Potassium Phosphite 50% Liquid

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

1.1. Product identifier

Product form : Substance in aqueous solution
Trade name : **Van Iperen Potassium Phosphite 50% Liquid**
IUPAC name : Phosphonic acid, potassium salt (1:1)
EC no : 604-162-9
CAS No : 13977-65-6
REACH registration No : 01-2119988836-13-
Formula : KH_2PO_3
Synonyms : Potassium phosphite 50% Liquid

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

1.2.1. Relevant identified uses

Main use category : Industrial use
Professional use
Use of the substance/mixture : Use as raw material for fertilizer solutions in agriculture and horticulture.
Use as foliar fertiliser
Function or use category : Fertilisers
Remark relevant uses : Consult for a complete list of uses and relevant exposure scenario the annex or the scenarios which are available at your supplier

Title	Use descriptors
Manufacturing of the substance (ES Ref: KH2PO3 9.1)	PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC1
Formulation of the fertilizer (ES Ref: KH2PO3 9.2)	PC12, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15, ERC2
Industrial use as intermediate (ES Ref: KH2PO3 9.7)	SU9, PC19, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC6a
Professional use as fertilizer indoor (ES Ref: KH2PO3 9.3)	SU1, PROC5, PROC8a, PROC8b, PROC9, PROC11, ERC8a
Professional use as fertilizer outdoor (ES Ref: KH2PO3 9.4)	SU1, PROC5, PROC8a, PROC8b, PROC9, PROC11, ERC8d
Consumer use as fertilizers indoor (ES Ref: KH2PO3 9.5)	PC12, ERC8a
Consumer use as fertilizers outdoor (ES Ref: KH2PO3 9.6)	PC12, ERC8d

Full text of use descriptors: see section 16

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Van Iperen International BV
Smidsweg 24
3273 LK Westmaas - Nederland
T +31 (0) 186 578 888 - F +31 (0) 186 573 452
info@iperen.com - www.vaniperen.com

1.4. Emergency telephone number

In case of emergency contact the national emergency telephone number: UK and Ireland: 112 or 999

Country	Official advisory body	Address	Emergency number
Ireland (Republic of)	National Poisons Information Centre Beaumont Hospital	Beaumont Hospital Beaumont Road 9 Dublin	: +353 1 8379964
United Kingdom	Guy's & St Thomas' Poisons Unit Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust	Avonley Road SE14 5ER London	0870 243 2241

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Eye Irrit. 2 H319

Full text of H-phrases: see section 16

Adverse physicochemical, human health and environmental effects
No additional information available

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS07

CLP Signal word : Warning
Hazard statements (CLP) : H319 - Causes serious eye irritation
Precautionary statements (CLP) : P264 - Wash hands thoroughly after handling
P280 - Wear protective gloves, protective clothing, eye protection
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

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH, annex XIII.
This substance/mixture does not meet the vPvB criteria of REACH, annex XIII.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Potassium phosphite	(CAS No) 13977-65-6 (EC no) 604-162-9 (REACH-no) 01-2119988836-13-	45 - 55	Eye Irrit. 2, H319

Full text of R-, H- and EUH-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Check the vital functions.
Unconscious: maintain adequate airway and respiration.
Respiratory arrest: artificial respiration or oxygen.
Cardiac arrest: perform resuscitation.
Victim conscious with laboured breathing: half-seated.
Victim in shock: on his back with legs slightly raised.
Vomiting: prevent asphyxia/aspiration pneumonia.
Prevent cooling by covering the victim (no warming up).
Keep watching the victim. Give psychological aid.
Keep the victim calm, avoid physical strain.
Depending on the victim's condition: doctor/hospital

First-aid measures after inhalation : Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
First-aid measures after skin contact : Wash immediately with lots of water. Soap may be used. If on skin, take off contaminated clothing. If on skin and if skin irritation or rash occurs, seek medical advice and attention.
First-aid measures after eye contact : Immediately flush eyes with plenty of water (> 15min), occasionally lifting the upper and lower eyelids. Remove contact lenses, if present and easy to do. Continue rinsing.
Take victim to an ophthalmologist if irritation persists.
First-aid measures after ingestion : Rinse mouth with water. Do not induce vomiting. Do not give an unconscious person anything to drink. Consult a doctor/medical service if you feel unwell.

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

Symptoms/injuries after inhalation : Inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract
Symptoms/injuries after skin contact : Contact during a long period may cause light irritation.
Symptoms/injuries after eye contact : Causes serious eye damage.
Symptoms may include: irritation of the eye tissue, redness of the eye tissue.
Symptoms/injuries after ingestion : After absorption of high quantities: nausea, vomiting, diarrhoea, irritation of the gastric/intestinal mucosa.
Chronic symptoms : On continuous/repeated exposure/contact: red skin. dry skin, itching.

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

Treat symptomatically. Follow the advices in chapter 4.1.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Extinguishing media for surrounding fires : All extinguishing media allowed.
Use fire extinguishing methods suitable to surrounding conditions.

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Non combustible.

Explosion hazard : No direct explosion hazard.

Reactivity : On burning: release of toxic and corrosive gases/vapours (phosphorus oxides, potassium oxides).

5.3. Advice for firefighters

Precautionary measures fire : Exposure to fire/heat: keep upwind, consider evacuation and have neighbourhood close doors and windows.

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety.
Do not move the load if exposed to heat. Dilute toxic gases with water spray.

Protection during firefighting : Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate air ventilation.
Avoid all eye and skin contact and do not breathe vapour and mist.

6.1.1. For non-emergency personnel

Protective equipment : Wear protective gloves/protective clothing/eye protection as adviced in section 8.

Emergency procedures : Mark the danger area. Keep unnecessary and unprotected personnel from entering.
Wash contaminated clothes.

6.1.2. For emergency responders

Protective equipment : Wear protective gloves/protective clothing/eye protection as adviced in section 8. Wear suitable respiratory equipment in case of insufficient ventilation or in case of prolonged exposure.

6.2. Environmental precautions

Prevent spreading in sewers. Prevent soil and water pollution. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3. Methods and material for containment and cleaning up

For containment : Stop leak if safe to do so. Any spillage should be cleaned up immediately. Collect spill in closed and suitable containers for disposal. Take up rest of liquid spill into absorbent material sand, earth, vermiculite. Scoop absorbed substance into closing containers.

Methods for cleaning up : Clean contaminated surfaces with an excess of water.
Wash clothing and equipment after handling.

Other information : Dispose the product, depending on the degree and type of contamination, either as fertilizer or in an authorized waste disposal site.

6.4. Reference to other sections

See section 1 for emergency contact information.
See section 8 for information on appropriate personal protective equipment.
See section 13 for additional waste treatment information

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Avoid contact with skin and eyes. Wear protective gloves/protective clothing/eye protection as adviced in section 8. Carry operations in the open air/under local exhaust or at sufficient ventilation to keep airborne levels below recommend/statutory exposure levels.
Meet the legal requirements. Keep container tightly closed.

Hygiene measures : Do not eat, drink or smoke during use. If on skin, take off contaminated clothing. Care for eyewashstations and security showers at the workplace. Keep away from food, drink and animal feedingstuffs. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep preferably in the original container.
Incompatible materials : Keep away from iron, metal, lead.
Storage temperature : -10 - 30 °C
Heat and ignition sources : Keep substance away from: heat sources.
Prohibitions on mixed storage : Keep substancee away from: oxidizing agents, (strong) acids.
Storage area : Meet the legal requirements.

Special rules on packaging : Keep packaging closed when not in use. Do not store in unlabelled containers. Meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials : Suitable material: polyethylene, stainless steel.

7.3. Specific end use(s)
Fertilizers. Consult the identified uses in the annex of this MSDS.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Potassium phosphite (13977-65-6)		
DNEL/DMEL (Workers)		
Long-term - systemic effects, dermal	59 mg/kg bodyweight/day	Repeated dose toxicity
Long-term - systemic effects, inhalation	41,2 mg/m³	Repeated dose toxicity
DNEL/DMEL (General population)		
Long-term - systemic effects,oral	2,9 mg/kg bodyweight/day	Repeated dose toxicity
Long-term - systemic effects, inhalation	10,2 mg/m³	Repeated dose toxicity
Long-term - systemic effects, dermal	29 mg/kg bodyweight/day	Repeated dose toxicity
PNEC (Water)		
PNEC aqua (freshwater)	0,137 mg/l	
PNEC aqua (marine water)	0,0137 mg/l	
PNEC aqua (intermittent, freshwater)	1,37 mg/l	
PNEC (Sediment)		
PNEC sediment (freshwater)	0,117 mg/kg dwt	
PNEC sediment (marine water)	0,0117 mg/kg dwt	
PNEC (Soil)		
PNEC soil	1 mg/kg dwt	
PNEC (STP)		
PNEC sewage treatment plant	100 mg/l	

8.2. Exposure controls
Appropriate engineering controls : Ensure good ventilation of the work station.
Care for eyewashstations and security showers at the workplace.
Personal protective equipment :

Hand protection : Gloves.
Material selection gloves : Good resistance gives:,rubber.
Take advice to your gloves' supplier. Replace damaged gloves
Eye protection : Tightly fitting safety goggles.
Skin and body protection : Wear suitable protective clothing.
Respiratory protection : If this product is handled normally, there is no demand of any respiratory protection.
Mist formation: aerosol mask with filter type P2.
Environmental exposure controls : Do not allow to enter drains or water courses.
See section 13 for additional waste treatment information.
Other information : See section 7. Training staff on good practice.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state : Liquid
Appearance : Liquid.
Molecular mass : 120,08 g/mol
Colour : Colourless.
Odour : Characteristic.
Odour threshold : No data available
Melting point : Not applicable
Crystallization temperature : -15 °C
Boiling point : +/- 105 °C
Vapour pressure : Negligible vapour pressure at ambient conditions
Relative vapour density at 20 °C : No data available
Relative density : 1,39
Density : 1,39 kg/l (25°C)
Solubility : Water: complete

Log Pow	:	insoluble in octanol
Log Kow	:	Not applicable. Inorganic chemical substance
Decomposition temperature	:	180 °C
Viscosity, dynamic	:	< 100 mPa.s
Explosive properties	:	not explosive.
Oxidising properties	:	not oxidising.

9.2. Other information

Other properties : Clear.

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: release of toxic and corrosive gases/vapours (phosphorus oxides, potassium oxides).

10.2. Chemical stability

The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions

To our knowledge, the product does not present any particular risk, under normal conditions of use.

10.4. Conditions to avoid

Temperatures lower than -10°C. Avoid high temperatures.

10.5. Incompatible materials

Keep substance away from: metals. metal powders.

10.6. Hazardous decomposition products

On burning: release of toxic and corrosive gases/vapours (phosphine, phosphorus oxides). This reaction is accelerated on exposure to (some) acids.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified (Based on available data, the classification criteria are not met)

Potassium phosphite (13977-65-6)	
LD50 oral rat	> 2000 mg/kg EU Method B.1 tris Test material: KH2PO3/K2HPO3 Reference: Salvador M.(2013a)
LD50 dermal rat	> 5050 mg/kg OECD Guideline 402 Test material: KH2PO3/K2HPO3 Reference: Salvador M.(2013a)
LC50 inhalation rat (mg/l)	Not considered as appropriate, based also on vapour pressure

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)
Explanation skin corrosion/irritation
In vitro study OECD Guideline 439 (In Vitro Skin Irritation)
Viability index: > 92.1 of max. 100 (mean) (Time point: 3h) (Not applicable) (A value > 50 indicates no irritation potential)
Test material (Common name): Potassium Phosphonate KH2PO3/K2HPO3
Reference: Bisini L. Biol.D (2013)

Serious eye damage/irritation : Causes serious eye irritation.
Symptoms may include: redness of the eye tissue, lacrimation
Explanation serious eye damage/irritation
In vitro study in vitro; bovine cornea OECD Guideline 437 (Bovine Corneal Opacity and Permeability Test) Test material (Common name): Mono Potassium Phosphonate

Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)
Explanation germ cell mutagenicity
In vitro genotoxicity studies
OECD Guideline 471 (Bacterial Reverse Mutation Assay)
EU Method B.13/14 (Mutagenicity - Reverse Mutation Test Using Bacteria)
Test material (Common name): Potassium Phosphonate KH2PO3/K2HPO3
Reference: Scarcella O.Biol.D (2013)

Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

Specific target organ toxicity (single exposure) : Not classified (Based on available data, the classification criteria are not met)

Specific target organ toxicity (repeated exposure) : Not classified (Based on available data, the classification criteria are not met)

Potassium phosphite (13977-65-6)

Potassium phosphite (13977-65-6)	
NOAEL (subacute,oral, animal/male,28 days)	> 1000 mg/kg bodyweight Rat (Sprague-Dawley) male/female Test material (Common name): Potassium Phosphonate KH2PO3/K2HPO3 OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test) Reference: Cicalese R. (2013)

Aspiration hazard : Not classified (Based on available data, the classification criteria are not met)

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Classification concerning the environment: not applicable.

Ecology - water : May cause eutrophication.

Potassium phosphite (13977-65-6)	
LC50 fishes 1	> 200 mg/l 96-h OECD Guideline 203 (Fish, Acute Toxicity Test) Brachydanio rerio (new name: Danio rerio) Test material (Common name): Potassium Phosphonate KH2PO3/K2HPO3 Reference: Tediosi E. (2013a)
LC50 other aquatic organisms 1	137,5 mg/l 72-h Algae OECD Guideline 201 (Alga, Growth Inhibition Test) Test material (Common name): Potassium Phosphonate KH2PO3/K2HPO3 Reference: Tediosi E., (2013)
EC50 Daphnia 1	> 200 mg/l 48-h Daphnia magna OECD Guideline 202 (Daphnia sp.Acute Immobilisation Test) Test material (Common name): Potassium Phosphonate KH2PO3/K2HPO3 Reference: Tediosi E., Dini R. (2013)

12.2. Persistence and degradability

Potassium phosphite (13977-65-6)	
Persistence and degradability	Biodegradability: not applicable.

12.3. Bioaccumulative potential

Potassium phosphite (13977-65-6)	
Log Pow	insoluble in octanol
Log Kow	Not applicable. Inorganic chemical substance
Bioaccumulative potential	No bioaccumulation or biomagnifications are expected based on substance properties (Log Pow < 1).

12.4. Mobility in soil

Potassium phosphite (13977-65-6)	
Ecology - soil	Soluble in water. Will complety dissociate into ions.

12.5. Results of PBT and vPvB assessment

Potassium phosphite (13977-65-6)
This substance/mixture does not meet the PBT criteria of REACH, annex XIII.
This substance/mixture does not meet the vPvB criteria of REACH, annex XIII.

12.6. Other adverse effects

Other information : No other effects known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

EURAL code : 06 03 14 - solid salts and solutions other than those mentioned in 06 03 11 and 06 03 13
Depending on branch of industry and production process, also other EURAL codes may be applicable

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

Waste treatment methods : Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Dispose the product, depending on the degree and type of contamination, either as fertilizer or in an authorized waste disposal site.

Waste disposal recommendations : Remove waste in accordance with local and/or national regulations. The generation of waste should be avoided or minimized wherever possible. Care should be taken when handling emptied containers that have not been cleaned or rinsed out.

Additional information : The user's attention is drawn to the possible existence of specific european, national or local regulations regarding disposal.

Ecology - waste materials : Avoid release to the environment.

Potassium Phosphite 50% Liquid

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA

14.1. UN number

No dangerous good in sense of transport regulations

14.2. UN proper shipping name

Not applicable

14.3. Transport hazard class(es)

Not applicable

14.4. Packing group

Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

14.6.1. Overland transport

No additional information available

14.6.2. Transport by sea

No additional information available

14.6.3. Air transport

No additional information available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Contains no REACH candidate substance

15.1.2. National regulations

Regional legislation : Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Version	: 5.01
Revision date	: 31-01-2014
Date of issue	: 05-01-2009
Supersedes	: 09-08-2013
Indication of changes	: Section 9.1. Density adapted.
Data sources	: Test information BIG-database Handbook of Chemistry and Physics CRC Press Inc REACH registration dossier.
Abbreviations and acronyms	: CLP = Classification, labelling and packaging DNEL = Derivative No Effect Level n.a. = not applicable PNEC = Predicted No Effect Concentration REACH = Registration, evaluation and autorisation of chemicals.
Training advice	: Normal use of this product shall imply use in accordance with the instructions on the packaging. Before using/handling the product one must read carefully the MSDS.

Full text of R-, H- and EUH-phrases::

Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H319	Causes serious eye irritation
R36	Irritating to eyes
Xi	Irritant
ERC1	Manufacture of substances
ERC2	Formulation of preparations
ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ERC8a	Wide dispersive indoor use of processing aids in open systems
ERC8d	Wide dispersive outdoor use of processing aids in open systems
PC12	Fertilizers
PC19	Intermediate
PROC1	Use in closed process, no likelihood of exposure

PROC11	Non industrial spraying
PROC15	Use as laboratory reagent
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)
SU1	Agriculture, forestry, fishery
SU9	Manufacture of fine chemicals

Company disclaimer

The information provided in this safety data sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any proceed, unless specified in the text.

1. Exposure scenario KH2PO3 9.2

Formulation & (re)packing of substances and mixtures

ES Ref: KH2PO3 9.2 ES Type: Worker Version: 1 Revision date: 04-07-2013	

Use descriptors	PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15 ERC2
Processes, tasks, activities covered	Industrial use
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.2 Contributing scenario controlling environmental exposure (ERC2)

ERC2	Formulation of preparations
Assessment method	Used ECETOC TRA model

Product characteristics

Physical form of product	Solution
Concentration of substance in product	50 %

Operational conditions

Amounts used	Fraction of Regional tonnage used locally:	100 %
	Maximum daily site tonnage (tonnes/day):	9,5
	Annual site tonnage (tonnes/year):	< 950
Environmental factors not influenced by risk management	Receiving surface water flow	18000 m³/d

Risk Management Measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Remove waste in accordance with local and/or national regulations	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements	
Conditions and measures related to municipal sewage treatment plant	Municipal STP: Yes	0,013 % Effectiveness water
	Discharge rate of STP	> 2000 m³/d
	Application of STP sludge to agricultural soil: Yes	
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. Operational conditions and risk management measures (continue)

2.1.1 Contributing scenario controlling worker exposure (PROC3)

PROC3	Use in closed batch process (synthesis or formulation)

Product characteristics

Physical form of product	Solution
Concentration of substance in product	50 %

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	

Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	240 cm² one hand face only

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable. Respiratory protection not applicable. Wear safety glasses	

2.1.2 Contributing scenario controlling worker exposure (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises

Product characteristics

Physical form of product	Solution
Concentration of substance in product	50 %

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2. Operational conditions and risk management measures (continue)

2.1.3 Contributing scenario controlling worker exposure (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities

Product characteristics

Physical form of product	Solution
Concentration of substance in product	50 %

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	960 cm² two hands

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2.1.4 Contributing scenario controlling worker exposure (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics

Physical form of product	Solution
Concentration of substance in product	50 %

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	960 cm²

		two hands

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2. Operational conditions and risk management measures (continue)

2.1.5 Contributing scenario controlling worker exposure (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics

Physical form of product	Solution
Concentration of substance in product	50 %

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2.1.6 Contributing scenario controlling worker exposure (PROC15)

PROC15	Use as laboratory reagent

Product characteristics

Physical form of product	Solution
Concentration of substance in product	50 %
Vapour pressure	23 hPa
Viscosity, dynamic	< 100 mPa.s

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	240 cm² one hand face only

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable. Respiratory protection not applicable. Wear safety glasses	

2. Operational conditions and risk management measures (continue)

2.1.7 Contributing scenario controlling worker exposure (PROC5)

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %
Vapour pressure	23 hPa
Viscosity, dynamic	< 100 mPa.s

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	

Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

3. Exposure estimation and reference to its source

3.1. Health

Long-term - systemic effects						
DNEL	Inhalation: 41,2 mg/m³ Dermal: 59 mg/kg bodyweight/day					
Contributing Scenario	inhalation exposure mg/m³	RCR	dermal exposure mg/kg bodyweight/day	RCR	Sum RCR	Assessment method Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC3	0,5	0,012	0,69	0,012	0,024	
PROC4	0,5	0,012	1,372	0,023	0,035	
PROC8a	0,5	0,012	2,742	0,046	0,058	
PROC8b	0,5	0,012	2,742	0,046	0,058	
PROC9	0,5	0,012	1,372	0,023	0,035	
PROC15	0,5	0,012	0,34	0,006	0,018	
PROC5	0,3	0,007	2,742	0,046	0,053	

3. Exposure estimation and reference to its source (continue)

3.2. Environment

Environmental exposure	Unit	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	mg/l	0,009	0,137	0,066	Used ECETOC TRA model
Marine water	mg/l	0,000936	0,0137	0,068	Used ECETOC TRA model
Freshwater sediment	mg/kg dwt	0,035	0,117	0,299	Used ECETOC TRA model
Marine water sediment	mg/kg dwt	0,003	0,0117	0,256	Used ECETOC TRA model
Sewage treatment plant	mg/l	0,047	100	0,000	Used ECETOC TRA model
Soil	mg/kg dwt	0,0007919	1	0,001	Used ECETOC TRA model

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

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels

4.2. Environment

Guidance - Environment	If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required

1. Exposure scenario KH2PO3 9.3

Professional use of potassium phosphite as fertilizer (indoor)

ES Ref: KH2PO3 9.3 ES Type: Worker Version: 1 Revision date: 04-07-2013	

Use descriptors	PROC5, PROC8a, PROC8b, PROC9, PROC11 SU1 ERC8d
Processes, tasks, activities covered	Professional use
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.2 Contributing scenario controlling environmental exposure (ERC8a)

ERC8a	Wide dispersive indoor use of processing aids in open systems
Assessment method	Used ECETOC TRA model

Product characteristics

Physical form of product	Liquid
Concentration of substance in product	50 %

Operational conditions

Amounts used	Daily amount for wide dispersive uses	0,00011 tonnes/day
	Fraction of Regional tonnage used locally:	10 %
Frequency and duration of use	Daily wide dispersive use	
Environmental factors not influenced by risk management	Receiving surface water flow	18000 m³/d
Other given operational conditions affecting environmental exposure	Indoor use	
Frequency and duration of use	Percentage of tonnage used at regional scale	10 %
Other given operational conditions affecting workers exposure	Indoor use	

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Discharge to aquatic environment is restricted (see Section 4.2),Do not allow uncontrolled discharge of product into the environment	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Remove waste in accordance with local and/or national regulations	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements	
Conditions and measures related to municipal sewage treatment plant	Municipal STP: Yes	0,013 % Effectiveness water
	Discharge rate of STP	> 2000 m³/d
	Application of STP sludge to agricultural soil: Yes	

2. Operational conditions and risk management measures (continue)

2.1.1 Contributing scenario controlling worker exposure (PROC5)

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Specific operational conditions:

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2.1.2 Contributing scenario controlling worker exposure (PROC11)

PROC11	Non industrial spraying

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	1500 cm² two hands and upper wrists

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection	
	Wear a respirator conforming to EN140 with Type A/P2 filter or better	APF = 10, Effect 90%

2. Operational conditions and risk management measures (continue)

2.1.3 Contributing scenario controlling worker exposure (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	960 cm² two hands

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2.1.4 Contributing scenario controlling worker exposure (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	960 cm² two hands

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2. Operational conditions and risk management measures (continue)

2.1.5 Contributing scenario controlling worker exposure (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

3. Exposure estimation and reference to its source

3.1. Health

Long-term - systemic effects						
DNEL	Inhalation: 41,2 mg/m³ Dermal: 59 mg/kg bodyweight/day					
Contributing Scenario	inhalation exposure mg/m³	RCR	dermal exposure mg/kg bodyweight/day	RCR	Sum RCR	Assessment method Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC5	0,3	0,007	2,742	0,046	0,053	
PROC11	30,02	0,729	10,71	0,182	0,911	
PROC8a	0,3	0,01	2,742	0,046	0,056	
PROC8b	0,3	0,007	2,742	0,046	0,053	
PROC9	0,3	0,007	1,372	0,023	0,030	

3.2. Environment

Environmental exposure	Unit	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	mg/l	0,01	0,137	0,073	Used ECETOC TRA model
Marine water	mg/l	0,001	0,0137	0,073	Used ECETOC TRA model
Freshwater sediment	mg/kg dwt	0,038	0,117	0,325	Used ECETOC TRA model
Marine water sediment	mg/kg dwt	0,004	0,0117	0,342	Used ECETOC TRA model
Sewage treatment plant	mg/l	0,055	100	0,001	Used ECETOC TRA model
Soil	mg/kg dwt	0,0007954	1	0,001	Used ECETOC TRA model

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

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels

4.2. Environment

Guidance - Environment	If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required

Potassium Phosphite 50% Liquid

1. Exposure scenario KH2PO3 9.4

Professional use of potassium phosphite as fertilizer (outdoor)

ES Ref: KH2PO3 9.4 ES Type: Worker Version: 1 Revision date: 04-07-2013	

Use descriptors	PROC5, PROC8a, PROC8b, PROC9, PROC11 SU1 ERC8d
Processes, tasks, activities covered	Professional use
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.2 Contributing scenario controlling environmental exposure (ERC8d)

ERC8d	Wide dispersive outdoor use of processing aids in open systems
Assessment method	Used ECETOC TRA model

Product characteristics

Physical form of product	Liquid
Concentration of substance in product	50 %

Operational conditions

Amounts used	Daily amount for wide dispersive uses	0,000275 tonnes/day
	Fraction of Regional tonnage used locally:	10 %
Frequency and duration of use	Daily wide dispersive use	
Environmental factors not influenced by risk management	Receiving surface water flow	18000 m³/d
Other given operational conditions affecting environmental exposure	Indoor use	
Frequency and duration of use	Percentage of tonnage used at regional scale	10 %
Other given operational conditions affecting workers exposure	Indoor use	

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Discharge to aquatic environment is restricted (see Section 4.2),Do not allow uncontrolled discharge of product into the environment	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Remove waste in accordance with local and/or national regulations	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements	
Conditions and measures related to municipal sewage treatment plant	Municipal STP: Yes	0,013 % Effectiveness water
	Discharge rate of STP	> 2000 m³/d
	Application of STP sludge to agricultural soil: Yes	

2. Operational conditions and risk management measures (continue)

2.1.1 Contributing scenario controlling worker exposure (PROC5)

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Outdoor	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2.1.2 Contributing scenario controlling worker exposure (PROC11)

PROC11	Non industrial spraying

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	outdoor	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	1500 cm² two hands and upper wrists

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection	
	Wear a respirator conforming to EN140 with Type A/P2 filter or better	APF = 10, Effect 90%

2. Operational conditions and risk management measures (continue)

2.1.3 Contributing scenario controlling worker exposure (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	outdoor	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	960 cm² two hands

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2.1.4 Contributing scenario controlling worker exposure (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %

Operational conditions

Frequency and duration of use	< 4 hours/ day	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	outdoor	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	960 cm² two hands

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

2. Operational conditions and risk management measures (continue)

2.1.5 Contributing scenario controlling worker exposure (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics

Physical form of product	Solution
Concentration of substance in product	> 25 %
Vapour pressure	0 hPa

Operational conditions

Frequency and duration of use	< 4 hours/ day	

Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Outdoor	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	
Organisational measures to prevent /limit releases, dispersion and exposure	The appropriate type of chemical protective glove/safety glasses has to be selected specially	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN374) and eye protection. Respiratory protection not applicable	

3. Exposure estimation and reference to its source

3.1. Health

Long-term - systemic effects						
DNEL	Inhalation: 41,2 mg/m³ Dermal: 59 mg/kg bodyweight/day					
Contributing Scenario	inhalation exposure mg/m³	RCR	dermal exposure mg/kg bodyweight/day	RCR	Sum RCR	Assessment method Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC5	0,21	0,005	2,742	0,046	0,051	
PROC11	21,01	0,510	21,43	0,363	0,873	
PROC8a	0,21	0,005	2,742	0,046	0,051	
PROC8b	0,21	0,005	2,742	0,046	0,051	
PROC9	0,21	0,005	1,372	0,023	0,028	

3.2. Environment

Environmental exposure	Unit	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	mg/l	0,018	0,137	0,131	Used ECETOC TRA model
Marine water	mg/l	0,002	0,0137	0,146	Used ECETOC TRA model
Freshwater sediment	mg/kg dwt	0,068	0,117	0,581	Used ECETOC TRA model
Marine water sediment	mg/kg dwt	0,007	0,0117	0,598	Used ECETOC TRA model
Sewage treatment plant	mg/l	0,138	100	0,01	Used ECETOC TRA model
Soil	mg/kg dwt	0,00833	1	0,01	Used ECETOC TRA model

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

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels

4.2. Environment

Guidance - Environment	If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required

1. Exposure scenario KH2PO3 9.5

Consumer use of potassium phosphite (indoor)

ES Ref: KH2PO3 9.5 ES Type: Consumer Version: 1 Revision date: 04-07-2013	

Use descriptors	PC12 ERC8a
Processes, tasks, activities covered	Consumer use
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.1 Contributing scenario consumer end-use

Product characteristics

Physical form of product	Mixture
Concentration of substance in product	0,5 g/g

Operational conditions

Human factors not influenced by risk management	Not applicable	

Risk Management Measures

Conditions and measures related to information and behavioural advice to consumers	This material and its container must be disposed of in a safe way, and as per local legislation	
Conditions and measures related to personal protection, hygiene and health evaluation	Goggles	

2.2 Contributing scenario controlling environmental exposure

Assessment method	Used ECETOC TRA model

Product characteristics

Physical form of product	Solution

Operational conditions

Amounts used	Daily amount for wide dispersive uses	0,00275 tonnes/day
	Fraction of Regional tonnage used locally:	10 %
Environmental factors not influenced by risk management	Receiving surface water flow	> 18000 m³/d
Other given operational conditions affecting environmental exposure	Indoor use	

Risk Management Measures

Conditions and measures related to municipal sewage treatment plant	Municipal STP: Yes	0,013 % Effectiveness water
	Discharge rate of STP	> 2000 m³/d
	Application of STP sludge to agricultural soil: Yes	

3. Exposure estimation and reference to its source

3.1. Health

Long-term - systemic effects								
DNEL	Inhalation: 10,2 mg/m³ Dermal: 29 mg/kg bodyweight/day Oral: 2,9 mg/kg bodyweight/day							
Contributing Scenario	inhalation exposure mg/m³	RCR	dermal exposure mg/kg bodyweight/day	RCR	oral exposure mg/kg bodyweight/day	RCR	Sum RCR	Assessment method
	0	0	7,146	0,246	0,15	0,052	0,298	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model Oral: Used ECETOC TRA model

3.2. Environment

Environmental exposure	Unit	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	mg/l	0,005	0,137	0,036	Used ECETOC TRA model
Marine water	mg/l	0,00474	0,0137	0,346	Used ECETOC TRA model
Freshwater sediment	mg/kg dwt	0,018	0,117	0,154	Used ECETOC TRA model
Marine water sediment	mg/kg dwt	0,002	0,0117	0,171	Used ECETOC TRA model
Sewage treatment plant	mg/l	0,001	100	0,000	Used ECETOC TRA model
Soil	mg/kg dwt	0,0007705	1	0,001	Used ECETOC TRA model

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

4.1. Health

Guidance - Health	Ensure correct labeling of the product. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in section 2 are implemented

4.2. Environment

Guidance - Environment	No additional risk management measures required

1. Exposure scenario KH2PO3 9.6

Consumer use of potassium phosphite (outdoor)

ES Ref: KH2PO3 9.6 ES Type: Consumer Version: 1 Revision date: 04-07-2013	

Use descriptors	PC12 ERC8d
Processes, tasks, activities covered	Consumer use
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.1 Contributing scenario consumer end-use (PC12)

PC12	Fertilizers

Product characteristics

Physical form of product	Mixture
Concentration of substance in product	0,5 g/g

Operational conditions

Human factors not influenced by risk management	Not applicable	

Risk Management Measures

Conditions and measures related to information and behavioural advice to consumers	This material and its container must be disposed of in a safe way, and as per local legislation	
Conditions and measures related to personal protection, hygiene and health evaluation	Goggles	

2.2 Contributing scenario controlling environmental exposure (ERC8d)

PC12	Fertilizers
ERC8d	Wide dispersive outdoor use of processing aids in open systems
Assessment method	Used ECETOC TRA model

Product characteristics

Physical form of product	Mixture
Concentration of substance in product	0,5 g/g

Operational conditions

Amounts used	Daily amount for wide dispersive uses	0,0000275 tonnes/day
	Fraction of Regional tonnage used locally:	10 %
Environmental factors not influenced by risk management	Receiving surface water flow	18000 m³/d
Other given operational conditions affecting environmental exposure	Outdoor use	

Risk Management Measures

Conditions and measures related to municipal sewage treatment plant	Municipal STP: Yes	
	Discharge rate of STP	> 2000 m³/d
	Application of STP sludge to agricultural soil: Yes	

3. Exposure estimation and reference to its source

3.1. Health

Long-term - systemic effects								
DNEL	Inhalation: 10,2 mg/m³ Dermal: 29 mg/kg bodyweight/day Oral: 2,9 mg/kg bodyweight/day							
Contributing Scenario	inhalation exposure mg/m³	RCR	dermal exposure mg/kg bodyweight/day	RCR	oral exposure mg/kg bodyweight/day	RCR	Sum RCR	Assessment method
PC12	0	0	7,146	0,246	0,15	0,052	0,298	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model Oral: Used ECETOC TRA model

3.2. Environment

Environmental exposure	Unit	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	mg/l	0,005	0,137	0,036	Used ECETOC TRA model
Marine water	mg/l	0,00474	0,0137	0,346	Used ECETOC TRA model
Freshwater sediment	mg/kg dwt	0,018	0,117	0,154	Used ECETOC TRA model
Marine water sediment	mg/kg dwt	0,002	0,0117	0,171	Used ECETOC TRA model
Sewage treatment plant	mg/l	0,001	100	0,000	Used ECETOC TRA model
Soil	mg/kg dwt	0,0007705	1	0,001	Used ECETOC TRA model

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

4.1. Health

Guidance - Health	Ensure correct labeling of the product. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in section 2 are implemented

4.2. Environment

Guidance - Environment	No additional risk management measures required

1. Exposure scenario KH2PO3 9.7

Industrial use as intermediate

ES Ref: KH2PO3 9.7 ES Type: Worker Version: 1 Revision date: 04-07-2013	

Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15 SU9 ERC6a
Processes, tasks, activities covered	Industrial use
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.2 Contributing scenario controlling environmental exposure (ERC6a)

ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
Assessment method	Used ECETOC TRA model

Product characteristics

Physical form of product	Solution

Operational conditions

Amounts used	Maximum daily site tonnage (tonnes/day):	<= 10
	Annual site tonnage (tonnes/year):	<= 200
	Fraction of Regional tonnage used locally:	100 %
Environmental factors not influenced by risk management	Receiving surface water flow	

Risk Management Measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Remove waste in accordance with local and/or national regulations	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements	
Conditions and measures related to municipal sewage treatment plant	Municipal STP: Yes	
	Discharge rate of STP	> 2000 m³/d
	Application of STP sludge to agricultural soil: Yes	
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. Operational conditions and risk management measures (continue)

2.1.1 Contributing scenario controlling worker exposure (PROC1)

PROC1	Use in closed process, no likelihood of exposure

Product characteristics

Physical form of product	Solution

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	240 cm² one hand face only

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable,Respiratory protection not applicable. Wear safety glasses	

2.1.2 Contributing scenario controlling worker exposure (PROC2)

PROC2	Use in closed, continuous process with occasional controlled exposure

Product characteristics

Physical form of product	Solution

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C

	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable,Respiratory protection not applicable. Wear safety glasses	

2. Operational conditions and risk management measures (continue)

2.1.3 Contributing scenario controlling worker exposure (PROC3)

PROC3	Use in closed batch process (synthesis or formulation)

Product characteristics

Physical form of product	Solution

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	240 cm² one hand face only

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable. Respiratory protection not applicable. Wear safety glasses	

2.1.4 Contributing scenario controlling worker exposure (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises

Product characteristics

Physical form of product	Solution

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable. Respiratory protection not applicable. Wear safety glasses	

2. Operational conditions and risk management measures (continue)

2.1.5 Contributing scenario controlling worker exposure (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities

Product characteristics

Physical form of product	Solution

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	960 cm² two hands

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable. Respiratory protection not applicable. Wear safety glasses	

2.1.6 Contributing scenario controlling worker exposure (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics

Physical form of product	Solution
Concentration of substance in product	50 %

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	960 cm² two hands

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable. Respiratory protection not applicable. Wear safety glasses	

2. Operational conditions and risk management measures (continue)

2.1.7 Contributing scenario controlling worker exposure (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics

Physical form of product	Solution

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	480 cm² two hands face

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour
	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable. Respiratory protection not applicable. Wear safety glasses	

2.1.8 Contributing scenario controlling worker exposure (PROC15)

PROC15	Use as laboratory reagent

Product characteristics

Physical form of product	Solution

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other given operational conditions affecting workers exposure	Indoor use	
	Maximum process temperature	40 °C
	Exposed skin surface assumed:	240 cm² one hand face only

Risk Management Measures

Technical conditions and measures at process level (source) to prevent release	Good general ventilation should be sufficient to control worker exposure to airborne contaminants	3 air changes/hour

	Local exhaust ventilation: no	
Organisational measures to prevent /limit releases, dispersion and exposure	Keep good industrial hygiene	
Conditions and measures related to personal protection, hygiene and health evaluation	Hand or dermal protection not applicable,Respiratory protection not applicable,Wear safety glasses	

3. Exposure estimation and reference to its source

3.1. Health

Long-term - systemic effects						
DNEL	Inhalation: 41,2 mg/m³ Dermal: 59 mg/kg bodyweight/day					
Contributing Scenario	inhalation exposure mg/m³	RCR	dermal exposure mg/kg bodyweight/day	RCR	Sum RCR	Assessment method Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC1	0,05	0,001	0,034	0,001	0,002	
PROC2	0,5	0,012	1,37	0,023	0,035	
PROC3	0,5	0,012	0,69	0,012	0,024	
PROC4	0,5	0,012	6,86	0,116	0,128	
PROC8a	0,5	0,012	13,71	0,232	0,244	
PROC8b	0,5	0,012	13,71	0,232	0,244	
PROC9	0,5	0,012	6,86	0,116	0,128	
PROC15	0,5	0,012	0,34	0,006	0,018	

3.2. Environment

Environmental exposure	Unit	Exposure estimation	PNEC	RCR	Assessment method
Freshwater	mg/l	0,01	0,137	0,073	Used ECETOC TRA model
Marine water	mg/l	0,0009611	0,0137	0,070	Used ECETOC TRA model
Freshwater sediment	mg/kg dwt	0,036	0,117	0,308	Used ECETOC TRA model
Marine water sediment	mg/kg dwt	0,004	0,0117	0,342	Used ECETOC TRA model
Sewage treatment plant	mg/l	0,05	100	0,001	Used ECETOC TRA model
Soil	mg/kg dwt	0,0007931	1	0,001	Used ECETOC TRA model

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

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels

4.2. Environment

Guidance - Environment	If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required