in relation to personal protection, hygiene and health testing:
Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Use in closed batch processes (synthesis or formulation) (worker)

List of use descriptors

Process categories [PROC]:
PROC3: Use in closed batch processes (synthesis or formulation)

Funcionament condition

Product characteristics:
solid, powder
exposure assessment: low
Concentration of the substance in the mixture:
not restricted
Duration and frequency of use:
480 minutes
Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 0.1 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

Calendering operations (worker)

List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Industrial spraying (worker)

List of use descriptors

Process categories [PROC]:

PROC7: Industrial spraying

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 8

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in non-specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8a: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in non-specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 9

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 10

Transfer of substances or preparations in small containers (specialized filling lines, including weighing) (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substances or mixtures to small containers (lines ofspecialized filling, including weighing)

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 11

Application by roller or brush (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Application by roller or brush

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 12

Treatment of articles by dipping and pouring (worker)

List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 13

Production of preparations or articles by tabletting, compression, extrusion, pelletizing (worker)

List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletizing

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 14

Use as a laboratory reagent (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as a laboratory reagent

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 15

Use of materials as fuels, limited foreseeable exposure to products that have not undergone combustion (worker)

List of use descriptors

Process categories [PROC]:

PROC16: Use of materials as fuels, limited foreseeable exposure toproducts that have not undergone combustion

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 16

Lubrication under high energy conditions and in partially open processes (worker)

List of use descriptors

Process categories [PROC]:

PROC17: Lubrication under high energy conditions and in partially open processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 17

Grease application under high energy conditions (worker)

List of use descriptors

Process categories [PROC]:

PROC18: Application of fats in high energy conditions

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 18

Manual mixtures with direct exposure and only protected by personal protective clothing (worker)

List of use descriptors

Process categories [PROC]:

PROC19: Manual mixing with close contact and use only of personal protection equipment

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not applicable

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 19

Handling with low energy level of substances contained in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC21: Handling with low energy level of substances contained inmaterials and/or items

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 20

Potentially closed transformation operations with metals or minerals at high temperatures, industrial sites (worker)

List of use descriptors

Process categories [PROC]:

PROC22: Manufacture and transformation of minerals and/or metals at very high temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 7 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.7

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 21

Open processes and transfer operations with minerals or metals at elevated temperatures (worker)

List of use descriptors

Process categories [PROC]:

PROC23: Open processes and transfer operations with minerals or metals tohigh temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.2

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 22

High energy (mechanical) treatment of substances that are bound in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC24: High-energy (mechanical) handling of substancescontained in materials and/or articles

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 23

Other hot operations with metals (worker)

List of use descriptors

Process categories [PROC]:

PROC25: Other hot metal operations

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.2

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 24

Handling of inorganic solid substances at room temperature (worker)

List of use descriptors

Process categories [PROC]:

PROC26: Handling of inorganic solid substances at room temperature

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 1.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.15

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 25

Production of substances and industrial uses (form/state: solid, powder - low dustiness) (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of substances ERC2: Formulation in mixture ERC3: Formulation in materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure scenario 3: Production of substances and industrial uses (form/state: solid, powder - medium dusty)

List of use descriptors

Sectors of use [SU]:

SU1: Agriculture, forestry, fishing
SU2a: Extractive industries (not including offshore industries)SU2b: Offshore industries
SU3: Industrial uses
SU4: Food industries
SU5: Textile, leather and fur industry
SU6a: Manufactures of wood and wood products
SU6b: Manufacture of pulp, paper and paper articlesSU7: Graphic arts and reproduction of recorded media
SU8: Large-scale bulk chemical manufacturing (including petroleum products)
SU9: Manufacture of fine chemical products
SU10: Formulation [mixture] of preparations and/or repackaging (not including alloys)SU11: Manufacture of rubber products
SU12: Manufacture of plastic products, including composition and conversion
SU13: Manufacture of other miscellaneous non-metallic mineral products, for example,plaster or cement
SU14: Manufacture of basic metals, including alloys
SU15: Manufacture of metal products, except machinery and equipment
SU16: Manufacture of computer equipment, electronic and optical material and electrical equipment
SU17: Manufacture of machinery, equipment, vehicles, other transport equipment, etc.commonly used
SU18: Furniture manufacturing
SU19: Construction of buildings and construction works
SU20: Health services
SU23: Electricity, steam, gas and water supply and wastewater treatment

ANNEX: EXPOSURE SCENARIOS

Product Category:

PC1: Adhesives, sealants
PC2: Adsorbents
PC3: Air sanitizing products
PC4: Antifreeze and de-icing productsPC7: Basic metals and alloys
PC8: Biocidal products (for example, disinfectants or pest control)PC9a: Coatings and paints, solvents, strippers
PC9b: Fillers, putties, plaster, modeling clay PC12: Fertilizers
PC13: Fuels
PC14: Metallic surface treatment products PC15: Non-metallic surface treatment products PC17: Hydraulic fluids
PC18: Inks and toners
PC19: Intermediate (precursor)
PC20: Technological aids such as pH regulators, flocculating agents,precipitants and neutralizers
PC23: Products for tanning
PC24: Lubricants, greases and release agentsPC25: Liquids for metallurgy
PC26: Inks for paper and cardboard, finishing and impregnating products: includedbleaches and other technological aids
PC28: Perfumes, fragrances
PC30: Photochemical substances
PC31: Polymeric preparations and components
PC32: Polymeric preparations and components
PC34: Dyes for fabrics and finishing and impregnation productsPC35: Washing and cleaning products
PC37: Chemicals for water treatmentPC38: Solder products and flux products
PC39: Cosmetics and personal care products PC40: Extraction solvents

App

Contributing scenarios:

Contributing scenarios:

Contributing Exposure Scenario 1

Use in closed process, unlikely exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, unlikely exposure

Funcionament condition

Product characteristics:

solid, powder

exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 0.01 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:
system closed
Operating conditions and risk management measures:
Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.
Conditions and measures in relation to personal protection, hygiene and health testing:
Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Use in closed and continuous processes with occasional controlled exposure (worker)

List of use descriptors

Process categories [PROC]:
PROC2: Use in closed and continuous processes with occasional controlled exposure

Funcionament condition

Product characteristics:
solid, powder
exposure assessment: medium
Concentration of the substance in the mixture:
not restricted
Duration and frequency of use:
480 minutes
Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
by inhalation: 0.5 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Use in closed batch processes (synthesis or formulation) (worker)

List of use descriptors

Process categories [PROC]:

PROC3: Use in closed batch processes (synthesis or formulation)

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

Calendering operations (worker)

List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Industrial spraying (worker)

List of use descriptors

Process categories [PROC]:

PROC7: Industrial spraying

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4.4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.44

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 8

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in non-specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8a: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in non-specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 9

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 10

Transfer of substances or preparations in small containers (specialized filling lines, including weighing) (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substances or mixtures to small containers (lines ofspecialized filling, including weighing)

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 11

Application by roller or brush (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Application by roller or brush

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 12

Treatment of articles by dipping and pouring (worker)

List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 13

Production of preparations or articles by tabletting, compression, extrusion, pelletizing (worker)

List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletizing

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 14

Use as a laboratory reagent (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as a laboratory reagent

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 15

Use of materials as fuels, limited foreseeable exposure to products that have not undergone combustion (worker)

List of use descriptors

Process categories [PROC]:

PROC16: Use of materials as fuels, limited foreseeable exposure toproducts that have not undergone combustion

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 16

Lubrication under high energy conditions and in partially open processes (worker)

List of use descriptors

Process categories [PROC]:

PROC17: Lubrication under high energy conditions and in partially open processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4.4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.44

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 17

Grease application under high energy conditions (worker)

List of use descriptors

Process categories [PROC]:

PROC18: Application of fats in high energy conditions

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4.4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.44

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 18

Manual mixtures with direct exposure and only protected by personal protective clothing (worker)

List of use descriptors

Process categories [PROC]:

PROC19: Manual mixing with close contact and use only of personal protection equipment

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not applicable

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 19

Potentially closed transformation operations with metals or minerals at high temperatures, industrial sites (worker)

List of use descriptors

Process categories [PROC]:

PROC22: Manufacture and transformation of minerals and/or metals at very high temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 7 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.7

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 20

Open processes and transfer operations with minerals or metals at elevated temperatures (worker)

List of use descriptors

Process categories [PROC]:

PROC23: Open processes and transfer operations with minerals or metals tohigh temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.2

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 21

High energy (mechanical) treatment of substances that are bound in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC24: High-energy (mechanical) handling of substancescontained in materials and/or articles

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 22

Other hot operations with metals (worker)

List of use descriptors

Process categories [PROC]:

PROC25: Other hot metal operations

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.2

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 23

Handling of inorganic solid substances at room temperature (worker)

List of use descriptors

Process categories [PROC]:

PROC26: Handling of inorganic solid substances at room temperature

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.4

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 24

Production of substances and industrial uses (form/state: solid, powder - medium dusty) (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of substances ERC2: Formulation in mixture ERC3: Formulation in materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure scenario 4: Production of substances and industrial uses (form/state: solid, dust - high dusty)

List of use descriptors

Sectors of use [SU]:

SU1: Agriculture, forestry, fishing
SU2a: Extractive industries (not including offshore industries)SU2b: Offshore industries
SU3: Industrial uses
SU4: Food industries
SU5: Textile, leather and fur industry
SU6a: Manufactures of wood and wood products
SU6b: Manufacture of pulp, paper and paper articlesSU7: Graphic arts and reproduction of recorded media
SU8: Large-scale bulk chemical manufacturing (including petroleum products)
SU9: Manufacture of fine chemical products
SU10: Formulation [mixture] of preparations and/or repackaging (not including alloys)SU11: Manufacture of rubber products
SU12: Manufacture of plastic products, including composition and conversion
SU13: Manufacture of other miscellaneous non-metallic mineral products, for example,plaster or cement
SU14: Manufacture of basic metals, including alloys
SU15: Manufacture of metal products, except machinery and equipment
SU16: Manufacture of computer equipment, electronic and optical material and electrical equipment
SU17: Manufacture of machinery, equipment, vehicles, other transport equipment, etc.commonly used
SU18: Furniture manufacturing
SU19: Construction of buildings and construction works
SU20: Health services
SU23: Electricity, steam, gas and water supply and wastewater treatment

ANNEX: EXPOSURE SCENARIOS

Product Category:

PC1: Adhesives, sealants
PC2: Adsorbents
PC3: Air sanitizing products
PC4: Antifreeze and de-icing productsPC7: Basic metals and alloys
PC8: Biocidal products (for example, disinfectants or pest control)PC9a: Coatings and paints, solvents, strippers
PC9b: Fillers, putties, plaster, modeling clay PC12: Fertilizers
PC13: Fuels
PC14: Metallic surface treatment products PC15: Non-metallic surface treatment products PC17: Hydraulic fluids
PC18: Inks and toners
PC19: Intermediate (precursor)
PC20: Technological aids such as pH regulators, flocculating agents,precipitants and neutralizers
PC23: Products for tanning
PC24: Lubricants, greases and release agentsPC25: Liquids for metallurgy
PC26: Inks for paper and cardboard, finishing and impregnating products: includedbleaches and other technological aids
PC28: Perfumes, fragrances
PC30: Photochemical substances
PC31: Polymeric preparations and components
PC32: Polymeric preparations and components
PC34: Dyes for fabrics and finishing and impregnation productsPC35: Washing and cleaning products
PC37: Chemicals for water treatmentPC38: Solder products and flux products
PC39: Cosmetics and personal care products PC40: Extraction solvents

App

Contributing scenarios:

Contributing scenarios:

Contributing Exposure Scenario 1

Use in closed process, unlikely exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, unlikely exposure

Funcionament condition

Product characteristics:

solid, powder

exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 0.01 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:
system closed
Operating conditions and risk management measures:
Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.
Conditions and measures in relation to personal protection, hygiene and health testing:
Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Use in closed and continuous processes with occasional controlled exposure (worker)

List of use descriptors

Process categories [PROC]:
PROC2: Use in closed and continuous processes with occasional controlled exposure

Funcionament condition

Product characteristics:
solid, powder
exposure assessment: high
Concentration of the substance in the mixture:
not restricted
Duration and frequency of use:
480 minutes
Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 1 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Use in closed batch processes (synthesis or formulation) (worker)

List of use descriptors

Process categories [PROC]:

PROC3: Use in closed batch processes (synthesis or formulation)

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

Calendering operations (worker)

List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Industrial spraying (worker)

List of use descriptors

Process categories [PROC]:

PROC7: Industrial spraying

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 8

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in non-specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8a: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in non-specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2.75 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.275

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 9

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 10

Transfer of substances or preparations in small containers (specialized filling lines, including weighing) (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substances or mixtures to small containers (lines ofspecialized filling, including weighing)

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4.4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.44

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 11

Application by roller or brush (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Application by roller or brush

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2.2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.22

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 12

Treatment of articles by dipping and pouring (worker)

List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 13

Production of preparations or articles by tabletting, compression, extrusion, pelletizing (worker)

List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletizing

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2.2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.22

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 14

Use as a laboratory reagent (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as a laboratory reagent

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 15

Use of materials as fuels, limited foreseeable exposure to products that have not undergone combustion (worker)

List of use descriptors

Process categories [PROC]:

PROC16: Use of materials as fuels, limited foreseeable exposure toproducts that have not undergone combustion

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2.2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.22

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 16

Lubrication under high energy conditions and in partially open processes (worker)

List of use descriptors

Process categories [PROC]:

PROC17: Lubrication under high energy conditions and in partially open processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2.75 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.275

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 17

Grease application under high energy conditions (worker)

List of use descriptors

Process categories [PROC]:

PROC18: Application of fats in high energy conditions

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2.75 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.275

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 18

Manual mixtures with direct exposure and only protected by personal protective clothing (worker)

List of use descriptors

Process categories [PROC]:

PROC19: Manual mixing with close contact and use only of personal protection equipment

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 6.25 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.625

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not applicable

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 19

Potentially closed transformation operations with metals or minerals at high temperatures, industrial sites (worker)

List of use descriptors

Process categories [PROC]:

PROC22: Manufacture and transformation of minerals and/or metals at very high temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 7 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.7

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 20

Open processes and transfer operations with minerals or metals at elevated temperatures (worker)

List of use descriptors

Process categories [PROC]:

PROC23: Open processes and transfer operations with minerals or metals tohigh temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.2

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 21

High energy (mechanical) treatment of substances that are bound in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC24: High-energy (mechanical) handling of substancescontained in materials and/or articles

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 22

Other hot operations with metals (worker)

List of use descriptors

Process categories [PROC]:

PROC25: Other hot metal operations

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.2

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 23

Handling of inorganic solid substances at room temperature (worker)

List of use descriptors

Process categories [PROC]:

PROC26: Handling of inorganic solid substances at room temperature

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 2.2 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.22

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 24

Production of substances and industrial uses (form/state: solid, dust - high dusty) (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of substances ERC2: Formulation in mixture ERC3: Formulation in materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure scenario 5: Commercial use of the substance or of mixtures containing said substance (form/state: slurries and pastes)

List of use descriptors

Sectors of use [SU]: SU22: Professional uses

Product Category: PC1: Adhesives, sealants
PC2: Adsorbents
PC7: Basic metals and alloys
PC9a: Coatings and paints, solvents, strippersPC9b: Fillers, putties, plaster, modeling clay PC12: Fertilizers
PC14: Metallic surface treatment products PC15: Non-metallic surface treatment products PC17: Hydraulic fluids
PC18: Inks and toners
PC20: Technological aids such as pH regulators, flocculating agents,precipitants and neutralizers
PC23: Products for tanning
PC24: Lubricants, greases and release agentsPC25: Liquids for metallurgy
PC26: Inks for paper and cardboard, finishing and impregnating products: includedbleaches and other technological aids
PC30: Photochemical substances
PC31: Polymeric preparations and components
PC34: Dyes for fabrics and finishing and impregnation productsPC35: Washing and cleaning products
PC37: Chemicals for water treatmentPC38: Solder and flux products PC40: Extraction solvents

App

Contributing scenarios:

ANNEX: EXPOSURE SCENARIOS

Contributing scenarios:

Contributing Exposure Scenario 1

Use in closed and continuous processes with occasional controlled exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC2: Use in closed and continuous processes with occasional controlled exposure

Funcionament condition

Product characteristics:

Pasta

exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.001 mg/m³

Risk Characterization Ratio (RCR):

inhalation: < 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Use in closed batch processes (synthesis or formulation) (worker)

List of use descriptors

Process categories [PROC]:

PROC3: Use in closed batch processes (synthesis or formulation)

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in non-specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8a: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in non-specialized facilities

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Transfer of substances or preparations in small containers (specialized filling lines, including weighing) (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substances or mixtures to small containers (lines ofspecialized filling, including weighing)

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 8

Application by roller or brush (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Application by roller or brush

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 9

Non-industrial spraying (worker)

List of use descriptors

Process categories [PROC]:

PROC11: Non-industrial spraying

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 10

Use of foaming agents for the manufacture of foams (worker)

List of use descriptors

Process categories [PROC]:

PROC12: Use of foaming agents for the manufacture of foams

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.001 mg/m³

Risk Characterization Ratio (RCR):

inhalation: <0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 11

Treatment of articles by dipping and pouring (worker)

List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 12

Production of preparations or articles by tabletting, compression, extrusion, pelletizing (worker)

List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletizing

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 13

Use as a laboratory reagent (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as a laboratory reagent

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.01 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 14

Use of materials as fuels, limited foreseeable exposure to products that have not undergone combustion (worker)

List of use descriptors

Process categories [PROC]:

PROC16: Use of materials as fuels, limited foreseeable exposure toproducts that have not undergone combustion

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 15

Lubrication under high energy conditions and in partially open processes (worker)

List of use descriptors

Process categories [PROC]:

PROC17: Lubrication under high energy conditions and in partially open processes

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 16

Grease application under high energy conditions (worker)

List of use descriptors

Process categories [PROC]:

PROC18: Application of fats in high energy conditions

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 17

Manual mixtures with direct exposure and only protected by personal protective clothing (worker)

List of use descriptors

Process categories [PROC]:

PROC19: Manual mixing with close contact and use only of personal protection equipment

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.05 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.005

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not applicable

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 18

Fluids that carry heat and pressure in dispersive systems for professional use, but closed (worker)

List of use descriptors

Process categories [PROC]:

PROC20: Use of functional fluids in small devices

Funcionament condition

Product characteristics:

Pasta
exposure assessment: very low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.001 mg/m³

Risk Characterization Ratio (RCR):

inhalation: <0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 19

Commercial use of the substance or of mixtures containing said substance (form/state: muds and pastes) (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of substances ERC2: Formulation in mixture ERC3: Formulation in materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure Scenario 6: Commercial use of the substance or of mixtures containing said substance (form/state: solid, powder - low dustiness)

List of use descriptors

Sectors of use [SU]: SU22: Professional uses

Product Category: PC1: Adhesives, sealants
PC2: Adsorbents
PC7: Basic metals and alloys
PC9a: Coatings and paints, solvents, strippersPC9b: Fillers, putties, plaster, modeling clay PC12: Fertilizers
PC14: Metallic surface treatment products PC15: Non-metallic surface treatment products PC17: Hydraulic fluids
PC18: Inks and toners
PC20: Technological aids such as pH regulators, flocculating agents,precipitants and neutralizers
PC23: Products for tanning
PC24: Lubricants, greases and release agentsPC25: Liquids for metallurgy
PC26: Inks for paper and cardboard, finishing and impregnating products: includedbleaches and other technological aids
PC30: Photochemical substances
PC31: Polymeric preparations and components
PC34: Dyes for fabrics and finishing and impregnation productsPC35: Washing and cleaning products
PC37: Chemicals for water treatmentPC38: Solder and flux products PC40: Extraction solvents

App

Contributing scenarios:

Contributing scenarios:

Contributing Exposure Scenario 1

Use in closed and continuous processes with occasional controlled exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC2: Use in closed and continuous processes with occasional controlled exposure

Funcionament condition

Product characteristics:

solid, powder

exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 0.01 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.001

Risk management measures

Technical conditions and measures at process level (source) to prevent release:
system closed
Operating conditions and risk management measures:
Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.
Conditions and measures in relation to personal protection, hygiene and health testing:
Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Use in closed batch processes (synthesis or formulation) (worker)

List of use descriptors

Process categories [PROC]:
PROC3: Use in closed batch processes (synthesis or formulation)

Funcionament condition

Product characteristics:
solid, powder
exposure assessment: low
Concentration of the substance in the mixture:
not restricted
Duration and frequency of use:
480 minutes
Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 0.1 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Calendering operations (worker)

List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in non-specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8a: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in non-specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 8

Transfer of substances or preparations in small containers (specialized filling lines, including weighing) (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substances or mixtures to small containers (lines ofspecialized filling, including weighing)

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 9

Application by roller or brush (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Application by roller or brush

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 10

Non-industrial spraying (worker)

List of use descriptors

Process categories [PROC]:

PROC11: Non-industrial spraying

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 11

Treatment of articles by dipping and pouring (worker)

List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 12

Production of preparations or articles by tabletting, compression, extrusion, pelletizing (worker)

List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletizing

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 13

Use as a laboratory reagent (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as a laboratory reagent

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 0.1 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.01

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 14

Use of materials as fuels, limited foreseeable exposure to products that have not undergone combustion (worker)

List of use descriptors

Process categories [PROC]:

PROC16: Use of materials as fuels, limited foreseeable exposure toproducts that have not undergone combustion

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 15

Lubrication under high energy conditions and in partially open processes (worker)

List of use descriptors

Process categories [PROC]:

PROC17: Lubrication under high energy conditions and in partially open processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 2.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.25

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 16

Grease application under high energy conditions (worker)

List of use descriptors

Process categories [PROC]:

PROC18: Application of fats in high energy conditions

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 17

Manual mixtures with direct exposure and only protected by personal protective clothing (worker)

List of use descriptors

Process categories [PROC]:

PROC19: Manual mixing with close contact and use only of personal protection equipment

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not applicable

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 18

Handling with low energy level of substances contained in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC21: Handling with low energy level of substances contained inmaterials and/or items

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 19

Potentially closed transformation operations with metals or minerals at high temperatures, industrial sites (worker)

List of use descriptors

Process categories [PROC]:

PROC22: Manufacture and transformation of minerals and/or metals at very high temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 2.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.25

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 20

Open processes and transfer operations with minerals or metals at elevated temperatures (worker)

List of use descriptors

Process categories [PROC]:

PROC23: Open processes and transfer operations with minerals or metals tohigh temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 21

High energy (mechanical) treatment of substances that are bound in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC24: High-energy (mechanical) handling of substancescontained in materials and/or articles

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 22

Other hot operations with metals (worker)

List of use descriptors

Process categories [PROC]:

PROC25: Other hot metal operations

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.4

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 23

Handling of inorganic solid substances at room temperature (worker)

List of use descriptors

Process categories [PROC]:

PROC26: Handling of inorganic solid substances at room temperature

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 3 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.3

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 24

Commercial use of the substance or of mixtures containing said substance (form/state: solid, powder - low dustiness) (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of substances ERC2: Formulation in mixture ERC3: Formulation in materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure Scenario 7: Commercial use of the substance or of mixtures containing said substance (form/state: solid, powder - medium dusty)

List of use descriptors

Sectors of use [SU]: SU22: Professional uses

Product Category: PC1: Adhesives, sealants
PC2: Adsorbents
PC7: Basic metals and alloys
PC9a: Coatings and paints, solvents, strippersPC9b: Fillers, putties, plaster, modeling clay PC12: Fertilizers
PC14: Metallic surface treatment products PC15: Non-metallic surface treatment products PC17: Hydraulic fluids
PC18: Inks and toners
PC20: Technological aids such as pH regulators, flocculating agents,precipitants and neutralizers
PC23: Products for tanning
PC24: Lubricants, greases and release agentsPC25: Liquids for metallurgy
PC26: Inks for paper and cardboard, finishing and impregnating products: includedbleaches and other technological aids
PC30: Photochemical substances
PC31: Polymeric preparations and components
PC34: Dyes for fabrics and finishing and impregnation productsPC35: Washing and cleaning products
PC37: Chemicals for water treatmentPC38: Solder and flux products PC40: Extraction solvents

App

Contributing scenarios:

Contributing scenarios:

Contributing Exposure Scenario 1

Use in closed and continuous processes with occasional controlled exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC2: Use in closed and continuous processes with occasional controlled exposure

Funcionament condition

Product characteristics:

solid, powder

exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Other data:	Inspirable fraction: 10 m³ per shift (8 hours) at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 1 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:
system closed
Operating conditions and risk management measures:
Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.
Conditions and measures in relation to personal protection, hygiene and health testing:
Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Use in closed batch processes (synthesis or formulation) (worker)

List of use descriptors

Process categories [PROC]:
PROC3: Use in closed batch processes (synthesis or formulation)

Funcionament condition

Product characteristics:
solid, powder
exposure assessment: medium
Concentration of the substance in the mixture:
not restricted
Duration and frequency of use:
480 minutes
Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 1 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.1

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Calendering operations (worker)

List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in non-specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8a: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in non-specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 8

Transfer of substances or preparations in small containers (specialized filling lines, including weighing) (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substances or mixtures to small containers (lines ofspecialized filling, including weighing)

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 9

Application by roller or brush (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Application by roller or brush

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 10

Non-industrial spraying (worker)

List of use descriptors

Process categories [PROC]:

PROC11: Non-industrial spraying

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 11

Treatment of articles by dipping and pouring (worker)

List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 12

Production of preparations or articles by tabletting, compression, extrusion, pelletizing (worker)

List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletizing

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 13

Use as a laboratory reagent (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as a laboratory reagent

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 14

Use of materials as fuels, limited foreseeable exposure to products that have not undergone combustion (worker)

List of use descriptors

Process categories [PROC]:

PROC16: Use of materials as fuels, limited foreseeable exposure toproducts that have not undergone combustion

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 15

Lubrication under high energy conditions and in partially open processes (worker)

List of use descriptors

Process categories [PROC]:

PROC17: Lubrication under high energy conditions and in partially open processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 16

Grease application under high energy conditions (worker)

List of use descriptors

Process categories [PROC]:

PROC18: Application of fats in high energy conditions

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 17

Manual mixtures with direct exposure and only protected by personal protective clothing (worker)

List of use descriptors

Process categories [PROC]:

PROC19: Manual mixing with close contact and use only of personal protection equipment

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not applicable

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 18

Potentially closed transformation operations with metals or minerals at high temperatures, industrial sites (worker)

List of use descriptors

Process categories [PROC]:

PROC22: Manufacture and transformation of minerals and/or metals at very high temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 2.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.25

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 19

Open processes and transfer operations with minerals or metals at elevated temperatures (worker)

List of use descriptors

Process categories [PROC]:

PROC23: Open processes and transfer operations with minerals or metals tohigh temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 20

High energy (mechanical) treatment of substances that are bound in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC24: High-energy (mechanical) handling of substancescontained in materials and/or articles

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 21

Other hot operations with metals (worker)

List of use descriptors

Process categories [PROC]:

PROC25: Other hot metal operations

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.4

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 22

Handling of inorganic solid substances at room temperature (worker)

List of use descriptors

Process categories [PROC]:

PROC26: Handling of inorganic solid substances at room temperature

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 8 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.8

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 23

Commercial use of the substance or of mixtures containing said substance (form/state: solid, powder - medium dusty) (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of substances ERC2: Formulation in mixture ERC3: Formulation in materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure scenario 8: Commercial use of the substance or of mixtures containing said substance (form/state: solid, powder - high dusty)

List of use descriptors

Sectors of use [SU]: SU22: Professional uses

Product Category: PC1: Adhesives, sealants
PC2: Adsorbents
PC7: Basic metals and alloys
PC9a: Coatings and paints, solvents, strippersPC9b: Fillers, putties, plaster, modeling clay PC12: Fertilizers
PC14: Metallic surface treatment products PC15: Non-metallic surface treatment products PC17: Hydraulic fluids
PC18: Inks and toners
PC20: Technological aids such as pH regulators, flocculating agents,precipitants and neutralizers
PC23: Products for tanning
PC24: Lubricants, greases and release agentsPC25: Liquids for metallurgy
PC26: Inks for paper and cardboard, finishing and impregnating products: includedbleaches and other technological aids
PC30: Photochemical substances
PC31: Polymeric preparations and components
PC34: Dyes for fabrics and finishing and impregnation productsPC35: Washing and cleaning products
PC37: Chemicals for water treatmentPC38: Solder and flux products PC40: Extraction solvents

App

Contributing scenarios:

ANNEX: EXPOSURE SCENARIOS

Contributing scenarios:

Contributing Exposure Scenario 1

Use in closed and continuous processes with occasional controlled exposure (worker)

List of use descriptors

Process categories [PROC]:

PROC2: Use in closed and continuous processes with occasional controlled exposure

Funcionament condition

Product characteristics:

solid, powder

exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Other data:	Inspirable fraction: 10 m³ per shift (8 hours) at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 5 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:
system closed
Operating conditions and risk management measures:
Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.
Conditions and measures in relation to personal protection, hygiene and health testing:
Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Use in closed batch processes (synthesis or formulation) (worker)

List of use descriptors

Process categories [PROC]:
PROC3: Use in closed batch processes (synthesis or formulation)

Funcionament condition

Product characteristics:
solid, powder
exposure assessment: high
Concentration of the substance in the mixture:
not restricted
Duration and frequency of use:
480 minutes
Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)
Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 5 mg/m³
Risk Characterization Ratio (RCR):
inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

system closed

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Calendering operations (worker)

List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in non-specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8a: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in non-specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 8

Transfer of substances or preparations in small containers (specialized filling lines, including weighing) (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substances or mixtures to small containers (lines ofspecialized filling, including weighing)

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 9

Application by roller or brush (worker)

List of use descriptors

Process categories [PROC]:

PROC10: Application by roller or brush

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 2.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.25

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 10

Non-industrial spraying (worker)

List of use descriptors

Process categories [PROC]:

PROC11: Non-industrial spraying

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

<60 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.4

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 11

Treatment of articles by dipping and pouring (worker)

List of use descriptors

Process categories [PROC]:

PROC13: Treatment of articles by dipping and pouring

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 12

Production of preparations or articles by tabletting, compression, extrusion, pelletizing (worker)

List of use descriptors

Process categories [PROC]:

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletizing

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 13

Use as a laboratory reagent (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as a laboratory reagent

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 14

Use of materials as fuels, limited foreseeable exposure to products that have not undergone combustion (worker)

List of use descriptors

Process categories [PROC]:

PROC16: Use of materials as fuels, limited foreseeable exposure toproducts that have not undergone combustion

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 15

Lubrication under high energy conditions and in partially open processes (worker)

List of use descriptors

Process categories [PROC]:

PROC17: Lubrication under high energy conditions and in partially open processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

<60 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.4

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 16

Grease application under high energy conditions (worker)

List of use descriptors

Process categories [PROC]:

PROC18: Application of fats in high energy conditions

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

<60 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.4

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 17

Manual mixtures with direct exposure and only protected by personal protective clothing (worker)

List of use descriptors

Process categories [PROC]:

PROC19: Manual mixing with close contact and use only of personal protection equipment

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not applicable

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P2 particle filter in accordance with standard EN 143. APF=10
Hand protection: Recommended: protective gloves in accordance with standard EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 18

Potentially closed transformation operations with metals or minerals at high temperatures, industrial sites (worker)

List of use descriptors

Process categories [PROC]:

PROC22: Manufacture and transformation of minerals and/or metals at very high temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 2.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.25

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 19

Open processes and transfer operations with minerals or metals at elevated temperatures (worker)

List of use descriptors

Process categories [PROC]:

PROC23: Open processes and transfer operations with minerals or metals tohigh temperatures

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 20

High energy (mechanical) treatment of substances that are bound in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC24: High-energy (mechanical) handling of substancescontained in materials and/or articles

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 21

Other hot operations with metals (worker)

List of use descriptors

Process categories [PROC]:

PROC25: Other hot metal operations

Funcionament condition

Product characteristics:

solid, powder, molten
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 4 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.4

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 22

Handling of inorganic solid substances at room temperature (worker)

List of use descriptors

Process categories [PROC]:

PROC26: Handling of inorganic solid substances at room temperature

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: P1 particle filter in accordance with EN 143. APF=4 Hand protection: Recommended: protective gloves in accordance with EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 23

Commercial use of the substance or of mixtures containing said substance (form/state: solid, powder - high dusty) (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of substances ERC2: Formulation in mixture ERC3: Formulation in materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure scenario 9: Consumer Use: Photochemical Substances

List of use descriptors

Sectors of use [SU]: SU21: Uses by consumers
Product Category: PC30: Photochemical substances

App

Contributing scenarios:

Contributing Exposure Scenario 1

Photography and photocopying supplies: For transferring, mixing - Concentrate, liquid (Consumer)

Funcionament condition

Product characteristics:
liquid
Concentration of the substance in the mixture:
10-20%
Pack size: 0.2 mL - 5 L
Duration and frequency of use:
an oral ingestion is not expected.
Dermal exposure is not considered relevant.duration of use, per task: <15 minutes
use per day: 1
Human factors, independent of risk management:
adult (60kg bw):
exposed skin parts: max. both hands (420-840 cm²)
Other relevant terms of use:
inside
volume: negligible ventilation: negligible

Exposure prediction

Exposure estimation and reference to its source:
Eyes: Liquid splashinhalation: not expected

Risk management measures

Conditions and measures for information and behavioral advice for consumers:

Avoid eye contact.
Keep container tightly closed. Keep out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wash hands and face thoroughly after handling.

Conditions and measures in relation to personal protection, hygiene and health testing:

Airtight goggles in accordance with EN 166.

Contributing Exposure Scenario 2

Photography and Photocopying Supplies: For Transfer, Mixing - Powder (Consumer)

Funcionament condition

Product characteristics:

solid, powder

Concentration of the substance in the mixture:

10-20%

Duration and frequency of use:

an oral ingestion is not expected.
Dermal exposure is not considered relevant.duration of use, per task: <15 minutes
use per day: 1

Human factors, independent of risk management:

adult (60kg bw):
exposed skin parts: max. both hands as well as most of the arms, face (840 cm^2)

Other relevant terms of use:

inside volume:
10 m^3
ventilation: none

Exposure prediction

Exposure estimation and reference to its source:

Eyes: powder
inhalation: 2.4-24 $\mu g/m^3$
amount of each use: 12-120 $\mu g/m^3$

Risk management measures

Conditions and measures for information and behavioral advice for consumers:

Avoid eye contact.
Keep container tightly closed. Keep out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wash hands and face thoroughly after handling.

Conditions and measures in relation to personal protection, hygiene and health testing:

Airtight goggles in accordance with EN 166.

Contributing Exposure Scenario 3

Photography and photocopying articles: Development of a closed system. (Consumer)

Funcionament condition

Product characteristics:

liquid

Concentration of the substance in the mixture:

relay, fixing material - ready-to-use solution: <=10%

Duration and frequency of use:

an oral ingestion is not expected.
Dermal exposure is not considered relevant.duration of use, per task: <15 minutes
use per day: 2 - 4

Human factors, independent of risk management:

adult (60 kg bw): parts of skin exposed: both hands (840 cm²)

Other relevant terms of use:

inside
volume: negligible ventilation:
negligible

Exposure prediction

Exposure estimation and reference to its source:

Eyes: Liquid splashinhalation: not expected

Risk management measures

Conditions and measures for information and behavioral advice for consumers:

Avoid eye contact.
Keep container tightly closed. Keep out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wash hands and face thoroughly after handling.

Conditions and measures in relation to personal protection, hygiene and health testing:

Airtight goggles in accordance with EN 166.

Contributing Exposure Scenario 4

Photography and Photocopying Supplies - Tray Processing (Consumer)

Funcionament condition

Product characteristics:

liquid

Concentration of the substance in the mixture:

relay, fixing material - ready-to-use solution: <=10%

Duration and frequency of use:

an oral ingestion is not expected.
Dermal exposure is not considered relevant.duration of use, for each task: 10 minutes
use per day: 2 - 4

Human factors, independent of risk management:

adult (60kg bw):
exposed skin parts: max. both hands (35.7-840 cm²)

Other relevant terms of use:

inside
volume: negligible ventilation:
negligible

Exposure prediction

Exposure estimation and reference to its source:

Eyes: Liquid splashinhalation: not expected

Risk management measures

Conditions and measures for information and behavioral advice for consumers:

Avoid eye contact.
Keep container tightly closed. Keep out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wash hands and face thoroughly after handling.

Conditions and measures in relation to personal protection, hygiene and health testing:

Airtight goggles in accordance with EN 166.

Contributing Exposure Scenario 5

Consumer use: Photochemicals (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC8b: Extensive indoor dispersive use of reactive substances in open systems

Funcionament condition

Concentration of the substance in the mixture:

liquid, concentrate: 10-20%
solid, dust: 10-20% (emission factor: 12-120µg/m³)
liquid (reliever, fixative material - ready-to-use solution): <=10%

Packaging size:
liquid, concentrate: 0.2 mL - 5 L
solid, powder: 0.25-1 kg

Duration and frequency of use:

365 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: 7.12 t/ySuma, EU: 35,514 t/y
Suma, regional: 3,551.4 t/y
Sum, standard city: 1.78 t/y

Other data: Expected release into water based on RMM measurements: 2%

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 16.4
PEC water (sea water): 1.64C purification station (fresh water): 0.16PEC purification station (sea water): 0.16

Risk Characterization Ratio (RCR):

water (fresh water): 0.01
water (sea water): <0.01
purification station (fresh water): <0.01 purification station (sea water): <0.01

Risk management measures

Conditions and measures for information and behavioral advice for consumers:

Avoid eye contact.
Keep container tightly closed. Keep out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wash hands and face thoroughly after handling.

Conditions and measures in relation to personal protection, hygiene and health testing:

Airtight goggles in accordance with EN 166.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

debugging station: none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimation, Ecological information: EUSES

Exposure Scenario 10: Industrial use: Furniture manufacturing

List of use descriptors

Sectors of use [SU]: SU3: Industrial uses
SU6a: Manufactures of wood and wood productsSU18: Furniture manufacturing

App

Contributing scenarios:

Contributing Exposure Scenario 1

Use in batch and other processes (synthesis) where exposure may occur (worker)

List of use descriptors

Process categories [PROC]:
PROC4: Use in batch and other processes (synthesis) where exposure may occur

Funcionament condition

Product characteristics:
solid, powder
exposure assessment: high

Concentration of the substance in the mixture:
not restricted

Duration and frequency of use:
480 minutes

Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):
inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

Mixing in batch processes for the formulation of preparations and articles (multiple phases and/or significant contact) (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing in batch processes

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Calendering operations (worker)

List of use descriptors

Process categories [PROC]:

PROC6: Calendering operations

Funcionament condition

Product characteristics:

solid
exposure assessment: medium

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.5

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 4

Transfer of substances or preparations (loading/unloading) from or to ships or large containers in specialized facilities (worker)

List of use descriptors

Process categories [PROC]:

PROC8b: Transfer of substances or preparations (loading/unloading) from or to shipsor large containers in specialized facilities

Funcionament condition

Product characteristics:

solid, powder
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: 78

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 5

Handling with low energy level of substances contained in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC21: Handling with low energy level of substances contained inmaterials and/or items

Funcionament condition

Product characteristics:

solid
exposure assessment: low

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 6

High energy (mechanical) treatment of substances that are bound in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC24: High-energy (mechanical) handling of substancescontained in materials and/or articles

Funcionament condition

Product characteristics:

solid
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 7

Industrial use: Manufactures of wood and wood products (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC1: Manufacture of
substances ERC2: Formulation
in mixture ERC3: Formulation in
materials
ERC4: Use of non-reactive processing aids at industrial sites (notare part of articles)
ERC5: Use in industrial site resulting in inclusion in an articleERC6a: Use of intermediates
ERC6b: Use of reactive processing aids at industrial sites (notare part of articles)
ERC6c: Use of monomers in site polymerization processesindustrial (not part of articles)
ERC6d: Use of reactive process regulators in polymerization processes inindustrial sites (not part of articles)
ERC7: Industrial use of substances in closed systems
ERC8a: Extensive internal dispersive use of processing aids in open systems ERC8b: Extensive internal dispersive use of reactive substances in open systems ERC8c: Extensive internal dispersive use leading to incorporation into a matrix ERC8d: Extensive external dispersive use of processing aids in open systems ERC8e: Extensive exterior dispersive use of reactive substances in open systems ERC8f: Extensive exterior dispersive use leading to incorporation into a matrix ERC9a: Extensive interior dispersive use of substances in closed systems
ERC9b: Extensive exterior dispersive use of substances in closed systems
ERC10a: Extensive outdoor dispersive use of low-emission long-life articles and materials

ANNEX: EXPOSURE SCENARIOS

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES

Exposure Scenario 11: Professional use: Furniture manufacturing

List of use descriptors

Sectors of use [SU]: SU22: Professional uses
SU6a: Manufactures of wood and wood productsSU18: Furniture manufacturing

App

Contributing scenarios:

Contributing Exposure Scenario 1

Handling with low energy level of substances contained in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:
PROC21: Handling with low energy level of substances contained inmaterials and/or items

Funcionament condition

Product characteristics:
solid
exposure assessment: low

Concentration of the substance in the mixture:
not restricted

Duration and frequency of use:
480 minutes

Human factors, independent of risk management:
Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:
by inhalation: 0.5 mg/m³

Risk Characterization Ratio (RCR):
inhalation: 0.05

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 2

High energy (mechanical) treatment of substances that are bound in materials and/or articles (worker)

List of use descriptors

Process categories [PROC]:

PROC24: High-energy (mechanical) handling of substancescontained in materials and/or articles

Funcionament condition

Product characteristics:

solid
exposure assessment: high

Concentration of the substance in the mixture:

not restricted

Duration and frequency of use:

480 minutes

Human factors, independent of risk management:

Inspirable fraction: 10 m³ per shift (8 hours)

Other data: at pH<7: formation of sulfur dioxide. Avoid exceeding the WEL limit values.

Exposure prediction

Exposure estimation and reference to its source:

inhalation: 5.5 mg/m³

Risk Characterization Ratio (RCR):

inhalation: 0.55

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Minimum local ventilation efficiency [%]: not necessary

Operating conditions and risk management measures:

Avoid all contact with the skin, all ingestion, as well as the inhalation of aerosols. It is assumed that a good basic standard of occupational hygiene has been implemented.
Clean appliances regularly. Clean the workplace regularly.Do not eat, drink or smoke during use. Wear suitable protective clothing. Before taking breaks and finishing work, wash your hands and face well, if necessary take a shower. Contaminated work clothing may not be removed from the workplace. Do not use pressurized air for cleaning purposes.

Conditions and measures in relation to personal protection, hygiene and health testing:

Respiratory protection: not necessary
Hand protection: Recommended: protective gloves according to EN 374
Eye protection: Tightly sealed goggles in accordance with EN 166. Usea suitable face protection screen.
Body Protection: Wear suitable protective clothing.

Contributing Exposure Scenario 3

Industrial use: Manufactures of wood and wood products (environment)

List of use descriptors

Environmental Release Categories [ERC]:

ERC11a: Extensive use of low-emitting articles (interior)
ERC11b: Extensive indoor dispersive use of long-lived articles and materials with high or intentional emissions (including transformation by abrasive means)

Funcionament condition

Product characteristics:

solid, powder

Duration and frequency of use:

300 d/y

Environmental factors, which are not influenced by risk management:

Fluidity of surface water absorption: 18000 m³/dLocal fresh water dilution factor 10
Local seawater dilution factor 100

Other relevant terms of use:

Quantities used: max. 8600t/y

Other data:

In the industrial use of the substance it is assumed that an essential part of the substance reacts/is oxidized during processing. A minimum ratio of 94% (receiving stream: freshwater) and 88% (receiving stream: seawater) is indicated in the ES, if on-site or municipal wastewater treatment is available. In case of on-site and municipal treatment it will not be necessary to consider oxidation during industrial use.
A removal of 99% is considered as relevant for the treatment of compoundssulfite/dithionite.

ANNEX: EXPOSURE SCENARIOS

Exposure prediction

Exposure estimation and reference to its source:

worst-case assumption: CKD4

Predicted environmental concentration, local (mg sulfite/L):PEC water (fresh water): 2.52
PEC water (sea water): 0.57
PEC purification station (fresh water): 25.2 PEC
purification station (sea water): 57.06

Risk Characterization Ratio (RCR):

water (fresh water): 0.9
water (sea water): 0.2
purification station (fresh water): 0.4 purification
station (sea water): 0.9

Risk management measures

Operating conditions and risk management measures:

Ensure periodic inspection, cleaning and maintenance of machines and facilities.Clean appliances regularly. Clean the workplace regularly.
Extinguish the dust with a jet of water.
Allow activities to be carried out only by professional or authorized personnel.
Offer special training for drivers to minimize exposure.

relative considerations to elimination

Conditions and measures in relation to municipal treatment plants:

Municipal STP and/or on-site wastewater treatment plant: 99% efficiency

Conditions and measures for external waste disposal treatment:

Respecting local and national legal provisions, evacuate as hazardous waste.

Conditions and measures linked to the external recovery of waste:

none

Guidance for downstream users to assess whether they work within the limits set by the ES

Exposure estimate, worker: MEASE Exposure estimate,
Ecological information: EUSES