

SAFETY DATA SHEET

NOTICE : Important information

Please note that this generic exposure scenario is by no means intended to be mandatory, prescriptive or exhaustive. The content of this document is intended for guidance only and whilst the information on uses covered is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk. Ultimately, it is for each company to assess the appropriateness and completeness of the information on a case-by case basis and decide what elements they wish to adopt or to add. In particular, the preparation and content of the e-SDS is the legal responsibility of each company for its own products placed on the market, and the user should verify, complete, correct or adapt this generic document appropriately.

No representations or warranties are made with regards to its completeness or accuracy, in particular regarding the list of uses that are covered, and no liability will be accepted by [the consortium members] for damages of any nature whatsoever resulting from the use of or reliance on the information.

The consortium members acknowledge that any activities carried out under REACH have to be carried out in full compliance with EU competition law, in particular but not limited to Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU) as well as any applicable national laws.

SECTION 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

1.1 Product identifier

Chemical Name	Manganese bis(dihydrogen phosphate)
EINECS No.	242-520-2
CAS No.	18718-07-5
EU Index No.	n/a
REACH Registration number:	

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

Identified Uses	Manufacture of manganese bis(dihydrogen phosphate) wet Formulation into products Use of surface treatment chemical in a formulation
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Uses advised against	No known uses advised against
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1.3 Details of the supplier of the safety data sheet

[SUPPLIER TO COMPLETE]

1.4 Emergency telephone number

[SUPPLIER TO COMPLETE]

SECTION 2 HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

2.1.1 According to Regulation (EC) No. 1272/2008 (EU CLP)

Eye Irritation Category 2. H319: Causes serious eye damage

STOT RE 2, Affected organ: Brain, Route of exposure: Inhalation. H373: May cause damage to brain through prolonged or repeated exposure

Aquatic Chronic 3. H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

2.2.1. According to Regulation (EC) No. 1272/2008 (EU CLP)



Signal word:

Warning

Hazard statements:

H319: Causes serious eye irritation.

H373: May cause damage to organs <or state all organs affected, if known> through prolonged or repeated exposure <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.

H412: Harmful to aquatic life with long lasting effects.

Precautionary statements:

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P264: Wash... thoroughly after handling.

P273: Avoid release to the environment.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical advice/attention.

P341: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing

NOTE: Information in Section 2.2 MUST be consistent with the information provided on the supplier's labels. [ONLY 6 SELECTED – ENSURE CONSISTENCY BETWEEN SDS AND LABELS.]

2.3 Other hazards

The material is not considered to be PBT or vPvB.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Substance

Substance	Manganese bis(dihydrogen phosphate)
Identification numbers	CAS No. 18718-07-5. EC No. 242-520-2
Typical concentration	99.5% [Taken from SIP - specific company to update where necessary]
Concentration Range	[SUPPLIER TO COMPLETE]
Registration number	[SUPPLIER TO COMPLETE]

SECTION 4 FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Do not breathe dust/spray. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

Eye contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Skin contact: IF ON SKIN: Wash with plenty of soap and water. Remove contaminated clothing and wash affected area thoroughly with soap and water. Take off contaminated clothing and shoes immediately.

Ingestion: Rinse out mouth and then drink plenty of water. Do not induce vomiting. In case of symptoms consult doctor

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: Inhaled substance may result in effects on the central nervous system. Chronic manganese poisoning primarily involves the CNS.

Eye contact: Manganese bis(dihydrogen phosphate) is irritating to the eyes.

4.3 Indication of any immediate medical attention and special treatment needed

All cases of exposure should be reported for medical attention. Treatment should be symptomatic and supportive. In case of contact with the eyes, flush immediately.

SECTION 5 FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media:

Manganese bis(dihydrogen phosphate) is not flammable. Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Inappropriate extinguishing media:

None identified.

5.2 Special hazards arising from the substance or mixture

Manganese / manganese oxides.

5.3 Advice for fire-fighters

In cases where dust particles of manganese bis(dihydrogen phosphate) may be present respiratory ventilation is recommended. Wear appropriate eye protection. See Section 8.2.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with eyes. Use personal protection equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

Refer to Section 8 for suitable PPE.

Refer to Section 13 for disposal considerations.

SECTION 7 HANDLING AND STORAGE

7.1 Precautions for safe handling

Technical measures: sufficient ventilation and local suction is required in accordance with the details in the annex to the SDS. Provide appropriate exhaust ventilation at places where dust is formed.

Do not eat, smoke or drink. Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

7.2 Consideration for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. No known incompatibilities.

7.3 Specific end uses

See annex for details of end uses covered in the exposure scenarios and CSR. The exposure scenarios detailed in the annex represent a worst case for exposure to humans and the environment.

SECTION 8 EXPOSURE CONTROL / PERSONAL PROTECTION

8.1 Control parameters

Workplace exposure limits :

Workplace exposure limits:

- General dust exposure limit: 10 mg/m³ (inhalable fraction), 3 mg/m³ (alveolic fraction). German TRGS 900 (2006).

- Long-term exposure limit: 0.5 mg/m³ 8-hr TWA. UK EH40/2005 Workplace exposure limits

[please check occupational limits for the country you supply to and insert limit here if available]

DNEL (derived no effect level): DNELS (worker): A DNEL was not derived since an IOELV value has been adopted by the European Commission (see reference below).

Systemic, long-term inhalation:

- Inhalable IOELV: 0.2 mg/m³

- respirable IOELV: 0.05 mg/m³

It is recommended that both values should be observed conjointly.

PNEC (predicted no effect concentration):

Compartment	Value	Remarks
PNEC aqua (freshwater)	0.99 mg/L	The value used to derive the PNEC (9.9 mg/L) is the NOEC from the algal growth study on manganese hydrogen phosphate. This study is considered to be the most reliable available data (conducted under GLP and in accordance with OECD 201). The assessment factor is assigned on the basis of the availability of long-term results from three species at three trophic levels. The derived PNEC is considered to represent a realistic PNEC for the protection of the environment.
PNEC aqua (marine water)	0.198 mg/L	The value used to derive the PNEC (9.9 mg/L) is the NOEC from the algal growth study on manganese hydrogen phosphate. This study is considered to be the most reliable available data (conducted under GLP and in accordance with OECD 201). The assessment factor is assigned on the basis of the availability of long-term results from three species at three trophic levels. The derived PNEC is considered to represent a realistic PNEC for the protection of the environment.
PNEC aqua (intermittent releases)	0.099 mg/L	The value used to derive the PNEC (9.9 mg/L) is the NOEC from the algal growth study on manganese hydrogen phosphate. This study is considered to be the most reliable available data (conducted under GLP and in accordance with OECD 201). The derived PNEC is considered to represent a realistic PNEC for the protection of the environment.
PNEC STP	N/A	The NOEC for manganese hydrogen phosphate was found to be the highest concentration tested (1000 mg/L) and as such no hazard has been identified for manganese phosphates.
PNEC sediment (freshwater)	Not determined	In accordance with Annex IX of Regulation (EC) No. 1907/2006 (REACH) no assessment of toxicity to sediment organisms has been made.
PNEC sediment (marine water)	Not determined	In accordance with Annex IX of Regulation (EC) No. 1907/2006 (REACH) no assessment of toxicity to sediment organisms has been made.
PNEC soil	4.31 mg/kg soil dw	The PNEC is based on the lowest NOEC available for soil dwelling organisms. This value (431.32 mg/kg d.w) has been calculated from a NOEC of 157 mg Mn/kg d.w on the basis of a molecular weight calculation and as such the PNEC soil is applicable to the substance manganese hydrogen phosphate. The assessment factor is assigned on the basis of the availability of one long-term study.
PNEC oral	Not determined	The homeostatic mechanism operating in mammals together with the negligible potential for bioaccumulation is not likely to cause toxicity to mammals in the environment.

8.2 Exposure controls

Appropriate engineering controls: Ensure work area is well ventilated or exhausted (where appropriate and in line with the exposure scenarios). Provide eye wash station.

Respiratory protection: See annex for details of processes requiring respiratory protection. In case of insufficient ventilation, wear suitable respiratory device such as EN141 or EN405, Type A.

Skin protection: Laboratory coat or overalls and plastic or rubber boots. Store protective clothing separately.

Eye protection: Tightly sealed chemical safety goggles (compliant with EN 166:2001). Use equipment for eye protection tested and approved under appropriate government standards.

Hand protection: It is advisable to wear suitable gloves that are compliant with EN 374. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.

Wash and dry hands.

Environmental controls: Refer to Sections 6, 7, 12 and 13 of the SDS.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance		Pale pink crystalline solid - Observed during melting point study (EU Method A1) under conditions of GLP. Klimisch 1.
Odour		Odourless - Observed during melting point study (EU Method A1) under conditions of GLP. Klimisch 1.
pH		1.7 – 2.1- As measured in the water solubility study (EU Method A.6) under conditions of GLP. Klimisch 1
Melting point	(°C)	>450 (EU Method A1) under conditions of GLP. Klimisch 1.
Initial boiling point	(°C)	Not determined – not required in accordance with Regulation (EC) No. 1907/2006
Boiling range	(°C)	Not determined – not required in accordance with Regulation (EC) No. 1907/2006
Evaporation rate		No data
Relative density	g/ml	Mean density: ca. 790 g/L at 20°C
Vapour density	Air = 1	Not applicable
Vapour pressure	Pa	Assumed to be 1×10^{-6}
Viscosity	Cp/s	Not applicable
Autoignition temperature	(°C)	Not applicable
Decomposition temperature	(°C)	No data
Flash point	(°C)	Not determined – not required in accordance with Regulation (EC) No. 1907/2006
Flammability (solid, gas)		Not applicable
Flammability limits in air	%	Not applicable
Explosivity limits in air	%	Not applicable
Explosive potential		None – determined by prediction in accordance with EU Method A14
Oxidising potential		None – determined by prediction in accordance with EU Method A17
Solubility in water	g/ml	Water: 630 g/L at 20± 0.5°C (very soluble) - EU Method A.6, under GLP conditions, Klimisch 1
Solubility in other	g/ml	No data
Log water/octanol partition coefficient		The Kd value of 1,200 (as quoted in the dossier) was used in place of the Kow for the purposes of environmental fate modelling. Also, the substance has been assigned the category “non-hydrophobic” when performing environmental fate modelling.

9.2 Other information

Testing has been performed on manganese bis(dihydrogen phosphate), in accordance with Annex IX of REACH.

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity

Non-reactive under recommended storage and handling conditions.

10.2 Chemical stability

Stable under recommended storage and handling conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions are considered unlikely.

10.4 Conditions to avoid

None identified.

10.5 Incompatible materials

None identified.

10.6 Hazardous decomposition products

None identified.

[Companies to ensure the above is correct according to the form and nature of the substance supplied]

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

a. Acute toxicity

<i>Exposure route</i>	<i>Result</i>	<i>Data/remarks</i>
Inhalation	n/a	No data
Dermal	Not classified	No data
Oral	Not classified	OECD 420, Rat oral LD50 >2000 mg/kg bw, not classified

b. Skin corrosion / irritation:

<i>Result</i>	<i>Data/remarks</i>
Not irritating	OECD Guideline 439 / EU Method B.46, under conditions of GLP, Klimisch 1. Supported by in vitro corrosivity study (OECD 431). Result = not corrosive.

c. Serious eye damage/irritation

<i>Result</i>	<i>Data/remarks</i>
Irritating, Cat 2	Rabbit, OECD 405 / EU Method B.5. Under conditions of GLP, Klimisch reliability 1.

d. Respiratory or skin sensitisation

<i>Result</i>	<i>Data/remarks</i>
Non-sensitiser	Mouse, OECD 429, EU Method B.42. Klimisch reliability 2; read-across from similar substance (manganese chloride). No data to suggest substance is a respiratory sensitiser.

e. Germ cell mutagenicity

<i>Result</i>	<i>Data/remarks</i>
Not classified	In vitro gene mutation in bacteria (OECD 471, Klimisch 2 as read-across)
	In vitro cytogenicity study in mammalian cells (OECD 476, Klimisch 2 as read-across)
	In vitro gene mutation study in mammalian cells (OECD 473, Klimisch 2 as read-across)

f. Carcinogenicity

<i>Result</i>	<i>Data/remarks</i>
Not considered to be a carcinogen.	Not required for REACH. No data to suggest likelihood of carcinogenicity.

g. Reproductive toxicity

<i>Result</i>	<i>Data/remarks</i>
Not classified	No structural alerts to suggest substance is a reproductive toxicant.

h. STOT-single exposure

Substance is not classified and no specific data is available.

i. STOT repeated exposure

<i>Result</i>	<i>Data/remarks</i>
Not classified	STOT-RE 2 is assigned on the basis of Mn ²⁺ . Neurotoxicity is considered to be the leading health effect and as such an IOELV has been proposed and adopted by the European Commission. Classification is based on a large database of epidemiology and toxicology data on inorganic manganese compounds.

j. Aspiration hazard

Substance is not an aspiration hazard.

SECTION 12 ECOLOGICAL INFORMATION

12.1 Toxicity

Acute aquatic toxicity

<i>Species</i>	<i>Data/remarks</i>
Fish	ACUTE: LC50 (freshwater): 8.71 mg/L Literature data, Klimisch 2. The lowest LC50 in studies performed with manganese sulphate was found to be 3.17 mg Mn/L (rainbow trout, soft water). This value was translated into a value relevant to manganese hydrogen phosphate by a molecular weight calculation resulting in an LC50 for manganese hydrogen phosphate of 8.709 mg/L.
	CHRONIC NOEC: 0.17 mg/L Literature data, Klimisch 2 The lowest NOEC in studies performed with manganese sulphate or manganese chloride was found to be 0.06 mg Mn/L (rainbow trout). This value was translated into a value relevant to manganese hydrogen phosphate by a molecular weight calculation.

Daphnia	ACUTE: EC50 (48hr): 15.66 mg/L Literature data, Klimisch 2 The lowest 48 h EC50 value in the studies performed with manganese chloride was found to be 5.7 mg Mn/L (C.dubia, soft water). In the study with H.azteca a lower value of 3 mg Mn/L was recorded, however this was over a 96h time period and as such the 48 h EC50 is more relevant for classification and labelling. In addition, H.azteca are not the standard test species for this type of experiments as studies for regulatory purposes are more common performed with Daphnia. Therefore the C.dubia value has been translated into a value relevant to manganese hydrogen phosphate by a molecular weight calculation.
	CHRONIC: 0.055 mg/L Literature data, Klimisch 2 The lowest NOEC in studies performed with manganese chloride was found to be 0.02 mg Mn/L. This value was translated into a value relevant to manganese hydrogen phosphate by a molecular weight calculation.
Algae	NOEC: 9.9 mg/L OECD 201 / EU Method C.3, Under conditions of GLP, Reliability 2 (read-across from manganese hydrogen phosphate).
Sewage treatment plant organisms	NOEC (3 hr): 1000 mg/L EC50 (3hr): >1000 mg/L OECD 209, Under conditions of GLP, Reliability 2 (read-across from manganese hydrogen phosphate).

Terrestrial toxicity (non-mammalian)

<i>Species</i>	<i>Data/remarks</i>
Soil organisms	No data
Other species	No data

12.2 Persistence and degradability

Manganese bis(dihydrogen phosphate) is an inorganic substance, biodegradation studies are not applicable. No further testing is deemed to be necessary.

12.3 Bioaccumulation potential

The potential for bioaccumulation is considered to be minimal.

12.4 Mobility in soil

The data on the adsorption /desorption for manganese has been taken from the publicly available literature and is considered to be limited. The most relevant value for use in risk assessment is $K_d = ca. 1200 \text{ ml/g}$. This is the lowest available value and therefore is considered to be indicative of metal that is known to partition to organic matter (soils/sediments) as opposed to remaining in the water column and as manganese hydrogen phosphate and manganese bis(dihydrogen phosphate) are both soluble they can be considered to be 'readily transformed' in the environment.

12.5 Results of PBT and vPvB assessment

According to the Guidance on Information Requirements and Chemical Safety Assessment, Chapter R.11: PBT Assessment, the PBT and vPvB criteria of Annex XIII to the regulation do not apply to inorganic substances. Therefore manganese bis(dihydrogen phosphate) is not considered to require any further assessment of PBT properties.

12.6 Other adverse effects

No sediment or terrestrial toxicity data exists. Substance is not considered to be hazardous to sediment dwelling or terrestrial organisms. According to the criteria of the European classification and labelling system, the substance does not require classification as hazardous for the environment.

SECTION 13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal recommendations are made based on the material as supplied. Disposal must be in accordance with current applicable laws and regulations.

Disposal of substance: Dispose of in accordance with national and local regulations for special waste via an appropriately licensed waste contractor. Do not discharge to drains or STP.

Disposal of packaging: Empty containers and clean out appropriately before reuse or disposal. Packaging may be recycled if thoroughly cleaned. Packaging that cannot be cleaned should be disposed of according to national and local regulations for special waste via an appropriately licensed waste contractor.

Regulatory disposal information:

European waste codes: Waste producers need to assess the process used when generating the waste and its contaminants in order to assign the most appropriate waste disposal code(s).

Recommended code: European waste catalogue 16 03 03 inorganic wastes containing dangerous substances

SECTION 14 TRANSPORT INFORMATION

Transport classifications (ADR/RID/IMDG/IATA) are not defined in the REACH Registration Dossier for the substance. The information provided here is therefore not derived from this Dossier and is based on other information available to the Consortium Members. The Transport classifications (ADR/RID/IMDG/IATA) provided here are indicative and based on the data in the REACH dossier for the pure substance only and may not be applicable for solutions or other preparations. Please seek advice from your Dangerous Good Safety Advisor. According to information available: UN transport classification: Not Classified (for pure substance as solid and solution in water)

14.1 UN number

14.2 UN proper shipping name

14.3 Transport hazard class(es)

14.4 Packing group

14.5 Environmental hazards

14.6 Special precautions for user None specific to transport

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not relevant

Other information:

SECTION 15 REGULATORY INFORMATION

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

[COMPANY TO INCLUDE ANY INFORMATION RELEVANT TO THE COUNTRY OF PRODUCT AND/OR SUPPLY]

This safety data sheet is compliant with Regulation (EC) No 1907/2006 (REACH) (including the amendment, Regulation (EU) 2015/230, Regulation (EU) No 453/2010 and Regulation (EC) No. 1272/2008 (EU CLP).

15.2 Chemical safety assessment

A chemical safety assessment is available for manganese bis(dihydrogen phosphate)

SECTION 16 OTHER INFORMATION

Abbreviations used in this SDS:

AF = Assessment factor
DNEL = Derived no effect level
EC50 = Median effect concentration
LC50 = Median lethal concentration
LD50 = Median lethal dose
LEV = Local Exhaust Ventilation
NOAEL = No observed adverse effect level
NOEC = No observed effect concentration
PBT = Persistent bioaccumulative toxic
PEC = Predicted effect level
PNEC = Predicted no effect level
PRE = Personal Respiratory Equipment
OEL = Occupational Exposure Limit
SDS = Safety data sheet
STOT-SE = Specific target organ toxicity – single exposure
STOT-RE = Specific target organ toxicity – repeated exposure
STP = Sewage treatment plant
vPvB = Very persistent very bioaccumulative

Sources of data used for this SDS:

REACH registration dossier

Changes made in this SDS:

Exposure scenarios added

This SDS supersedes the SDS dated [TO BE COMPLETED BY COMPANY SUPPLYING SDS]