

**Safety data sheet**  
**according to 1907/2006/EC and 453/2010/EC**

Printing date 18.01.2012

2-800-26-004-EU version 9

Revision: 16.01.2012

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

· **1.1 Product identifier**

· **Trade name:** ***Phosphoric acid 25-93%, food grade***

· **Synonyms** *Orthophosphoric acid 25-93%*

· **Article number:** 9733611322

· **CAS Number:**  
7664-38-2

· **EC number:**  
231-633-2

· **Index number:**  
015-011-00-6

· **Registration number** 01-2119485924-24-0005

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

*Relevant identified uses:*

*Food additives*

*Intermediate*

*Laboratory chemicals*

*Descaling compound/ Scale solvent*

*Corrosion inhibitors*

*pH-corrective agent*

*Processing aid*

*Degreasing agent*

*Fertilizer*

*Metal surface treatment*

*No uses advised against.*

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

· **Manufacturer/Supplier:**

*Rotem Amfert Negev Ltd.*

*PuriPhos Division*

*Mishor Rotem Plants*

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*Israel*

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*Supplier:*

*Marketing Europe (except Italy)*

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**Trade name: Phosphoric acid 25-93%, food grade**

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**1.4 Emergency telephone number:**

In Europe call: +31-205-815100 (24 hours a day, 365 days a year)

In Israel call: +972-8-6504777 (24 hours a day, 365 days a year)

+972-8-6504915

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008**



GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



C; Corrosive

R34: Causes burns.

**2.2 Label elements**

**Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

**Hazard pictograms**



GHS05

**Signal word Danger**

**Hazard statements**

H314 Causes severe skin burns and eye damage.

**Precautionary statements**

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

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

**2.3 Other hazards**

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**SECTION 3: Composition/information on ingredients**

**3.1 Substances**

**CAS No. Description**

7664-38-2 Orthophosphoric acid 25-93%

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- **EC number:** 231-633-2
- **Index number:** 015-011-00-6
- **SVHC** None

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**SECTION 4: First aid measures**

- **4.1 Description of first aid measures**
- **General information:**
  - Do not leave affected persons unattended.
  - Personal protection for the First Aider.
  - Involve doctor immediately.
  - Immediately remove any clothing soiled by the product.
  - In case of irregular breathing or respiratory arrest provide artificial respiration.
  - Provide oxygen treatment if affected person has difficulty breathing.
- **After inhalation:**
  - Take affected persons into fresh air and keep quiet.
  - Supply fresh air.
  - Call a doctor immediately.
- **After skin contact:**
  - Immediately wash with water and soap and rinse thoroughly.
  - Call a doctor immediately.
- **After eye contact:**
  - Rinse opened eye for several minutes under running water.
  - Call a doctor immediately.
- **After swallowing:**
  - Rinse out mouth and then drink plenty of water.
  - Do not induce vomiting; call for medical help immediately.
  - NOTE: Never give an unconscious person anything to drink.
- **4.2 Most important symptoms and effects, both acute and delayed**
  - Causes severe skin burns and eye damage.
  - Gastric or intestinal disorders
- **4.3 Indication of any immediate medical attention and special treatment needed**
  - Medical supervision for at least 48 hours.

**SECTION 5: Firefighting measures**

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**
  - The product is not flammable.
  - Use fire extinguishing methods suitable to surrounding conditions.
  - CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture**
  - In case of fire, the following can be released:
  - Phosphorus oxides (e.g. P<sub>2</sub>O<sub>5</sub>)
- **5.3 Advice for firefighters**
- **Protective equipment:**
  - Wear self-contained respiratory protective device.
  - Wear fully protective suit.
- **Additional information**
  - Cool endangered receptacles with water spray.

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Collect contaminated fire fighting water separately. It must not enter the sewage system.

**SECTION 6: Accidental release measures**

**· 6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Mount respiratory protective device.

**· 6.2 Environmental precautions:**

Dilute with plenty of water.

Do not allow to enter sewers/ surface or ground water.

**· 6.3 Methods and material for containment and cleaning up:**

Absorb liquid components with liquid-binding material.

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**· 6.4 Reference to other sections** See Section 8 for information on personal protection equipment.

**SECTION 7: Handling and storage**

**· 7.1 Precautions for safe handling**

Keep receptacles tightly sealed.

Ensure good ventilation/exhaustion at the workplace.

When diluting always pour product into water and not vice versa.

**· Information about fire - and explosion protection:** No special measures required.

**· 7.2 Conditions for safe storage, including any incompatibilities**

**· Requirements to be met by storerooms and receptacles:**

Store only in the original receptacle.

Use polyolefine receptacles.

Provide acid-resistant floor.

Suitable material for receptacles and pipes: Stainless steel.

**· Information about storage in one common storage facility:**

Store away from reducing agents.

Store away from metals.

Do not store together with alkalis (caustic solutions).

**· Further information about storage conditions:** Keep container tightly sealed.

**· Recommended storage temperature:**

Phosphoric acid, solution 93%: +35 - +42°C

85%: +28 - +42°C

80%: +15 - +42°C

<75%: no need in heating

(For other acid concentrations please use interpolation)

**· 7.3 Specific end use(s)** No further relevant information available.

**SECTION 8: Exposure controls/personal protection**

**· Additional information about design of technical facilities:** No further data; see item 7.

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· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

**7664-38-2 Orthophosphoric acid**

IOELV (EU)	Short-term value: 2 mg/m <sup>3</sup> Long-term value: 1 mg/m <sup>3</sup>
PEL (USA)	1 mg/m <sup>3</sup>
REL (USA)	Short-term value: 3 mg/m <sup>3</sup> Long-term value: 1 mg/m <sup>3</sup>
TLV (USA)	Short-term value: 3 mg/m <sup>3</sup> Long-term value: 1 mg/m <sup>3</sup>

· **DNELs**

For workers:

Long-term-local effects (inhalation) DNEL: 1 mg/m<sup>3</sup>

Acute local effects (inhalation) DNEL: 2 mg/m<sup>3</sup>

For general population:

Long-term-local effects (inhalation) DNEL: 0.73 mg/m<sup>3</sup>

· **PNECs**

Not applicable

Phosphoric acid toxicity is related to its acidic nature. A generic PNEC (water) cannot be derived as the effects are highly depending on the pH of the receiving water and its buffer capacity highly variable.

· **8.2 Exposure controls**

· **General protective and hygienic measures:**

The usual precautionary measures are to be adhered to when handling chemicals.

Do not eat or drink while working.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

· **Respiratory protection:**

Use suitable respiratory protective device only when aerosol or mist is formed.

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Short term filter device: ABEK+P

Filter A/P2

(EN 14387, EN 143)

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

· **Material of gloves**

Butyl rubber, BR (0.7 mm)

Nitrile rubber, NBR (0.4 mm)

Chloroprene rubber, CR (0.5 mm)

Fluorocarbon rubber (Viton)

Natural rubber, NR

Neoprene gloves

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed. (EN 374)

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- **Not suitable are gloves made of the following materials: Leather gloves**
- **Eye protection:**



Tightly sealed goggles (EN 166)

- **Body protection:**  
Acid resistant protective clothing  
Boots
- **Limitation and supervision of exposure into the environment**  
Avoid discharging of phosphoric acid solutions into municipal wastewater, surface water or soils, when such discharges are expected to cause significant pH changes.
- **Risk management measures**  
Regular control of the pH value previous to or during discharges into open waters is required. Discharges should be carried out as to minimize pH changes in receiving surface waters. In general most aquatic organisms can tolerate pH values in the range of 6-9.

**SECTION 9: Physical and chemical properties**

- **9.1 Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**

Form:	Solution
Colour:	Colourless
Odour:	Odourless
- **pH-value (23 g/l) at 20°C:** <1
- **Change in condition**

Melting point/Melting range:	-18 + 27°C (75-93% EC A.1)
Boiling point/Boiling range:	108 - 171°C (50-93%, 1013 hPa)
- **Flash point:** Not applicable.  
This product is inorganic substance.
- **Flammability (solid, gaseous):** Product is not flammable.  
(based on molecular structure)
- **Ignition temperature:** Not applicable
- **Decomposition temperature:** >200°C  
Thermal decomposition on losing water.
- **Self-igniting:** Product is not selfigniting.  
(based on molecular structure)
- **Danger of explosion:** Product does not present an explosion hazard.  
(based on molecular structure)
- **Explosion limits:** None
- **Oxidizing properties** None  
The substance does not contain any groups associated with oxidising properties.
- **Vapour pressure at 20°C:** 4 Pa
- **Relative density at 20°C** 1,574-1,791 (75-93%, EC A.3)
- **Vapour density** 3,4 (air=1)

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- **Evaporation rate** *Not determined.*
- **Solubility in / Miscibility with water at 20°C:** *>1000 g/l*
- **Segregation coefficient (n-octanol/water):** *Not applicable*  
*This substance is inorganic chemical.*
- **Viscosity at 20°C:** *1,1 - 600 mPa.s (5% - 105%)*
- **9.2 Other information** *No further relevant information available.*

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**SECTION 10: Stability and reactivity**

- **10.1 Reactivity**  
*Corrosive action on metals.*  
*Reacts with reducing agents.*  
*Reacts with alkali (lyes).*  
*Ammonia (NH<sub>3</sub>), fluorine, sulfur trioxide (SO<sub>3</sub>), phosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>).*
- **10.2 Chemical stability** *No decomposition if used and stored according to specifications.*
- **10.3 Possibility of hazardous reactions**  
*Reacts with metals forming hydrogen.*  
*Reacts with alkali (lyes).*
- **10.4 Conditions to avoid** *To avoid thermal decomposition do not overheat.*
- **10.5 Incompatible materials:**  
*Alkalis*  
*Metals*
- **10.6 Hazardous decomposition products:** *Phosphorus oxides (e.g. P<sub>2</sub>O<sub>5</sub>)*

**SECTION 11: Toxicological information**

- **11.1 Information on toxicological effects**
- **Acute toxicity:**

- **LD/LC50 values relevant for classification:**

Oral	LD50	2600 mg/kg (rat) (equivalent to OECD 423)
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- **Specific symptoms in biological assay:**  
*Phosphoric acid is classified as corrosive to the skin, therefore, no need to perform an acute dermal and an acute inhalative toxicity tests.*
- **Primary irritant effect:**
- **on the skin:** *Caustic effect on skin and mu*
- **on the eye:** *Strong caustic effect.*
- **Sensitization:**  
*Phosphoric acid is classified as skin corrosive, thus a further assessment for skin sensitization is not necessary.*
- **Additional toxicological information:**  
*Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.*
- **Toxicokinetics, metabolism and distribution**  
*This substance is not considered to have bioaccumulative potential as it is highly soluble in water and phosphate levels in the body are regulated via homeostasis.*

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For risk assessment purposes oral absorption is considered to be 50-100%, inhalation absorption 100% and dermal absorption 50-100%.

Wide distribution throughout the body is to be expected and excretion will be predominantly via urine. Supporting studies show increased phosphorus retention in bone and increased urinary phosphorus excretion after prolonged dietary administration of phosphoric acid and support the initial toxicokinetic assessment.

**· Repeated dose toxicity**

Oral	NOAEL	250 mg/kg bw/day (rat) (OECD 422 (subchronic)) should not be classified for STOT - repeated exposure
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**· CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

**· Mutagenicity:**

None  
(acc. to OECD 471, OECD 473, OECD 476 tests)

**· Carcinogenicity:**

no data available  
(no carcinogenicity study needs to be performed as this substance is not genotoxic)

**· Toxicity for reproduction:**

no classification is necessary  
reproductive toxicity: NOAEL ≥ 500 mg/kg bw/day ; rat; oral (OECD 422)  
developmental toxicity: NOAEL ≥ 410 mg/kg bw/day ; rat; oral  
maternal toxicity: NOAEL ≥ 410 mg/kg bw/day ; rat; oral (equivalent to OECD 414)

**SECTION 12: Ecological information**

**· 12.1 Toxicity**

**· Aquatic toxicity:**

Phosphoric acid toxicity is related to its acidic nature and, therefore, is more related to concentration than to dose.

EC50/48 h (static)	>100 mg/L (Daphnia magna) (OECD 202, freshwater)
EC50/72 h (static)	>100 mg/L (algae) (OECD 201, freshwater)
median lethal pH 96h	3-3,25 (Bluegill fish) fish mortality is caused by low pH values

**· 12.2 Persistence and degradability**

The substance is inorganic; therefore no biodegradation tests are applicable.  
Phosphoric acid dissociates in water into H<sub>3</sub>O<sup>+</sup>, H<sub>2</sub>PO<sub>4</sub><sup>-</sup>, HPO<sub>4</sub><sup>-</sup> ions, which cannot be further degraded.

**· Other information:**

The product should not get in high quantities into waste water because it may act as a plant nutrient and cause eutrophication.

**· 12.3 Bioaccumulative potential**

Does not accumulate in organisms  
This substance is highly water soluble and dissociating.  
Phosphoric acid dissociates in water into H<sub>3</sub>O<sup>+</sup>, H<sub>2</sub>PO<sub>4</sub><sup>-</sup>, HPO<sub>4</sub><sup>-</sup> ions, which are ubiquitous in the environment.  
Phosphoric acid is absorbed in form of phosphate anions. This anion is an essential component of the body.

**· 12.4 Mobility in soil**

This substance is highly water soluble and dissociating.  
When spilled onto soil, phosphoric acid will infiltrate downward and will be partially neutralized by dissolving some of the soil material. On reaching the ground table phosphoric acid will be dispersed and diluted. Therefore, the environmental assessment should be limited to the aquatic compartment.

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**Behaviour in sewage processing plants:**

Phosphoric acid is of low toxicity to microorganisms, since in sewage treatment plants the microorganisms are essentially exposed to mainly  $H_2PO_4^-$  and  $HPO_4^{2-}$  ions, which are an essential nutrient for them, and not to parent phosphoric acid or to low pH values.

**12.5 Results of PBT and vPvB assessment**

**PBT:** No assessment is required for inorganic substances.

**vPvB:** No assessment is required for inorganic substances.

**12.6 Other adverse effects**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

**Recommendation**

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Disposal must be made according to official regulations.

Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.

**European waste catalogue**

06 01 04\* phosphoric and phosphorous acid

**Uncleaned packaging:**

**Recommendation:**

Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

Packagings that may not be cleansed are to be disposed of in the same manner as the product.

Disposal must be made in accordance with Local Authority requirements.

**Recommended cleansing agents:** Water, if necessary together with cleansing agents.

**SECTION 14: Transport information**

**14.1 UN-Number**

**DOT, ADR, IMDG, IATA**

UN1805

**14.2 UN proper shipping name**

**DOT, IMDG, IATA**

PHOSPHORIC ACID, SOLUTION  
1805 PHOSPHORIC ACID, SOLUTION

**ADR**

**14.3 Transport hazard class(es)**

**DOT, IMDG, IATA**



**Class**

8 Corrosive substances.

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· **Label** 8  
· **ADR**



· **Class** 8 (C1) Corrosive substances.  
· **Label** 8  
· **14.4 Packing group**  
· **DOT, ADR, IMDG, IATA** III  
· **14.5 Environmental hazards:** None  
· **Marine pollutant:** No  
· **14.6 Special precautions for user** Warning: Corrosive substances.  
· **Danger code (Kemler):** 80  
· **EMS Number:** F-A,S-B  
· **Segregation groups** Acids  
· **14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** pollution category : z  
ship type : 3

· **Transport/Additional information:**

· **ADR**  
· **Tunnel restriction code** E  
· **UN "Model Regulation":** UN1805, PHOSPHORIC ACID, SOLUTION, 8, III

**SECTION 15: Regulatory information**

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
Directive 2000/60 EC (phosphates)
- **Labelling according to Regulation (EC) No 1272/2008**  
The substance is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS05

- **Signal word** Danger
- **Hazard statements**  
H314 Causes severe skin burns and eye damage.
- **Precautionary statements**  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

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- **National regulations:**
- **Information about limitation of use:** Employment restrictions concerning juveniles must be observed.
- **Other regulations, limitations and prohibitive regulations**
- **Substances of very high concern (SVHC) according to REACH, Article 57 None**
- **Registration status (Chemical Inventories listing) :**
  - United States (TSCA) : listed
  - Canada (DSL) : listed
  - Australia (AICS) : listed
  - Japan (ENCS) : listed
  - Korea (KECI) : listed
  - Philippines (PICCS) : listed
  - China (IECSC) : listed
  - NTP (National Toxicology Program) : Substance is not listed
  - IARC (International Agency for Research on Cancer) : Substance is not listed
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

**SECTION 16: Other information**

- **Department issuing MSDS:** EHS UNIT in ISRAEL
- **Abbreviations and acronyms:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - ICAO: International Civil Aviation Organization
  - GHS: Globally Harmonized System of Classification and Labelling of Chemicals
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - DNEL: Derived No-Effect Level (REACH)
  - PNEC: Predicted No-Effect Concentration (REACH)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - NOAEL: No Observable Adverse Effect Level
  - STOT: Single Target Organ Toxicity
  - OECD: Organisation for Economic Co-operation and Development
  - RCR: Risk Characterisation Ratio
  - PRE: Personal Respiratory Equipment
  - LEV: Local Exhaust Ventilation

- **Sources**
  - REACH Dossier, 2010
  - REACH CSR, 2010

- **\* Data compared to the previous version altered.**

Reason for revision: Compliance with Reg. 453/2010 EC, amending Reg. 1907/2006 EC.

The sections where alterations took place are marked with an asterisk in the left border

- **Disclaimer**

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*INFORMATION REFERS.*

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**SECTION 17: Annex: Exposure scenario I**

- **Short title of the exposure scenario** Industrial use of phosphoric acid
- **Sector of Use**
  - SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
  - SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
  - SU9 Manufacture of fine chemicals
  - SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
  - SU15 Manufacture of fabricated metal products, except machinery and equipment
  - SU16 Manufacture of computer, electronic and optical products, electrical equipment
  - SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
- **Product category**
  - PC0 Other
  - PC1 Adhesives, sealants
  - PC7 Base metals and alloys
  - PC9a Coatings and paints, thinners, paint removers
  - PC9b Fillers, putties, plasters, modelling clay
  - PC13 Fuels
  - PC14 Metal surface treatment products, including galvanic and electroplating products
  - PC19 Intermediate
  - PC20 Products such as ph-regulators, flocculants, precipitants, neutralization agents
  - PC21 Laboratory chemicals
  - PC23 Leather tanning, dye, finishing, impregnation and care products
  - SU24 Scientific research and development
  - PC25 Metal working fluids
  - PC26 Paper and board dye, finishing and impregnation products: including bleaches and other processing aids
  - PC32 Polymer preparations and compounds
  - PC34 Textile dyes, finishing and impregnating products; including bleaches and other processing aids
  - PC35 Washing and cleaning products (including solvent based products)
  - PC37 Water treatment chemicals
  - PC39 Cosmetics, personal care products
- **Process category**
  - PROC1 Use in closed process, no likelihood of exposure
  - PROC2 Use in closed, continuous process with occasional controlled exposure
  - PROC3 Use in closed batch process (synthesis or formulation)
  - PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises
  - PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
  - PROC7 Industrial spraying
  - 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)
  - PROC10 Roller application or brushing
  - PROC13 Treatment of articles by dipping and pouring
  - PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation
  - PROC15 Use as laboratory reagent
  - PROC19 Hand-mixing with intimate contact and only PPE available
- **Article category** Not applicable

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· **Environmental release category**

ERC2 Formulation of preparations

ERC3 Formulation in materials

ERC4 Industrial use of processing aids in processes and products, not becoming part of articles

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

ERC6b Industrial use of reactive processing aids

ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

· **Description of the activities / processes covered in the Exposure Scenario**

See section 1 of the annex to the Safety Data Sheet.

· **Conditions of use**

· **Duration and frequency** 8hrs (full working shift).

· **Physical parameters**

· **Physical state**

Liquid

Solution

In water

· **Concentration of the substance in the mixture** 10-100%

· **Used amount per time or activity** Not applicable

· **Other operational conditions**

· **Other operational conditions affecting worker exposure** Indoor application.

· **Risk management measures**

· **Worker protection**

· **Organisational protective measures**

The appropriate type of chemical protective glove/safety glasses has to be selected specifically.

Deploy only trained chemical workers.

Washing facilities / Water for cleaning eyes and skin should be available.

Provide emergency eye wash station and mark its location clearly.

Keep good industrial hygiene.

Keep away from food, beverages and animal feed.

· **Technical protective measures**

Store in cool, dry place in tightly closed receptacles.

Ensure good ventilation/exhaustion at the workplace.

Use closed/ automated systems or covering of open containers (e.g. screens) to avoid irritating mists, sprayings and potential splashes. (Good practice)

· **Personal protective measures**

Avoid contact with the eyes and skin.

Do not inhale gases / fumes / aerosols.

Wash hands before breaks and at the end of work.

Keep work clothes separate.

Use suitable respiratory protective device only when aerosol or mist is formed.

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Short term filter device: ABEK+P

Filter A/P2

(EN 14387, EN 143)

Wear suitable protective gloves (EN 374) and protective goggles /face protection (EN 166) during work.

Acid resistant protective clothing

Boots

· **Environmental protection measures**

· **Air** Not applicable

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· **Water**

Regular control of the pH value previous to or during discharges into open waters is required. Discharges should be carried out as to minimize pH changes in receiving surface waters. In general most aquatic organisms can tolerate pH values in the range of 6-9.

· **Soil** No special measures required.

· **Disposal measures** Disposal must be made according to official regulations.

· **Disposal procedures**

Discharges should be carried out as to minimize pH changes in receiving surface waters.

Phosphates should be removed from industrial wastewater before it is released to the environment.

· **Waste type**

Liquid product residues

Aqueous solution

Uncleaned packaging

· **Exposure estimation**

· **Worker (oral)** No significant oral exposure

· **Worker (dermal)** No significant dermal exposure

· **Worker (inhalation)**

The exposure estimation was carried out in accordance with TIER 1: MEASE and Advanced REACH Tool ver. 1.0 (ART Consortium 2010)

H <sub>3</sub> PO <sub>4</sub> , liquid						
Process Category (PROC)	LEV (% efficiency)	Duration (hours)	PRE (% efficiency)	Content (% w/w)	Inhalation exposure (mg/m <sup>3</sup> )	RCR
PROC 1	No	> 4	No	25 - 100	0.04	0.04
PROC 2	medium	> 4	No	25 - 100	0.721	0.721
PROC 3	medium	> 4	75%	25 - 100	0.541	0.541
PROC 4	medium	> 4	75%	25 - 100	0.902	0.902
PROC 5	medium	> 4	75%	25 - 100	0.902	0.902
PROC 7 (ART)	90%	> 4	50%*	25 - 100	0.55	0.55
PROC 8a (ART)	50%	> 4	No	25 - 100	0.49	0.49
PROC 8b	medium	> 4	75%	25 - 100	0.902	0.902
PROC 9	medium	> 4	75%	25 - 100	0.902	0.902
PROC 10 (ART)	50%	> 4	No	25 - 100	0.55	0.55
PROC 13 (ART)	50%	> 4	No	25 - 100	0.0054	0.0054
PROC 14	medium	> 4	75%	25 - 100	0.902	0.902
PROC 15	medium	> 4	75%	25 - 100	0.902	0.902
PROC 19 (ART)	50%	> 4	No	25 - 100	0.0054	0.0054

\* Secondary containment

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**In water**

Phosphoric acid, aqueous solutions						
Process Category (PROC)	LEV	Duration (hours)	PRE (% efficiency)	Content (% w/w)	Inhalation exposure (mg/m <sup>3</sup> )	RCR
PROC 1	No	> 4	No	25 - 100	0.001	0.001
PROC 2	No	> 4	No	25 - 100	0.001	0.001
PROC 3	No	> 4	No	25 - 100	0.01	0.01
PROC 4	No	> 4	No	25 - 100	0.05	0.05
PROC 5	No	> 4	No	25 - 100	0.05	0.05
PROC 7 (ART)	Primary containment 90%	> 4	Secondary containment: LEV (50%)	25 - 100	0.55	0.55
PROC 8a	No	> 4	No	25 - 100	0.05	0.05
PROC 8b	No	> 4	No	25 - 100	0.01	0.01
PROC 9	No	> 4	No	25 - 100	0.01	0.01
PROC 10	No	> 4	No	25 - 100	0.05	0.05
PROC 13	No	> 4	No	25 - 100	0.01	0.01
PROC 14	No	> 4	No	25 - 100	0.01	0.01
PROC 15	No	> 4	No	25 - 100	0.01	0.01
PROC 19	No	> 4	No	25 - 100	0.05	0.05

**Environment**

An environmental assessment has not been performed as the substance/mixture does not meet the criteria for being classified as dangerous for the environment.

Water: Phosphoric acid dissociates in water into  $H_3O^+$ ,  $H_2PO_4^-$ ,  $HPO_4^{2-}$  ions.

Regular control of the pH value previous to or during discharges into open waters is required. Discharges should be carried out as to minimize pH changes in receiving surface waters. In general most aquatic organisms can tolerate pH values in the range of 6-9.

Soil: No exposure

Purification plant: No exposure

Humans via environment: No exposure

**Consumer** Not applicable.**Guidance for downstream users**

Whether the downstream user uses the substance / the mixture within the scope of the Exposure Scenario can be determined by means of a technical assessment.

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**SECTION 17: Annex: Exposure scenario 2**

- **Short title of the exposure scenario** Phosphoric acid - professional use
- **Sector of Use**
  - SU1 Agriculture, forestry, fishery
  - SU19 Building and construction work
  - SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
  - SU24 Scientific research and development
- **Product category**
  - PC9a Coatings and paints, thinners, paint removers
  - PC9b Fillers, putties, plasters, modelling clay
  - PC12 Fertilizers
  - PC14 Metal surface treatment products, including galvanic and electroplating products
  - PC15 Non-metal-surface treatment products
  - PC21 Laboratory chemicals
  - PC31 Polishes and wax blends
  - PC35 Washing and cleaning products (including solvent based products)
  - PC37 Water treatment chemicals
  - PC38 Welding and soldering products (with flux coatings or flux cores.), flux products
- **Process category**
  - 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)
  - PROC10 Roller application or brushing
  - PROC11 Non industrial spraying
  - PROC13 Treatment of articles by dipping and pouring
  - PROC15 Use as laboratory reagent
  - PROC19 Hand-mixing with intimate contact and only PPE available
- **Article category** Not applicable
- **Environmental release category**
  - ERC8a Wide dispersive indoor use of processing aids in open systems
  - ERC8b Wide dispersive indoor use of reactive substances in open systems
  - ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
  - ERC8e Wide dispersive outdoor use of reactive substances in open systems
- **Conditions of use** Customary application according to section 1.
- **Duration and frequency** > 4 hrs (>half working shift).
- **Environment** Indoor and outdoor applications
- **Physical parameters**
- **Physical state**
  - Liquid
  - In water
- **Concentration of the substance in the mixture** 5-25%
- **Used amount per time or activity** According to directions for use.
- **Risk management measures**
- **Worker protection**
- **Organisational protective measures**
  - The appropriate type of chemical protective glove/safety glasses has to be selected specifically.
  - Deploy only trained chemical workers.

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Washing facilities / Water for cleaning eyes and skin should be available.

Provide emergency eye wash station and mark its location clearly.

Keep good industrial hygiene.

Keep away from food, beverages and animal feed.

· **Technical protective measures**

Store in cool, dry place in tightly closed receptacles.

Use closed/ automated systems or covering of open containers (e.g. screens) to avoid irritating mists, sprayings and potential splashes. (Good practice)

· **Personal protective measures**

Do not inhale gases / fumes / aerosols.

Use respiratory protective device against the effects of fumes/dust/aerosol.

Avoid contact with the eyes and skin.

Wear suitable protective gloves (EN 374) and protective goggles /face protection (EN 166) during work.

Material of gloves: Chloroprene, Neoprene or PVC gloves.

Acid resistant protective clothing

Boots

Keep work clothes separate.

· **Environmental protection measures**

· **Air** Not applicable

· **Water**

Regular control of the pH value previous to or during discharges into open waters is required. Discharges should be carried out as to minimize pH changes in receiving surface waters. In general most aquatic organisms can tolerate pH values in the range of 6-9.

· **Soil** No special measures required.

· **Disposal measures** Disposal must be made according to official regulations.

· **Disposal procedures**

Phosphates should be removed from industrial wastewater before it is released to the environment.

Discharges should be carried out as to minimize pH changes in receiving surface waters.

· **Waste type**

Liquid product residues

Solid product residues

Uncleaned packaging

· **Exposure estimation**

· **Worker (oral)** No significant oral exposure

· **Worker (dermal)** No significant dermal exposure

· **Worker (inhalation)**

The exposure estimation was carried out in accordance with:

TIER 1 (all uses): MEASE

TIER 2 (spray applications) : UK POEM

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*Risk adequately controlled.*

Process Category (PROC)	Location	LEV (% efficiency)	Duration (hours)	PRE (% efficiency)	Content (% w/w)	Inhalation exposure (mg/m <sup>3</sup> )	RCR
PROC 5	Indoors	Medium	> 4	90%	5 - 25	0.541	0.541
	Outdoors	Ventilation effect	> 4	95%	5 - 25	0.857	0.857
PROC 8a (MEASE)	Indoors	Medium	> 4	95%	5 - 25	0.676	0.676
PROC 8a (ART)	Outdoors	Ventilation effect	> 4	No	5 - 25	0.54	0.54
PROC 8b	Indoors	Medium	> 4	90%	5 - 25	0.541	0.541
	Outdoors	Ventilation effect	> 4	95%	5 - 25	0.857	0.857
PROC 9	Indoors	Medium	> 4	90%	5 - 25	0.541	0.541
	Outdoors	Ventilation effect	> 4	95%	5 - 25	0.857	0.857
PROC 10 (MEASE)	Indoors	Medium	> 4	95%	5 - 25	0.676	0.676
PROC 10 (ART)	Outdoors	Ventilation effect	> 4	No	5 - 25	0.59	0.59
PROC 13	Indoors	Medium	> 4	90%	5 - 25	0.541	0.541
	Outdoors	Ventilation effect	> 4	95%	5 - 25	0.857	0.857
PROC15	Indoors	Medium	> 4	95%	5 - 25	0.676	0.676
PROC 19	Indoors	No	> 4	No	5 - 25	0.3	0.3
	Outdoors	Ventilation effect	> 4	No	5 - 25	0.3	0.3

**Spray application**

Tier 2	Tractor-mounted/trailed boom sprayer: hydraulic nozzles	Tractor-mounted/trailed boom sprayer: rotary atomisers	Tractor-mounted/trailed broadcast air-assisted sprayer: 500 L/ha	Hand-held sprayer (15 L tank): hydraulic nozzles. Outdoor, low level target	Hand-held rotary atomiser equipment (2.5 L tank). Outdoor, low level target	Hand-held rotary atomiser equipment (2.5 L tank). Outdoor, high level target	Unit
Long-term exposure concentration of H <sub>3</sub> PO <sub>4</sub>	0.06	0.03	0.3	0.12	0.06	0.06	mg/m <sup>3</sup>
RCR	0.06	0.03	0.3	0.12	0.06	0.06	

**Environment**

*An environmental assessment has not been performed as the substance/mixture does not meet the criteria for being classified as dangerous for the environment.*

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*Water: Phosphoric acid dissociates in water into  $H_3O^+$ ,  $H_2PO_4^-$ ,  $HPO_4^{2-}$  ions.*

*Soil: No exposure*

*Purification plant: No exposure*

*Humans via environment: No exposure*

**Guidance for downstream users**

*No additional risk management measures (RMMs), besides those that are mentioned above, are needed to guarantee safe use for workers.*

*For the risk assessment, the tools recommended by ECHA can be used.*

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**SECTION 17: Annex: Exposure scenario 3**

- **Short title of the exposure scenario** Consumer uses
- **Sector of Use SU21** Consumer uses: Private households / general public / consumers
- **Product category**
  - PC12 Fertilizers
  - PC31 Polishes and wax blends
  - PC35 Washing and cleaning products (including solvent based products)
  - PC38 Welding and soldering products (with flux coatings or flux cores.), flux products
  - PC39 Cosmetics, personal care products
- **Process category** Not applicable
- **Article category** Not applicable
- **Environmental release category**
  - ERC8a Wide dispersive indoor use of processing aids in open systems
  - ERC8b Wide dispersive indoor use of reactive substances in open systems
  - ERC8d Wide dispersive outdoor use of processing aids in open systems
  - ERC8e Wide dispersive outdoor use of reactive substances in open systems
- **Physical parameters**
- **Physical state**
  - Liquid
  - Solid
- **Concentration of the substance in the mixture** 5-15%
- **Risk management measures**
- **Measures for consumer protection**
  - Ensure adequate labelling.
  - Keep out of reach of children.
  - Use packaging with child-proof cap.
  - Provide instructions for use.
- **Environmental protection measures** No special measures required.
- **Disposal measures**
- **Disposal procedures**
  - Dispose of uncleaned packaging with household waste.
  - Batteries: bring to a collection point for further recycling.
- **Waste type**
  - Partially emptied and uncleaned packaging
  - Batteries.
- **Exposure estimation**
- **Environment**
  - An environmental assessment has not been performed as the substance/mixture does not meet the criteria for being classified as dangerous for the environment.
  - Water: Phosphoric acid dissociates in water into  $H_3O^+$ ,  $H_2PO_4^-$ ,  $HPO_4^{2-}$  ions.
  - Soil: No exposure
  - Purification plant: No exposure
  - Humans via environment: No exposure
- **Consumer**
  - The exposure estimation was carried out in accordance with:
  - TIER 2 (spray applications, fertilizers) : UK POEM
  - TIER 2 (spray applications, lime scale removal) : ConsExpo (RIVM., 2006)

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*Risk adequately controlled.*

Spray & lime scale removal applications						
Consumer use	Content (% w/w)	Inhalation exposure (mg/m <sup>3</sup> )	RCR	Duration	Frequency	Conditions
Private spraying of liquid fertiliser	<10	0.01	0.014	30 min/day		The inhalation volume of the consumer: 26 m <sup>3</sup> /day, the body weight of the consumer 60 kg
Use of liquid bathroom cleaners	<15	0.0687	0.094	20 min	4 times/ year	110g product/ application
Use of toilet cleaners	<15	0.085	0.116	20 min	260 times/ year	110g product/ application

· **Guidance for downstream users**

*No additional risk management measures (RMMs), besides those that are mentioned above, are needed to guarantee safe use for consumers.*

· **Additional good practices advice beyond the REACH CSA:**

*Wear protective gloves/eye protection.*

*Wear work clothing with long sleeves.*

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