

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Product form	: Substance
Substance name	: Zinc Phosphate
Chemical name	: trizinc bis(orthophosphate)
EC Index-No.	: 030-011-00-6
EC-No.	: 231-944-3
CAS-No.	: 7779-90-0
REACH registration No	: 01-2119485044-40-XXXX
Synonyms	: C.I. 77964 / C.I. pigment white 32 / Delaphos 2 (D2) / Delaphos 2M (D2M) / Delaphos 4 (D4) / pigment white 32 / zinc acid phosphate / zinc orthophosphate / zinc(II) phosphate

**1.2. Relevant identified uses of the substance or mixture and uses advised against****1.2.1. Relevant identified uses**

Main use category	: Industrial use
Use of the substance/mixture	: Use in the manufacture of anti-corrosive coatings
Use of the substance/mixture	: Corrosion inhibitors

**1.2.2. Uses advised against**

No additional information available

**1.3. Details of the supplier of the safety data sheet**

JPE Holdings Ltd  
WV11 2AR  
T +44 (0) 1922 475055 - F +44 (0) 1922 477354  
[stevenbirch@delaphos.co.uk](mailto:stevenbirch@delaphos.co.uk)

**1.4. Emergency telephone number**

Emergency number : +44 (0) 1922 475055

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No. 1272/2008 [CLP]**

Hazardous to the aquatic environment H400  
— Acute Hazard, Category 1  
Hazardous to the aquatic environment H410  
— Chronic Hazard, Category 1

Full text of hazard classes and H-statements : see section 16

**Adverse physicochemical, human health and environmental effects**

Very toxic to aquatic life with long lasting effects.

**2.2. Label elements****Labelling according to Regulation (EC) No. 1272/2008 [CLP]**

Hazard pictograms (CLP) :



GHS09

Signal word (CLP) : Warning  
Hazard statements (CLP) : H410 - Very toxic to aquatic life with long lasting effects.  
Precautionary statements (CLP) : P273 - Avoid release to the environment.  
P391 - Collect spillage.  
P501 - Dispose of contents and container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

**2.3. Other hazards**

No additional information available

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Name	Product identifier	%
Zinc Phosphate	(CAS-No.) 7779-90-0 (EC-No.) 231-944-3 (EC Index-No.) 030-011-00-6 (REACH-no) 01-2119485044-40-XXXX	100

Full text of H-statements: see section 16

#### 3.2. Mixtures

Not applicable

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

First-aid measures general	: If you feel unwell, seek medical advice.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: Wash skin with plenty of water.
First-aid measures after eye contact	: Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Do not induce vomiting. Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects	: Not expected to present a significant hazard under anticipated conditions of normal use.
Symptoms/effects after inhalation	: None under normal use. May cause slight irritation.
Symptoms/effects after skin contact	: None under normal use. May cause slight irritation.
Symptoms/effects after eye contact	: None under normal use. May cause slight irritation.
Symptoms/effects after ingestion	: None under normal conditions. May cause slight irritation.

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

Treat symptomatically.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media	: Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	: Do not use water jet. Carbon dioxide (CO <sub>2</sub> ).

#### 5.2. Special hazards arising from the substance or mixture

Fire hazard	: Not flammable.
Explosion hazard	: Product is not explosive.
Hazardous decomposition products in case of fire	: Toxic fumes may be released.

#### 5.3. Advice for firefighters

Precautionary measures fire	: Exercise caution when fighting any chemical fire. Stop leak if safe to do so.
Firefighting instructions	: Do not allow run-off from fire fighting to enter drains or water courses.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
Other information	: On exposure to high temperature, may decompose, releasing toxic gases.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Avoid dust formation.
------------------	-------------------------

##### 6.1.1. For non-emergency personnel

Protective equipment	: Do not attempt to take action without suitable protective equipment.
Emergency procedures	: Ventilate spillage area.
Measures in case of dust release	: Where excessive dust may result, use approved respiratory protection equipment.

##### 6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	: Avoid dust formation.

#### 6.2. Environmental precautions

Avoid release to the environment.

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 6.3. Methods and material for containment and cleaning up

For containment : Collect spillage.  
Methods for cleaning up : Mechanically recover the product.  
Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

See also sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Additional hazards when processed : Not expected to present a significant hazard under anticipated conditions of normal use.  
Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment.  
Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Ensure adequate ventilation, especially in confined areas.  
Storage conditions : Store in a well-ventilated place. Keep cool. Keep container below 50°C in a well ventilated place. Keep container closed when not in use.  
Incompatible products : Strong acids. Strong bases.  
Storage temperature : 0 - 50 °C

### 7.3. Specific end use(s)

No special requirements.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Zinc Phosphate (7779-90-0)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	83 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	5 mg/m <sup>3</sup>
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	0.83 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	2.5 mg/m <sup>3</sup>
Long-term - systemic effects, dermal	83 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	0.0206 mg/l
PNEC aqua (marine water)	0.0061 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	117.8 mg/kg dwt
PNEC sediment (marine water)	56.5 mg/kg dwt
PNEC (Soil)	
PNEC soil	35.6 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	0.052 mg/l

### 8.2. Exposure controls

#### Appropriate engineering controls:

Ensure good ventilation of the work station.

#### Personal protective equipment:

Avoid all unnecessary exposure. Gloves. Dustproof clothing.

#### Materials for protective clothing:

Wear suitable protective clothing

#### Hand protection:

Wear chemically resistant protective gloves.

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Reusable gloves	Polyvinylchloride (PVC)				EN 374

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### Eye protection:

Safety glasses

### Skin and body protection:

Wear suitable protective clothing

### Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

Device	Filter type	Condition	Standard
Disposable half mask, Reusable half mask	Type P1, Type P2, Type P3	Dust protection	EN 143



### Environmental exposure controls:

Avoid release to the environment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Powder.
Colour	: Off-white.
Odour	: odourless.
Odour threshold	: No data available
pH	: No data available
pH solution	: 6 - 8 10% w/w
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: 912 °C
Freezing point	: Not applicable
Boiling point	: No data available
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: < 1 hPa
Relative vapour density at 20 °C	: No data available
Relative density	: Not applicable
Density	: 3.3 - 3.7 g/cm <sup>3</sup>
Solubility	: Insoluble. Water: < 0.01 %
Log Pow	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: No data available
Explosive properties	: Product is not explosive.
Oxidising properties	: Non oxidizing material according to EC criteria.
Explosive limits	: Not applicable

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

### 10.2. Chemical stability

Stable under normal conditions.

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

No additional information available

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

#### Zinc Phosphate (7779-90-0)

LD50 oral rat	> 5000 mg/kg
---------------	--------------

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Very toxic to aquatic life with long lasting effects.

#### Zinc Phosphate (7779-90-0)

LC50 fish 1	0.14 mg/l
-------------	-----------

EC50 Daphnia 1	0.04 mg/l
----------------	-----------

EC50 72h algae (1)	0.136 mg/l
--------------------	------------

### 12.2. Persistence and degradability

#### Zinc Phosphate (7779-90-0)

Persistence and degradability	No data available.
-------------------------------	--------------------

### 12.3. Bioaccumulative potential

#### Zinc Phosphate (7779-90-0)

Bioaccumulative potential	Not established.
---------------------------	------------------

### 12.4. Mobility in soil

#### Zinc Phosphate (7779-90-0)

Ecology - soil	Not established.
----------------	------------------

### 12.5. Results of PBT and vPvB assessment

No additional information available

### 12.6. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Regional legislation (waste) : Disposal must be done according to official regulations.

Product/Packaging disposal recommendations : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Ecology - waste materials : Avoid release to the environment.

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number</b>				
3077	3077	3077	3077	3077
<b>14.2. UN proper shipping name</b>				
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Phosphate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Phosphate)	Environmentally hazardous substance, solid, n.o.s. (Zinc Phosphate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Phosphate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Phosphate)
<b>Transport document description</b>				
UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Phosphate), 9, III	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Phosphate), 9, III, MARINE POLLUTANT	UN 3077 Environmentally hazardous substance, solid, n.o.s. (Zinc Phosphate), 9, III	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Phosphate), 9, III	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Phosphate), 9, III
<b>14.3. Transport hazard class(es)</b>				
9	9	9	9	9
<b>14.4. Packing group</b>				
III	III	III	III	III
<b>14.5. Environmental hazards</b>				
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes
No supplementary information available				

### 14.6. Special precautions for user

#### - Overland transport

Classification code (ADR)	: M7
Special provisions (ADR)	: 274, 335, 375, 601
Limited quantities (ADR)	: 5kg
Excepted quantities (ADR)	: E1
Packing instructions (ADR)	: P002, IBC08, LP02, R001
Special packing provisions (ADR)	: PP12, B3
Mixed packing provisions (ADR)	: MP10
Portable tank and bulk container instructions (ADR)	: T1, BK1, BK2, BK3
Portable tank and bulk container special provisions (ADR)	: TP33
Tank code (ADR)	: SGAV, LGBV
Vehicle for tank carriage	: AT
Transport category (ADR)	: 3
Special provisions for carriage - Packages (ADR)	: V13
Special provisions for carriage - Bulk (ADR)	: VC1, VC2
Special provisions for carriage - Loading, unloading and handling (ADR)	: CV13
Hazard identification number (Kemler No.)	: 90
Orange plates	:



EAC code : 2Z

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### - Transport by sea

Special provisions (IMDG)	: 274, 335, 966, 967, 969
Limited quantities (IMDG)	: 5 kg
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: P002, LP02
Special packing provisions (IMDG)	: PP12
IBC packing instructions (IMDG)	: IBC08
IBC special provisions (IMDG)	: B3
Tank instructions (IMDG)	: T1, BK1, BK2, BK3
Tank special provisions (IMDG)	: TP33
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-F
Stowage category (IMDG)	: A
Stowage and handling (IMDG)	: SW23

### - Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y956
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA packing instructions (IATA)	: 956
PCA max net quantity (IATA)	: 400kg
CAO packing instructions (IATA)	: 956
CAO max net quantity (IATA)	: 400kg
Special provisions (IATA)	: A97, A158, A179, A197
ERG code (IATA)	: 9L

### - Inland waterway transport

Classification code (ADN)	: M7
Special provisions (ADN)	: 274, 335, 375, 601
Limited quantities (ADN)	: 5 kg
Excepted quantities (ADN)	: E1
Equipment required (ADN)	: PP, A
Number of blue cones/lights (ADN)	: 0
Additional requirements/Remarks (ADN)	: * Only in the molten state. ** For carriage in bulk see also 7.1.4.1. *** Only in the case of transport in bulk.

### - Rail transport

Classification code (RID)	: M7
Special provisions (RID)	: 274, 335, 375, 601
Limited quantities (RID)	: 5kg
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P002, IBC08, LP02, R001
Special packing provisions (RID)	: PP12, B3
Mixed packing provisions (RID)	: MP10
Portable tank and bulk container instructions (RID)	: T1, BK1, BK2
Portable tank and bulk container special provisions (RID)	: TP33
Tank codes for RID tanks (RID)	: SGAV, LGBV
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W13
Special provisions for carriage – Bulk (RID)	: VC1, VC2
Special provisions for carriage - Loading, unloading and handling (RID)	: CW13, CW31
Colis express (express parcels) (RID)	: CE11
Hazard identification number (RID)	: 90

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### SECTION 15: Regulatory information

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

##### 15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Zinc Phosphate is not on the REACH Candidate List

Zinc Phosphate is not on the REACH Annex XIV List

##### 15.1.2. National regulations

No additional information available

#### 15.2. Chemical safety assessment

A chemical safety assessment has been carried out

### SECTION 16: Other information

Abbreviations and acronyms:

ATE	Acute Toxicity Estimate
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DNEL	Derived-No Effect Level
EC50	Median effective concentration
	IATA - International Air Transport Association
vPvB	Very Persistent and Very Bioaccumulative
STP	Sewage treatment plant
	WGK - Water Hazard Class
PNEC	Predicted No-Effect Concentration
LD50	Median lethal dose
IMDG	International Maritime Dangerous Goods
	CAS# - Chemical Abstract Service number

Full text of H- and EUH-statements:

Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

SDS EU (REACH Annex II) - Llewellyn

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*



# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### Annex to the safety data sheet

#### Product exposure scenario(s)

ES Type	ES title
Worker	Industrial use of Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> in the formulation of preparations by mixing thoroughly, dry or in a solvent, the starting materials with potentially pressing, pelletising, sintering, possibly followed by packing.
Worker	Industrial use of zinc oxide or Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> -formulations in the manufacturing of other inorganic or organic zinc substances through different process routes, with potentially drying, calcining and packaging
Worker	Industrial and professional use of Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> as active laboratory reagent in aqueous or organic media, for analysis or synthesis
Worker	Industrial use of Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> or Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> -formulations as component for the manufacture of solid blends and matrices for further downstream use
Worker	Industrial use of Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> or Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> -formulations as component for the manufacture of dispersions, pastes or other viscous or polymerized matrices
Worker	Industrial and professional use of solid substrates containing less than 25%w/w of Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>
Worker	Industrial and professional use of dispersions, pastes and polymerised substrates containing less than 25%w/w of Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 1. Exposure scenario GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -1

**Industrial use of Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> in the formulation of preparations by mixing thoroughly, dry or in a solvent, the starting materials with potentially pressing, pelletising, sintering, possibly followed by packing.**

ES Ref.: GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -1  
ES Type: Worker  
Version: 1.0

Date of issue: 19/10/2017

Use descriptors	SU3, SU10 PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC22, PROC26 ERC1, ERC2
Processes, tasks, activities covered	Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> is used in the manufacture of preparations by mixing thoroughly the starting materials, followed by direct use of packaging of the preparation. Many different industrial uses are characterised by this process. Therefore these industrial uses are all covered by this generic exposure scenario. Formulation

### 2. Operational conditions and risk management measures

#### 2.2 Contributing scenario controlling environmental exposure (ERC1, ERC2)

Removed from the packaging and stored in silos after delivery; Extracted from the silo, dosed and fed with the other reagents to the mixing tank. Mixing occurs batchwise or continuously, according the process receipt. The mixing occurs in a closed tank/chamber.; The preparation (dry or wet (solvent/paste) matrix) is further used as such or packed for further treatment/use.

ERC1	Manufacture of substances
ERC2	Formulation of preparations

#### Product characteristics

Physical form of product	Powder
Concentration of substance in product	> 80 %

#### Operational conditions

Amounts used	Annual site tonnage (tonnes/year):	5000 t/yr
Frequency and duration of use	Continuous release	7 days/week Continuous production is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.
Environmental factors not influenced by risk management	Receiving surface water flow is 18000 m <sup>3</sup> /d	
Other given operational conditions affecting environmental exposure	Indoor use	
	Even when no process waters (e.g. when dry process throughout), some non-process water can be generated containing zinc (e.g. from cleaning)	
	All residues containing zinc are recycled.	

#### Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Process within closed systems.	
	Local exhaust is recommended where dust may occur	
	Containment of liquid volumes in sumps to collect/prevent accidental spillage	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Prevent discharge of undissolved substance to or recover from onsite wastewater	
	On-site waste water treatment techniques can be applied to prevent releases to water (if applicable) e.g.: chemical precipitation, sedimentation and filtration (efficiency 90-99.98%).	
	Use appropriate air emissions abatement systems (e.g. wet or dry scrubber or local STP) to ensure that the emission levels defined by local regulations are not exceeded	
	Air emissions are controlled by use of bag-house	

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	filters and/or other air emission abatement devices e.g. fabric (or bag) filters (up to 99% efficiency), wet scrubbers (50-99% efficiency). This may create a general negative pressure in the building.	
Organisation measures to prevent/limit release from site	Ensure operatives are trained to minimise releases	
	Regular cleaning of equipment and work area	
Conditions and measures related to sewage treatment plant	Size of the sewage treatment plant (STP). No additional information	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations	

### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC22, PROC26)

Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> is used in the manufacture of preparations by mixing thoroughly the starting materials, followed by direct use of packaging of the preparation. Many different industrial uses are characterised by this process.

Therefore these industrial uses are all covered by this generic exposure scenario.

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC13	Treatment of articles by dipping and pouring
PROC14	Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC15	Use as laboratory reagent
PROC22	Potentially closed processing operations with minerals/metals at elevated temperature Industrial setting
PROC26	Handling of solid inorganic substances at ambient temperature

#### Product characteristics

Physical form of product	Solid or liquid, When the preparation is in solid state, it can be in a) powdery, b) glassy or c) pelletized form. In the powder form, it can be characterised by high dustiness in a worst case situation.
Concentration of substance in product	<= 5% up to >25%

#### Operational conditions

Amounts used	Annual site tonnage (tonnes/year):	< 5000 t/yr
Frequency and duration of use	Exposure duration	< 8 h/day
Human factors not influenced by risk management	Uncovered body parts:	(Potentially) Face
Other given operational conditions affecting workers exposure	Elevated temperature steps (~=100°C) can occur	
	All indoor processes in confined area.	

#### Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	During indoor processes or in cases where natural ventilation is not sufficient, LEV should be in place at points where emissions could occur. Outdoor, LEV is not generally required.	
	Containment of liquid volumes in sumps to collect/prevent accidental spillage	
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90-95%	
	Cyclones/filters (for minimizing dust emissions) : efficiency: 70-90% (cyclones), 50-80% (dust filters), 85-95% (double stage, cassette filters)	
	Process enclosure, especially in the drying /calcination / packaging (potentially dusty) units	
	Dust control: dust and Zn in dust needs to be measured in the workplace air (static or individual) according to national regulations.	
	Special care for the general establishment and maintenance of a clean working environment by e.g.:	Cleaning of process equipment and workshop
	Storage of packaged Zn product in dedicated zones, eg:	

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Organisational measures to prevent /limit releases, dispersion and exposure	Such management system would include general industrial hygiene practice e.g.:	information and training of workers on prevention of exposure/accidents. procedures for control of personal exposure (hygiene measures). regular cleaning of equipment and floors, extended workers instruction-manuals. procedures for process control and maintenance. personal protection measures (see below)
Conditions and measures related to personal protection, hygiene and health evaluation	With normal handling, no respiratory personal protection (breathing apparatus) is necessary. If risk for exceedance of OEL/DNEL, use e.g.:	dust filter-half mask P1 (efficiency 75%). dust filter-half mask P2 (efficiency 90%). dust filter-half mask P3 (efficiency 95%). dust filter-full mask P1 (efficiency 75%). dust filter-full mask P2 (efficiency 90 %). dust filter-full mask P3 (efficiency 97.5%)

### 3. Exposure estimation and reference to its source

3.1. Health

3.2. Environment

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

4.1. Health

4.2. Environment

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 1. Exposure scenario GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -2

**Industrial use of zinc oxide or Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> - formulations in the manufacturing of other inorganic or organic zinc substances through different process routes, with potentially drying, calcining and packaging**

ES Ref.: GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -2  
ES Type: Worker  
Version: 1.1

Use descriptors	SU0, SU3, SU8, SU9, SU10, SU14, SU15 PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC15, PROC21, PROC23, PROC26 PC7, PC14, PC19, PC20, PC21, PC24, PC29, PC39 AC2, AC7 ERC1, ERC2, ERC5, ERC6a
Processes, tasks, activities covered	Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> is used as a starting material for the manufacturing of several other inorganic and organic zinc compounds. All the manufacturing processes are covered by the present scenario. Manufacture

### 2. Operational conditions and risk management measures

#### 2.2 Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC5, ERC6a)

Description of activities/process(es) covered in the Exposure Scenario:

- Reception of the Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> or Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -containing formulation, or Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> - bearing raw material in the reaction tank
- Sequential addition of reagents for purification steps and filtration on press filter, when needed (ventilation is adapted).
- Concentration by water evaporation, under exhaust hood.
- Possible pouring on a cooling belt.
- Discharge and packaging of produced zinc compounds. Workers have to place and adjust the bag or drum under the discharge pipe and to set the process in motion. Filled bags or drums are subsequently closed and carried to the storage area.
- Exposure to dust can occur during packing of the powder. Solutions are packed in intermediate bulk containers (ca. 1 m<sup>3</sup> capacity); solids are packed in bags or drums.
- Maintenance activities

ERC1 Manufacture of substances

ERC2 Formulation of preparations

ERC5 Industrial use resulting in inclusion into or onto a matrix

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

#### Product characteristics

Physical form of product	Powder
Concentration of substance in product	> 99 % or in solution.
Vapour pressure	< 1 hPa

#### Operational conditions

Amounts used	Annual site tonnage:	< 75 T per day of Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> is transformed to equivalent Zn compound
Frequency and duration of use	Continuous release	7 days/week Continuous production is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.
Environmental factors not influenced by risk management	Default for generic scenario:	18000 m <sup>3</sup> /d unless specified otherwise
Other given operational conditions affecting environmental exposure	Wet processes (leaching, filtering, purification) followed by drying (possible grinding), and packaging All indoor processes, in confined area.	

#### Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Careful use of acids and corrosive solutions, if used	
--	---	--

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	Sump containment is provided under the tanks and the filters i.o. to collect any accidental spillage	
	When applicable, process waters need to be specifically treated before release	
	Dosing and packaging operations occur under a special ventilation hood	
	Process air is filtered before release outside the building	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	On-site waste water treatment techniques are (if applicable) e.g.: chemical precipitation, sedimentation, filtration (efficiency 90-99.98%).	
	Containment of liquid volumes in sumps to collect/prevent accidental spillage	
	Air emissions are controlled by use of bag-house filters and/or other air emission abatement devices e.g. fabric (or bag) filters (up to 99% efficiency), wet scrubbers (50-99% efficiency). This may create a general negative pressure in the building. Air emissions are continuously monitored.	
Organisation measures to prevent/limit release from site	In general emissions are controlled and prevented by implementing an integrated management system e.g. ISO 9000, ISO 1400X series, or alike, and, when applicable, by being IPPC-compliant.	
	Such management system should include general industrial hygiene practice e.g.: - information and training of workers - regular cleaning of equipment and floors - procedures for process control and maintenance	
	Treatment and monitoring of releases to outside air, and exhaust gas streams (process & hygiene), according to national regulation.	
	SEVESO 2 compliance, if applicable	
Conditions and measures related to sewage treatment plant	In cases where applicable: default size, unless specified otherwise.	
Conditions and measures related to external treatment of waste for disposal	If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.	
	Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products	
	Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.	
Conditions and measures related to external recovery of waste	All residues from the wet process are recycled.	
	Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products	
	Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.	

### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC15, PROC21, PROC23, PROC26)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC13	Treatment of articles by dipping and pouring
PROC15	Use as laboratory reagent
PROC21	Low energy manipulation of substances bound in materials and/or articles
PROC23	Open processing and transfer operations with minerals/metals at elevated temperature
PROC26	Handling of solid inorganic substances at ambient temperature

#### Product characteristics

Physical form of product	Powder
--------------------------	--------

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Concentration of substance in product	≈ 100 % or in solution.	
Vapour pressure	< 1 hPa	
<b>Operational conditions</b>		
Amounts used	Maximum daily site tonnage (kg/day):	< 25 T Ton Per Shift
Frequency and duration of use	Exposure duration	< 8 h/day Worst Case
Human factors not influenced by risk management	Uncovered body parts:	(Potentially) Face
Other given operational conditions affecting workers exposure	All indoor processes in confined area.	
<b>Risk Management Measures</b>		
Technical conditions and measures at process level (source) to prevent release	Process enclosures or semi-enclosures where appropriate.	
	Local exhaust ventilation work areas with potential dust and fumes generation, dust capturing and removal techniques	
	Containment of liquid volumes in sumps to collect/prevent accidental spillage	
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90-95%	
	Cyclones/filters (for minimizing dust emissions) : efficiency: 70-90% (cyclones), 50-80% (dust filters), 85-95% (double stage, cassette filters)	
	Process enclosure, especially in the drying /calcination / packaging (potentially dusty) units	
	Dust control: dust and Zn in dust needs to be measured in the workplace air (static or individual) according to national regulations.	
	Special care for the general establishment and maintenance of a clean working environment by e.g.:	Cleaning of process equipment and workshop
	Storage of packaged Zn product in dedicated zones, eg:	
Organisational measures to prevent /limit releases, dispersion and exposure	In general integrated management systems are implemented at the workplace e.g. ISO 9000, ISO-ICS 13100, or alike, and are, when appropriate, IPPC-compliant.	
	Such management system would include general industrial hygiene practice e.g.:	information and training of workers on prevention of exposure/accidents. personal protection measures (see below). procedures for control of personal exposure (hygiene measures). procedures for process control and maintenance. regular cleaning of equipment and floors, extended workers instruction-manuals
Conditions and measures related to personal protection, hygiene and health evaluation	Wearing of gloves and protective clothing is compulsory (efficiency >=90%).	
	With normal handling, no respiratory personal protection (breathing apparatus) is necessary. If risk for exceedance of OEL/DNEL, use e.g.:	dust filter-half mask P1 (efficiency 75%). dust filter-half mask P2 (efficiency 90%). dust filter-half mask P3 (efficiency 95%). dust filter-full mask P1 (efficiency 75%). dust filter-full mask P2 (efficiency 90 %). dust filter-full mask P3 (efficiency 97.5%)
	Eyes	safety glasses are optional

### 3. Exposure estimation and reference to its source

#### 3.1. Health

#### 3.2. Environment

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

#### 4.1. Health

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 4.2. Environment



# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 1. Exposure scenario GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -3

#### Industrial and professional use of Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> as active laboratory reagent in aqueous or organic media, for analysis or synthesis

ES Ref.: GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -3  
ES Type: Worker  
Version: 1.1

Use descriptors	SU3, SU10, SU22, SU24 PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15 PC19, PC21, PC28, PC39 ERC1, ERC2, ERC4, ERC6a, ERC6b, ERC8a, ERC8c, ERC8d, ERC8f
Processes, tasks, activities covered	Industrial use Professional use

### 2. Operational conditions and risk management measures

#### 2.2 Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC4, ERC6a, ERC6b, ERC8a, ERC8c, ERC8d, ERC8f)

Analysis: sample (solid or liquid) treatment or preparation: the substance is in the sample or in the reagents; or synthesis: manipulations are usually under ventilation (e.g. laminar flow, ventilation hood); The substance is used:

- at the industrial scale, in industrial installations for air control and water treatment
- at the professional scale by laboratories

ERC1	Manufacture of substances
ERC2	Formulation of preparations
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b	Industrial use of reactive processing aids
ERC8a	Wide dispersive indoor use of processing aids in open systems
ERC8c	Wide dispersive indoor use resulting in inclusion into or onto a matrix
ERC8d	Wide dispersive outdoor use of processing aids in open systems
ERC8f	Wide dispersive outdoor use resulting in inclusion into or onto a matrix

#### Product characteristics

Physical form of product	Solid
Concentration of substance in product	< 80 % higher grades (>95%) are usual
Vapour pressure	< 1 hPa

#### Operational conditions

Amounts used		< 5 t/yr Industrial Scale < 0.5 t/yr Professional Scale
Frequency and duration of use		Continuous production is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.
Environmental factors not influenced by risk management	Receiving surface water flow is 18000 m <sup>3</sup> /d	unless specified otherwise
Other given operational conditions affecting environmental exposure	All indoor processes, in confined area, All residues containing zinc are recycled.	

#### Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Process within closed systems.	
	If relevant, dust capturing and removal techniques are applied on local exhaust ventilation (centralised treatment, scrubbers, filters,...)	
	Containment of liquid volumes to collect waste streams	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	At industrial scale, the waste waters will be treated in the on-site waste water treatment techniques that can be applied to prevent releases to water (if applicable) e.g.: chemical precipitation, sedimentation and filtration (efficiency 90-99.98%).	
	At professional scale, the emissions are treated	

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	usually by STP. Professional services will be used for treating waste streams e.g. for the recovery of metallic solids (for recycling), and for the recovery of e.g. acid solutions containing the substance.	
	Air emissions are controlled by use filters and/or other air emission abatement devices e.g. fabric (or bag) filters (up to 99% efficiency), wet scrubbers (50-99% efficiency). This may create a general negative pressure in the laboratory.	
Organisation measures to prevent/limit release from site	In general emissions are controlled and prevented by implementing an integrated management system e.g. ISO 9000, ISO 1400X series, or alike, and, when applicable, by being IPPC-compliant.  Such management system should include general industrial hygiene practice e.g.: - information and training of workers - regular cleaning of equipment and floors - procedures for process control and maintenance	
	Treatment and monitoring of releases to outside air, and exhaust gas streams (process & hygiene), according to national regulation.	
Conditions and measures related to sewage treatment plant	In cases where applicable: default size, unless specified otherwise.	
Conditions and measures related to external treatment of waste for disposal	If any, all hazardous wastes are treated by certified contractors according to EU and national legislation. Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.	
Conditions and measures related to external recovery of waste	All residues are recycled or handled and conveyed according to waste legislation.	

### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15	Use as laboratory reagent

### Product characteristics

Physical form of product	Solid, Liquid
Concentration of substance in product	> 80 % higher grades (>95%) are usual
Vapour pressure	< 1 hPa
Dustiness	Solid, high dustiness
Other product characteristics	When the preparation is in solid state, it can be in a) powdery, b) glassy or c) pelletized form.

### Operational conditions

Amounts used	Annual site tonnage (tonnes/year):	< 5 t/yr Industrial Scale
	Annual site tonnage (tonnes/year):	< 0.5 t/yr Professional Scale
Frequency and duration of use	Use is usually intermittent but continuous use is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.	
Human factors not influenced by risk management	Uncovered body parts:	(Potentially) Face
Other given operational conditions affecting workers	high temperature steps can occur in protected zones	

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

exposure	(fume cupboards) all indoor processes in confined area, including hazardous substances cabinets.	
<b>Risk Management Measures</b>		
Technical conditions and measures at process level (source) to prevent release	Process enclosures or semi-enclosures where appropriate.	
	Local exhaust ventilation work areas with potential dust and fumes generation, dust capturing and removal techniques	
	Containment of liquid volumes and collection in special circuits	
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation systems are provided where needed on the benches and in the fume cupboards.	
	Process enclosures if relevant	
	Dust control: dust and Zn in dust needs to be measured in the workplace air (static or individual) according to national regulations.	
	Special care for the general establishment and maintenance of a clean working environment by e.g.:	Cleaning of process equipment and laboratory
	Storage of packaged Zn product in dedicated zones, eg:	hazardous substances cabinets
Organisational measures to prevent /limit releases, dispersion and exposure	In general integrated management systems are implemented at the workplace e.g. ISO 9000, ISO-ICS 13100, or alike, and are, when appropriate, IPPC-compliant.	
Conditions and measures related to personal protection, hygiene and health evaluation	Wearing of protective clothing is compulsory (efficiency >=90%)	
	Gloves can be used occasionally if risk for direct contact with the substance.	
	With normal handling, no respiratory personal protection (breathing apparatus) is necessary. If risk for exceedance of OEL/DNEL, use e.g.:	dust filter-half mask P1 (efficiency 75%). dust filter-half mask P2 (efficiency 90%). dust filter-half mask P3 (efficiency 95%). dust filter-full mask P1 (efficiency 75%). dust filter-full mask P2 (efficiency 90 %). dust filter-full mask P3 (efficiency 97.5%)
	Eyes	safety glasses are optional but usually taken as "normal laboratory practice"

### 3. Exposure estimation and reference to its source

3.1. Health

3.2. Environment

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

4.1. Health

4.2. Environment

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 1. Exposure scenario GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -4

#### Industrial use of Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> or Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> - formulations as component for the manufacture of solid blends and matrices for further downstream use

ES Ref.: GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -4  
ES Type: Worker  
Version: 1.1

Use descriptors	SU0, SU1, SU3, SU4, SU5, SU6a, SU8, SU9, SU10, SU11, SU12, SU13, SU14, SU16, SU20 PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC22 PC1, PC9a, PC9b, PC9c, PC12, PC14, PC15, PC18, PC20, PC21, PC26, PC29, PC32 ERC1, ERC2, ERC3, ERC4, ERC5, ERC7, ERC10a, ERC10b, ERC11a
Processes, tasks, activities covered	Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> or Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> - containing preparations are used in the manufacture of dry preparations by mixing thoroughly the starting materials, possibly followed by pressing or pelletizing, and finally packaging of the preparation.

### 2. Operational conditions and risk management measures

#### 2.2 Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC7, ERC10a, ERC10b, ERC11a)

In the described process, the Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> (Zn compound) containing preparation/mixture is optionally:

- Pressed at high temperature (>1000°C), grinded and re-pressed/sintered or fritted at high temperature
- Molten at high temperature (>500°C) and further cast as glassy material
- Pressed and pelletized at low temperature

And subsequently packed, or used as such, in further treatment/use

ERC1	Manufacture of substances
ERC2	Formulation of preparations
ERC3	Formulation in materials
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC5	Industrial use resulting in inclusion into or onto a matrix
ERC7	Industrial use of substances in closed systems
ERC10a	Wide dispersive outdoor use of long-life articles and materials with low release
ERC10b	Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)
ERC11a	Wide dispersive indoor use of long-life articles and materials with low release

#### Product characteristics

Physical form of product	Solid
Concentration of substance in product	< 25 % usually <5%
Vapour pressure	< 1 hPa

#### Operational conditions

Amounts used	Annual site tonnage (tonnes/year):	< 5000 t/yr
Frequency and duration of use		Continuous production is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.
Environmental factors not influenced by risk management	Receiving surface water flow is 18000 m <sup>3</sup> /d	unless specified otherwise
Other given operational conditions affecting environmental exposure	All dry processes throughout, no process waters. Even when no process waters occur (with dry process throughout), some non-process water can be generated containing zinc (e.g. from cleaning) High temperature steps are possible. All processes are performed indoor in a confined area. High temperature steps are possible. All residues containing zinc are recycled.	

#### Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Local exhaust ventilation on furnaces and other work areas with potential dust generation. Dust capturing and removal techniques are applied.
--	--

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	Process enclosures or semi-enclosures where appropriate.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	No process waters, so possible emissions to water are limited and non-process related.	
	On-site waste water treatment techniques can be applied to prevent releases to water (if applicable) e.g.: chemical precipitation, sedimentation and filtration (efficiency 90-99.98%).	
	Air emissions are controlled by use of bag-house filters and/or other air emission abatement devices e.g. fabric or bag filters, wet scrubbers. This may create a general negative pressure in the building.	
Organisation measures to prevent/limit release from site	In general emissions are controlled and prevented by implementing an integrated management system e.g. ISO 9000, ISO 1400X series, or alike, and, when applicable, by being IPPC-compliant.	
	Such management system should include general industrial hygiene practice e.g.: - information and training of workers - regular cleaning of equipment and floors - procedures for process control and maintenance	
	Treatment and monitoring of releases to outside air, and exhaust gas streams (process & hygiene), according to national regulation. SEVESO 2 compliance, if applicable	
Conditions and measures related to sewage treatment plant	In cases where applicable: default size, unless specified otherwise.	
Conditions and measures related to external treatment of waste for disposal	If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.	
	Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products	
	Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.	
Conditions and measures related to external recovery of waste	All residues are recycled or handled and conveyed according to waste legislation.	
	Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products	
	Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.	

### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC22)

Industrial formulation of dry preparations/mixtures by mixing thoroughly the zinc compounds with the other starting materials, with possible pressing, pelletising, sintering and packaging of the preparations/mixtures	
PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC13	Treatment of articles by dipping and pouring
PROC14	Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC15	Use as laboratory reagent
PROC22	Potentially closed processing operations with minerals/metals at elevated temperature Industrial setting

#### Product characteristics

Physical form of product	Solid
Concentration of substance in product	< 25 %
	usually <5%
Vapour pressure	< 1 hPa

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Dustiness	Solid, high dustiness	
Other product characteristics	The preparation is in the solid state, usually with a low level of dustiness; however, powder forms can occur, the high dustiness is therefore applied as a worst case	
<b>Operational conditions</b>		
Amounts used	Annual site tonnage (tonnes/year):	< 5000 t/yr
	Maximum daily site tonnage (kg/day):	< 15 T T/day
		< 5 T Ton Per Shift
Frequency and duration of use	8 hour shifts (default worst case) are assumed as starting point; it is emphasised that the real duration of exposure could be less. This has to be considered when estimating exposure.	
Human factors not influenced by risk management	Uncovered body parts:	(Potentially) Face
Other given operational conditions affecting workers exposure	Dry processes: dry operational conditions throughout the process; no process waters	
	high temperature steps can occur	
	indoor processes in confined area	
<b>Risk Management Measures</b>		
Technical conditions and measures at process level (source) to prevent release	Local exhaust ventilation work areas with potential dust and fumes generation, dust capturing and removal techniques	
	Process enclosures or semi-enclosures where appropriate.	
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation systems and process enclosures are generally applied	
	Cyclones/filters (for minimizing dust emissions): efficiency 70%-90% (cyclones); dust filters (50-80%)	
	LEV in work area: efficiency 84% (generic LEV)	
Organisational measures to prevent /limit releases, dispersion and exposure	In general integrated management systems are implemented at the workplace e.g. ISO 9000, ISO-ICS 13100, or alike, and are, when appropriate, IPPC-compliant.	
	Such management system would include general industrial hygiene practice e.g.:	information and training of workers on prevention of exposure/accidents. procedures for control of personal exposure (hygiene measures). regular cleaning of equipment and floors, extended workers instruction-manuals. procedures for process control and maintenance. personal protection measures (see below)
Conditions and measures related to personal protection, hygiene and health evaluation	Wearing of protective clothing is compulsory (efficiency >=90%)	
	With normal handling, no respiratory personal protection (breathing apparatus) is necessary. If risk for exceedance of OEL/DNEL, use e.g.:	
	Eyes	dust filter-half mask P1 (efficiency 75%). dust filter-half mask P2 (efficiency 90%). dust filter-half mask P3 (efficiency 95%). dust filter-full mask P1 (efficiency 75%). dust filter-full mask P2 (efficiency 90 %). dust filter-full mask P3 (efficiency 97.5%) safety glasses are optional

### 3. Exposure estimation and reference to its source

3.1. Health

3.2. Environment

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

4.1. Health

4.2. Environment

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 1. Exposure scenario GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -5

#### Industrial use of Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> or Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> - formulations as component for the manufacture of dispersions, pastes or other viscous or polymerized matrices

ES Ref.: GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -5  
ES Type: Worker  
Version: 1.1

Use descriptors	SU0, SU3, SU4, SU8, SU9, SU10, SU20 PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14, PROC15 PC9b, PC12, PC20, PC21, PC29 ERC2, ERC3, ERC5, ERC10a, ERC10b, ERC11a, ERC12b
Processes, tasks, activities covered	Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> or Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> -containing preparations are used in the manufacture of liquid preparations by mixing thoroughly the starting materials, with a solvent in order to obtain a solution, dispersion or paste.  Industrial use ManufactureFormulation

### 2. Operational conditions and risk management measures

#### 2.2 Contributing scenario controlling environmental exposure (ERC2, ERC3, ERC5, ERC10a, ERC10b, ERC11a, ERC12b)

In the described process, the zinc phosphate containing preparation/mixture is:

- unpacked and stored in silos
- Extracted from the silo, dosed and fed with the other reagents and/or solvents to the mixing tank, batchwise or continuously, according to the process receipt.
- The resulting zinc salt containing mixture (solution, dispersion, paste) is directly further processed, or packed, for further treatment/use.

ERC2	Formulation of preparations
ERC3	Formulation in materials
ERC5	Industrial use resulting in inclusion into or onto a matrix
ERC10a	Wide dispersive outdoor use of long-life articles and materials with low release
ERC10b	Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)
ERC11a	Wide dispersive indoor use of long-life articles and materials with low release
ERC12b	Industrial processing of articles with abrasive techniques (high release)

#### Product characteristics

Physical form of product	Solid
Concentration of substance in product	> 25 % usually <5%
Vapour pressure	< 1 hPa

#### Operational conditions

Amounts used	Annual site tonnage (tonnes/year):	< 5000 t/yr
Frequency and duration of use		Continuous production is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.
Environmental factors not influenced by risk management	Receiving surface water flow is 18000 m <sup>3</sup> /d	unless specified otherwise
Other given operational conditions affecting environmental exposure	Even when no process waters (e.g. when dry process throughout), some non-process water can be generated containing zinc(e.g. from cleaning) All indoor processes, in confined area. All residues containing zinc are recycled.	

#### Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Local exhaust ventilation on mixing tanks and other work areas with potential dust generation. Dust capturing and removal techniques are applied. Process enclosures or semi-enclosures where appropriate.	
Technical onsite conditions and measures to reduce or	Most of the operations imply wet process-steps	

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

limit discharges, air emissions and releases to soil	Sump containment is provided under the tanks and the filters i.o. to collect any accidental spillage	
	On-site waste water treatment techniques can be applied to prevent releases to water (if applicable) e.g.: chemical precipitation, sedimentation and filtration (efficiency 90-99.98%).	
	Air emissions are controlled by use of bag-house filters and/or other air emission abatement devices e.g. fabric or bag filters, wet scrubbers. This may create a general negative pressure in the building.	
Organisation measures to prevent/limit release from site	In general emissions are controlled and prevented by implementing an integrated management system e.g. ISO 9000, ISO 1400X series, or alike, and, when applicable, by being IPPC-compliant.	
	Such management system should include general industrial hygiene practice e.g.: - information and training of workers - regular cleaning of equipment and floors - procedures for process control and maintenance	
	Treatment and monitoring of releases to outside air, and exhaust gas streams (process & hygiene), according to national regulation.	
	SEVESO 2 compliance, if applicable	
Conditions and measures related to sewage treatment plant	In cases where applicable: default size, unless specified otherwise.	
Conditions and measures related to external treatment of waste for disposal	If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.	
	Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products	
	Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.	
Conditions and measures related to external recovery of waste	All residues are recycled or handled and conveyed according to waste legislation.	
	Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products	
	Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.	

### 2.1 Contributing scenario controlling worker exposure

#### Product characteristics

Physical form of product	Solid	
Concentration of substance in product	< 25 %	
	usually <5%	
Vapour pressure	< 1 hPa	
Other product characteristics	The preparation is in the liquid state, as a paste or dispersion or other viscous or polymerized matrix, with a low level of dustiness; however, powder forms can occur, medium dustiness is therefore applied as a worst case	

#### Operational conditions

Amounts used	Annual site tonnage (tonnes/year):	< 5000 t/yr 20 T/d = 7T/shift depending of application
Frequency and duration of use	8 hour shifts (default worst case) are assumed as starting point; it is emphasised that the real duration of exposure could be less. This has to be considered when estimating exposure.	
Human factors not influenced by risk management	Uncovered body parts:	(Potentially) Face
Other given operational conditions affecting workers exposure	Wet processes	
	All indoor processes in confined area.	

#### Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Local exhaust ventilation on mixing tanks, furnaces and other work areas with potential dust generation, dust capturing and removal techniques	
	Process enclosures or semi-enclosures where appropriate.	



# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation systems and process enclosures are generally applied	
	Cyclones/filters (for minimizing dust emissions): efficiency 70%-90% (cyclones); dust filters (50-80%)	
	LEV in work area: efficiency 84% (generic LEV)	
Organisational measures to prevent /limit releases, dispersion and exposure	In general integrated management systems are implemented at the workplace e.g. ISO 9000, ISO-ICS 13100, or alike, and are, when appropriate, IPPC-compliant.	regular cleaning of equipment and floors, extended workers instruction-manuals. procedures for process control and maintenance. procedures for control of personal exposure (hygiene measures). information and training of workers on prevention of exposure/accidents. personal protection measures (see below)
Conditions and measures related to personal protection, hygiene and health evaluation	Wearing of protective clothing is compulsory (efficiency >=90%)	
	With normal handling, no respiratory personal protection (breathing apparatus) is necessary. If risk for exceedance of OEL/DNEL, use e.g.:	dust filter-half mask P1 (efficiency 75%). dust filter-half mask P2 (efficiency 90%). dust filter-half mask P3 (efficiency 95%). dust filter-full mask P1 (efficiency 75%). dust filter-full mask P2 (efficiency 90 %). dust filter-full mask P3 (efficiency 97.5%)
		In particular, when PROC 7, 11, 19 are involved, respiratory protection is recommended
	Eyes	safety glasses are optional

### 3. Exposure estimation and reference to its source

3.1. Health

3.2. Environment

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

4.1. Health

4.2. Environment

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 1. Exposure scenario GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -6

**Industrial and professional use of solid substrates containing less than 25%w/w of Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>**

ES Ref.: GES Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> -6

ES Type: Worker

Version: 1.1

Use descriptors	
Processes, tasks, activities covered	No uses were identified that relate to this generic scenario. Industrial use Professional use

### 2. Operational conditions and risk management measures

### 3. Exposure estimation and reference to its source

3.1. Health

3.2. Environment

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

4.1. Health

4.2. Environment

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 1. Exposure scenario GES Zn3(PO4)2- 7

#### Industrial and professional use of dispersions, pastes and polymerised substrates containing less than 25%w/w of Zn3(PO4)2

ES Ref.: GES Zn3(PO4)2- 7  
ES Type: Worker  
Version: 1.1

Use descriptors	SU3, SU8, SU9, SU10, SU15, SU16, SU17, SU18, SU19 PROC4, PROC5, PROC7, PROC8b, PROC9, PROC10, PROC13, PROC19 PC1, PC9a, PC9b, PC9c, PC14, PC15, PC18 AC0 ERC8a, ERC8c, ERC8d, ERC8f, ERC10a, ERC10b, ERC11a, ERC12a, ERC12b
Processes, tasks, activities covered	Industrial use Professional use

### 2. Operational conditions and risk management measures

#### 2.2 Contributing scenario controlling environmental exposure (ERC8a, ERC8c, ERC8d, ERC8f, ERC10a, ERC10b, ERC11a, ERC12a, ERC12b)

This scenario covers both the industrial scale processes and professional use. In the described process, the Zn3(PO4)2 -containing preparation/mixture is further processed, involving potentially the following steps:

- Reception/unpacking of material
- Final application, spraying, embedding or to produce the end product or article.

ERC8a	Wide dispersive indoor use of processing aids in open systems
ERC8c	Wide dispersive indoor use resulting in inclusion into or onto a matrix
ERC8d	Wide dispersive outdoor use of processing aids in open systems
ERC8f	Wide dispersive outdoor use resulting in inclusion into or onto a matrix
ERC10a	Wide dispersive outdoor use of long-life articles and materials with low release
ERC10b	Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)
ERC11a	Wide dispersive indoor use of long-life articles and materials with low release
ERC12a	Industrial processing of articles with abrasive techniques (low release)
ERC12b	Industrial processing of articles with abrasive techniques (high release)

#### Product characteristics

Physical form of product	Solid
Concentration of substance in product	< 25 %
Vapour pressure	< 1 hPa

#### Operational conditions

Amounts used	The quantities involved in this scenario are 10-50 times smaller than in blending (GES 4-GES 5); the concentration of the zinc substance is also lower (<25%).	
	Typical quantities for both industrial and professional are 50T/y (typical), maximum 500T/y (in industrial setting).	
Frequency and duration of use	Continuous production is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.	
Environmental factors not influenced by risk management	Receiving surface water flow is 18000 m <sup>3</sup> /d	unless specified otherwise
Other given operational conditions affecting environmental exposure	Wet processes. All process and non-process waters should be recycled internally to a maximal extent. Even when no process waters occur, some non-process water can be generated containing zinc (e.g. from cleaning)	
	In industrial and professional setting, all processes are performed in a confined area. All residues containing zinc are recycled.	

#### Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	In industrial and professional setting the following applies:	Process enclosures or semi-enclosures where appropriate.
--	---	--

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

		Local exhaust ventilation on furnaces and other work areas with potential dust generation. Dust capturing and removal techniques are applied. Containment of liquid volumes in sumps to collect/prevent accidental spillage
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil		In industrial and professional setting, the following applies: - If zinc emissions to water, on-site waste water treatment techniques can be applied to prevent releases to water (if applicable) e.g.: chemical precipitation, sedimentation and filtration (efficiency 90-99.98%). By exposure modelling it is predicted that at use quantities of >100T/y, refinement of the exposure assessment to water and sediment needs to be made (exposure assessment based on real measured data and local parameters). Treatment of the emissions to water may be needed under such conditions (see "exposure estimation and risk characterisation"). - Air emissions are controlled by use of bag-house filters and/or other air emission abatement devices e.g. fabric or bag filters, wet scrubbers. This may create a general negative pressure in the building.
Organisation measures to prevent/limit release from site	In general, emissions are controlled and prevented by implementing an appropriate management system. This would involve:	information and training of workers on prevention of exposure/accidents. regular cleaning of equipment and floors, extended workers instruction-manuals. procedures for process control and maintenance
	Treatment and monitoring of releases to outside air, and exhaust gas streams (process & hygiene), according to national regulation.	
	SEVESO 2 compliance, if applicable	
Conditions and measures related to sewage treatment plant	In cases where applicable: default size, unless specified otherwise.	
Conditions and measures related to external treatment of waste for disposal	If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.	
	Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products	
	Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.	
Conditions and measures related to external recovery of waste	All residues are recycled or handled and conveyed according to waste legislation.	

### 2.1 Contributing scenario controlling worker exposure (PROC4, PROC5, PROC7, PROC8b, PROC9, PROC10, PROC13, PROC19)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC7	Industrial spraying
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

PROC13	Treatment of articles by dipping and pouring	
PROC19	Hand-mixing with intimate contact and only PPE available	
<b>Product characteristics</b>		
Physical form of product	Solid	
Concentration of substance in product	< 25 %	
Vapour pressure	< 1 hPa	
Dustiness	Solid, low dustiness	
Other product characteristics	Most of the processes imply the use of solutions or pastes; the "solution status" is therefore taken as the worst case.	
<b>Operational conditions</b>		
Amounts used	The quantities involved in this scenario are 10-50 times smaller than in blending (GES 4-GES 5); the concentration of the zinc substance is also lower (<25%).	
	Typical quantities for both Industrial and professional are 50 T/y (typical), or 0.15 T/day, 0.05 T/shift	
	maximum use quantity is 500T/y (1.5T/d, 0.5T/shift) in industrial setting.	
Frequency and duration of use	8 hour shifts (default worst case) are assumed as starting point; it is emphasised that the real duration of exposure could be less. This has to be considered when estimating exposure.	
Human factors not influenced by risk management	Uncovered body parts:	(Potentially) Face
Other given operational conditions affecting workers exposure	Industrial / Professional:	Wet processes, all indoor in confined area
<b>Risk Management Measures</b>		
Technical conditions and measures at process level (source) to prevent release	Industrial / Professional:	Local exhaust ventilation work areas with potential dust and fumes generation, dust capturing and removal techniques. Process enclosures or semi-enclosures where appropriate.
Technical conditions and measures to control dispersion from source towards the worker	Industrial / Professional:	Local exhaust ventilation systems and process enclosures are generally applied. Cyclones/filters (for minimizing dust emissions): efficiency 70%-90% (cyclones); dust filters (50-80%). LEV in work area: efficiency 84% (generic LEV)
Organisational measures to prevent /limit releases, dispersion and exposure	In general, management systems are implemented; They include general industrial hygiene practice e.g.:	regular cleaning of equipment and floors, extended workers instruction-manuals. procedures for process control and maintenance. procedures for control of personal exposure (hygiene measures). information and training of workers on prevention of exposure/accidents. personal protection measures (see below)
Conditions and measures related to personal protection, hygiene and health evaluation	Wearing of protective clothing is compulsory (efficiency >=90%)	
	With normal handling, no respiratory personal protection (breathing apparatus) is necessary. If risk for exceedance of OEL/DNEL, use e.g.:	
	Eyes	dust filter-half mask P1 (efficiency 75%). dust filter-half mask P2 (efficiency 90%). dust filter-half mask P3 (efficiency 95%). dust filter-full mask P1 (efficiency 75%). dust filter-full mask P2 (efficiency 90 %). dust filter-full mask P3 (efficiency 97.5%)
		safety glasses are optional

### 3. Exposure estimation and reference to its source

#### 3.1. Health

# Zinc Phosphate

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

3.2. Environment

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

4.1. Health

4.2. Environment