

Safety Data Sheet

acc. to OSHA and ANSI

Printing date 11/14/2017

2-800-26-003-US version 1

Reviewed on 11/14/2017

1 Identification

- **Product identifier**
- **Trade name:** Phosphoric acid 4D grade (P2O5 50-56%)
- **Synonyms** Orthophosphoric acid (69-77%)
- **CAS Number:**
7664-38-2
- **Application of the substance / the mixture**
Intermediate
Laboratory chemicals
Descaling compound/ Scale solvent
Corrosion inhibitors
pH-corrective agent
Processing aid
Degreasing agent
Fertilizer
Metal surface treatment
- **Uses advised against** No uses advised against.
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Rotem Amfert Negev Ltd.
Mishor Rotem Plants,
M.P. Arava 8680600
ISRAEL
Phone: +972-8-6465343
E-mail: Amit.Paz@icl-group.com
- **Emergency telephone number:** CHEMTREC : 1-800-424-9300

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS05 Corrosion

Met. Corr.1 H290 May be corrosive to metals.

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



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

- **GHS label elements** The substance is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS05



GHS07

- **Signal word** Danger
- **Hazard statements**
H290 May be corrosive to metals.
H302 Harmful if swallowed.

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H314 Causes severe skin burns and eye damage.

· **Precautionary statements**

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

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

P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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

· **Hazard description:**

· **WHMIS-symbols:**

E - Corrosive material



· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**

HEALTH	3	Health = 3
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

· **Other hazards** None

3 Composition/information on ingredients

· **Chemical characterization: Substances**

· **CAS No. Description**

7664-38-2 Orthophosphoric acid

4 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.

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- **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; immediately call for medical help.
NOTE: Never give an unconscious person anything to drink.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed**
Causes severe skin burns and eye damage.
Gastric or intestinal disorders
- **Indication of any immediate medical attention and special treatment needed** Medical supervision for at least 48 hours.

5 Fire-fighting measures

- **Suitable extinguishing agents:**
The product is not flammable.
Use fire fighting measures that suit the environment.
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Phosphorus oxides (e.g. P₂O₅)
- **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
- **Additional information**
Cool endangered receptacles with water spray.
Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Mount respiratory protective device.
- **Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
- **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.
- **Reference to other sections** See Section 8 for information on personal protection equipment.

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7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Keep receptacles tightly sealed.
Ensure good ventilation/exhaustion at the workplace.
When diluting, always stir the product into standing water, not water to product.
- **Information about protection against explosions and fires:** No special measures required.
- **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 receptacle 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)
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Components with limit values that require monitoring at the workplace:**

7664-38-2 Orthophosphoric acid

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

- **Personal protective equipment:**
- **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
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.
- **Breathing equipment:**
Use suitable respiratory protective device only when aerosol or mist is formed.

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In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

Short term filter device:

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)

Chloroprene rubber, CR (0.5 mm)

Fluorocarbon rubber (Viton) (0.4 mm)

Natural rubber, NR (0.5 mm)

Neoprene gloves (0.5 mm)

· **Penetration time of glove material** ≥ 8 h

· **Not suitable are gloves made of the following materials:** Leather gloves

· **Eye protection:**



Tightly sealed goggles

· **Body protection:**

Acid resistant protective clothing

Boots

9 Physical and chemical properties

· **Appearance:**

Form:

Solution

Color:

Light green

· **Odor:**

Odorless

· **pH-value (23 g/l) at 20 °C (68 °F):**

<1

· **Change in condition**

Melting point/Melting range:

-18 +27 °C (-0 +81 °F) (EC A.1)

Boiling point/Boiling range:

138 - 171 °C (280 - 340 °F) (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 (>392 °F)

· **Auto igniting:**

Product is not selfigniting.

(based on molecular structure)

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- **Danger of explosion:** Product does not present an explosion hazard.
(based on molecular structure)
- **Explosion limits:** None
- **Oxidizing properties:** The substance does not contain any groups associated with oxidising properties.
- **Vapor pressure at 20 °C (68 °F):** 4 Pa
- **Relative density at 20 °C (68 °F):** 1.550-1.685 g/cm³ (12.935-14.061 lbs/gal) (EC A.3)
- **Vapor density:** 3.4 (air=1)
- **Evaporation rate:** Not determined.
- **Solubility in / Miscibility with Water at 20 °C (68 °F):** >1000 g/l
- **Partition coefficient (n-octanol/water):** Not applicable
This substance is inorganic chemical.
- **Viscosity at 20 °C (68 °F):** 1.1 - 600 mPa.s (5% - 105%)
- **Other information:** No further relevant information available.

10 Stability and reactivity

- **Reactivity:**
Corrosive action on metals.
Reacts with reducing agents.
Reacts with alkali (lyes).
Ammonia (NH₃), fluorine, sulfur trioxide (SO₃), phosphorus pentoxide (P₂O₅).
- **Chemical stability:** No decomposition if used and stored according to specifications.
- **Possibility of hazardous reactions:**
Reacts with metals forming hydrogen.
Reacts with alkali (lyes).
- **Conditions to avoid:** To avoid thermal decomposition do not overheat.
- **Incompatible materials:**
Alkalis
Metals
- **Hazardous decomposition products:** Phosphorus oxides (e.g. P2O5)

11 Toxicological information

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

· **LD/LC50 values that are relevant for classification:**

7664-38-2 Orthophosphoric acid

Oral | LD50 | >300, ≤2000 mg/kg (rat) (equivalent to OECD 423)

- **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:** Strong caustic effect.
- **on the eye:** Strong caustic effect.

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· **Sensitization:**

Phosphoric acid is classified as skin corrosive, thus a further assessment for sensitization is not necessary.

Respiratory sensitization:

no data available

· **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.

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.

· **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)

· **STOT-single exposure** Based on available data, the classification criteria are not met.

· **STOT-repeated exposure**

Based on available data, the classification criteria are not met.

7664-38-2 Orthophosphoric acid

Oral	NOAEL	250 mg/kg bw/day (rat) (OECD 422 (subchronic)) should not be classified for STOT - repeated exposure
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12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**

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

7664-38-2 Orthophosphoric acid

EC50/48 h (static)	>100 mg/L (Daphnia magna) (OECD 202, freshwater)
EC50/72 h (static)	>100 mg/L (algae) (OECD 201, freshwater, 72 h NOEC=100 mg/L)
median lethal pH 96h	3-3.25 (Bluegill fish) fish mortality is caused by low pH values

· **Persistence and degradability**

The substance is inorganic; therefore no biodegradation tests are applicable.

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

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· **Behavior in environmental systems:**

· **Bioaccumulative potential**

Does not accumulate in organisms

This substance is highly water soluble and dissociating.

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

· **Mobility in soil**

This substance is highly water soluble and dissociating.

When spilled onto soil, polyphosphoric acid will infiltrate downward and will be partially neutralized by dissolving some of the soil material. On reaching the ground table polyphosphoric acid will be dispersed and diluted. Therefore, the environmental assessment should be limited to the aquatic compartment.

· **Ecotoxicological effects:**

· **Behavior 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 polyphosphoric acid or to low pH values.

· **Results of PBT and vPvB assessment**

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

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

· **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.

13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:**

Must not be disposed of 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.

· **Uncleaned packagings:**

· **Recommendation:**

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

Packagings that cannot 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 agent:** Water, if necessary with cleansing agents.

14 Transport information

· **UN-Number**

· **DOT, ADR, IMDG, IATA**

UN1805

· **UN proper shipping name**

· **ADR**

1805 Phosphoric acid solution

· **IMDG, IATA**

PHOSPHORIC ACID, SOLUTION

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· **Transport hazard class(es)**

· **DOT**



· **Class** 8 Corrosive substances
 · **Label** 8
 · **ADR**



· **Class** 8 (C1) Corrosive substances
 · **Label** 8
 · **IMDG, IATA**



· **Class** 8 Corrosive substances
 · **Label** 8
 · **Packing group**
 · **DOT, ADR, IMDG, IATA** III
 · **Environmental hazards:** None
 · **Marine pollutant:** No
 · **Special precautions for user** Warning: Corrosive substances
 · **Danger code (Kemler):** 80
 · **EMS Number:** F-A,S-B
 · **Segregation groups** Acids
 · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** pollution category : z
 ship type : 3
 UN "Model Regulation": UN 1805 PHOSPHORIC ACID SOLUTION, 8, III

15 Regulatory information

- **Sara**
- **Section 355 (extremely hazardous substances):** Substance is not listed.
- **Section 313 (Specific toxic chemical listings):** Substance is listed.
- **TSCA (Toxic Substances Control Act):** Substance is listed.
- **Proposition 65**
- **Chemicals known to cause cancer:** Substance is not listed.
- **Chemicals known to cause reproductive toxicity for females:** Substance is not listed.
- **Chemicals known to cause reproductive toxicity for males:** Substance is not listed.
- **Chemicals known to cause developmental toxicity:** Substance is not listed.
- **Carcinogenicity categories**
- **EPA (Environmental Protection Agency)** Substance is not listed.
- **IARC (International Agency for Research on Cancer)** Substance is not listed.

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- **NTP (National Toxicology Program)** Substance is not listed.
- **TLV (Threshold Limit Value established by ACGIH)** Substance is not listed.
- **NIOSH-Ca (National Institute for Occupational Safety and Health)** Substance is not listed.
- **Canadian substance listings:**
- **Canadian Domestic Substances List (DSL)** Substance is listed.
- **GHS label elements** The substance is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS05 GHS07

- **Signal word** Danger
- **Hazard statements**
 - H290 May be corrosive to metals.
 - H302 Harmful if swallowed.
 - H314 Causes severe skin burns and eye damage.
- **Precautionary statements**
 - P260 Do not breathe dust/fume/gas/mist/vapors/spray.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
 - P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 - P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 - P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- **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

16 Other information

- **Department issuing SDS:** Regulatory Affairs of ICL Fertilizers Products
- **Date of preparation / last revision** 11/14/2017 / -
- **Disclaimer**
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