

Chemische Fabrik Wülfel	Safety Data Sheet in accordance with Regulation (EC) No 1907/2006	State: 01/11/2021 Author: U. Köhler Version: 2.0
	metaphosphoric acid	Page 1 of 10

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

1.1. Product identifier

- 1.1.1. Trade name** metaphosphoric acid
purum or as ACS Reagent
- 1.1.2. Substance name** Amorphous condensation products of orthophosphoric acid and sodium carbonate (3-6 : 1)
EC No.: 947-754-5
REACH Registration No: 01-2120774027-53-0000

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

1.2.1. Relevant identified uses

Use descriptor category:

Life cycle stage (LCS) M: Industrial uses: Pharmaceutical industry (Diagnostics)
PW: Widespread use by professional workers: Food analysis, chemical analysis in Biochemistry, Clinical chemistry and Veterinary medicine

Sector of use SU24 : Scientific research and development (analytical chemistry)

Technical function Fine chemical

1.2.2. Uses advised against

not known

1.3. Details of the supplier of the safety data sheet

Chemische Fabrik Wülfel GmbH & Co. KG
Hildesheimer Straße 305, 30519 Hannover
Tel.: 0049 511 98496-0, Fax: 0049 511 98406-40
eMail: person with expertise cfw@wuelfel.de,
Web: www.wuelfel.de

1.4. Emergency telephone number

00 49 511 98496-0 (Office hours: Monday - Thursday 8 o'clock a.m. to 2 o'clock p.m.)
or
Poison control center north (Bremen, Hamburg, Lower Saxony, Schleswig-Holstein)
Tel.: 00 49 551 19 24 0 (24h emergency call)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1. Classification of the mixture according to Regulation (EC) No 1272/2008 (CLP/GHS)

Skin Corr. 1B; H314
Aquatic Chronic 4; H413

2.2. Label elements

2.2.1. Labelling according to Regulation (EC) No 1272/2008 (CLP/GHS)

Hazard pictogram



GHS05

Signal word: Danger

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Hazard statements:

H314 Causes severe skin burns and eye damage.
H413 May cause long lasting harmful effects to aquatic life.

Precautionary statements

Prevention:

P273 Avoid release to the environment.
P280 Wear protective gloves /protective clothing/eye protection/face protection.

Reaction:

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
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.
P310 Immediately call a POISON CENTER/doctor/...

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/container in accordance with local/regional/national/international regulation.

2.3. Other hazards

The mixture does not meet the PBT / vPvB criteria as an inorganic substance according to Annex XIII of the REACH Regulation.

There is no evidence of endocrine disrupting properties of the present UVCB substance according to the criteria of the Commission Delegated Regulation (EU) 2017/2100 or the Commission Regulation (EU) 2018/605.

See also sections 5, 6, 10, 11, 12, 15.

SECTION 3: Composition/information on ingredients

3.1. Substances

The substance is not a pure compound.

3.2. Mixtures

It is a UVCB substance which is prepared by polycondensation of orthophosphoric acid in these was added previously a certain amount of sodium carbonate (soda). The main components are metaphosphoric acid and trisodium trimetaphosphate.

Main components of the UVCB substance	CAS No.	EC No.	REACH Registration No.	Content (% w/w)	Classification acc. Regulation (EC) No 1272/2008 (CLP Regulation) C & L Inventory of the ECHA
metaphosphoric acid IUPAC nomenclature: 1,3,5,2,4,6- Trioxatriphosphinane- 2,4,6-triol-2,4,6-trioxide (HPO ₃) _n ; n= 3	37267-86-0	253-433-4	-	33,5 – 60,0	Skin Corr. 1B; H314

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trisodium trimetaphosphate UPAC nomenclature: Trisodium-1,3,5,2,4,6-trioxatriphosphinane-2,4,6-triolate-2,4,6-trioxide (NaPO ₃) _n ; n= 3 (In the function as a stabilizer)	7785-84-4	232-088-3	01-2119474214-42 and 01-2119966157-29	40 – 66,5	no hazardous substance
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SECTION 4: First aid measures

4.1. Description of first aid measures

4.1.1. General informations

Remove all contaminated clothing.

Bring injured person to fresh air, lie down comfortably, loosen tight clothing.

4.1.2. In case of eye contact

Rinse widely opened eye for several minutes under running water. Is advisable to use a eyewash. Do not attempt to neutralize, but further treatment by an ophthalmologist.

4.1.3. In case of skin contact

Wash the affected area immediately with plenty of soap and water and, if possible dab with polyethylene glycol 400. Then cover with sterile dressing (no fire bandages!) cover. Consult a doctor if skin irritation persists.

4.1.4. Following ingestion

Rinse mouth and drink plenty of water. Do not induce vomiting. Physician.

4.1.5. Following inhalation of fumes

After inhalation of acid fumes. As soon as possible a glucocorticoid aerosol, eg Ventolair[®], should be inhaled repeatedly.

Oxygen should be inhaled during difficulty in breathing.

If health problems occur, seek medical attention.

4.1.6. Self-protection of the First Aider

Avoid contact with substance still present.

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

Local tissue destruction and corneal opacity in the eye.

The healing process can last for a long time.

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

Physician treating of a disease caused by an acid burn.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Water spray, foam, carbon dioxide, extinguishing powder

Unsuitable extinguishing media: not known

5.2. Special hazards arising from the substance or mixture

None

5.3. Advice for fire-fighters

The UVCB substance is not burning (see also subsection 5.2.).

The fire water is strongly acidic and reacts with metals liberating hydrogen.

In closed rooms an explosive gas/air mixture can be formed.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Skin and eye contact must be prevented by protective eye glasses and gloves.

6.2. Environmental precautions

The UVCB substance must not be discharged into drains or waterways.

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6.3. Methods and material for containment and cleaning up

Collect mechanically and place in corrosion-resistant containers for disposal.

Solve smaller quantities with plenty of water and dilute it. Larger amounts previously neutralize with sodium hydroxide.

The dilute solutions can be supplied to the waste water.

Here, the maximum permissible concentration must be maintained!

6.4. Reference to other sections

See Sections 4 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Follow the safety instructions in subsection 2.2.!

Use acid-resistant equipment only.

7.2. Conditions for safe storage, including any incompatibilities

Packaging material of the manufacturer: metal container with PE inner bag.

Storage:

The UVCB substance has to be stored dry in tightly closed, acid-resistant containers, in well ventilated areas, be stored separately from food, beverages and animal feed.

Note on joint storage: Do not store together with alkalis.

Storage class: 8B (non-combustible corrosive substances)

7.3. Specific end uses

Laboratory analysis, pH adjusting agent

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1. Occupational Exposure Limit (OEL) values

For the UVCB substance no OEL value is set.

In Germany for orthophosphoric acid is according to TRGS 900 the OEL value at 2 mg/m³ (inhalable fraction), and the STEL (Short-Time Exposure Limit, related to a 15-minute period) is marked by an exceeding factor of 2 (Category I : Substance for which the local effect determines the limit).

In the EU (COMMISSION DIRECTIVE 2000/39/EC of 8 June 2000) the IOEL (Indicative Occupational Exposure Limit) value is at 1 mg/m³ (eight hours, time-weighted average) and is at 2 mg/m³ (short-term, related to a 15-minute period).

8.1.2. DNEL/PNEC

DNEL (see REACH dossier orthophosphoric acid)		
Oral mode	long term exposition	0.1 mg/kg bw/day (general population)
Inhalation route	long term exposition / local effects	1 mg/m ³ (worker)
	short term exposure /local effects	2 mg/m ³ (worker)
	short term exposure /local effects	0.36 mg/m ³ (general population)
	long term exposition	10.7 mg/m ³ (worker) 4.57 mg/m ³ (general population)
DNEL (see REACH dossier trisodium trimetaphosphate)		
Inhalation route, dermal route, eyes	short term exposure (acute) long term exposure (systemic)	workers and general population, no hazards identified

PNEC values are not available for orthophosphoric acid and trisodium trimetaphosphate.

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8.2. Exposure controls

8.2.1. Personal protective equipment

8.2.1.1. Eye / Face protection

Tightly fitting protective goggles required

8.2.1.2. Respiratory protection:

Required when dust forms (particle filter P2 according to DIN 3181).

8.2.1.3. Skin protection

Chemical protective gloves, e.g. consisting of nitrile rubber (Check for damage before use),
Penetration time (value for permeation: Level 6, > 480 min, EN 374)

8.2.2. General health and safety measures

Avoid unnecessary contact with the product.

Wash hands after work, change contaminated clothing.

While using do not eat, drink or smoke.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Property	Value / Description
Physical state	solid (acidum phosphoricum glaciale)
Colour	glass-like
Odour	odourless
Melting point/freezing point	135 - 150 °C (at 1013 hPa), determined by EC test method A.1
Boiling point or initial boiling point and boiling range	above 500 °C (at 1013 hPa), determined by EC test method A.2
Flammability	not applicable, since inorganic solid
Lower and upper explosion limit	not applicable, since inorganic solid
Flash point	not applicable, since inorganic solid
Auto-ignition temperature	not applicable, since inorganic solid
Decomposition temperature	above 500 °C
pH	1.60 - 1.90 (10 g/L H ₂ O at 20 °C, depending on the composition) according to OECD Test Guideline 122
Kinematic viscosity	not applicable, since inorganic solid
Solubility	1558-1780 g/L at 20 °C (depending on composition and under simultaneous hydrolysis) according to OECD Test Guideline 105
Partition coefficient n-octanol/water (log value)	not determined, since inorganic solid
Vapour pressure	< 10 ⁻² Pa, determined by EC test method A.4 (application of the Knudsen cell)
Density and/or relative density	2.25 - 2.42 g/cm ³ (depending on the composition) according to OECD Test Guideline 109
Relative vapour density	not determined, since vapor pressure too low
Particle characteristics	colorless glass-like pieces with a bandwidth of 1-100 mm

9.2. Other information

The product is hygroscopic and melts down on long term exposure to air.

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A de-glassing process (crystallisation) can occur. When dissolved in water, hydrolysis takes place with formation of orthophosphoric acid and sodium dihydrogenorthophosphate. At high temperatures corrosive to metals.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts under heat formation with alkali (salt formation).

10.2. Chemical stability

No decomposition if used according to specifications.

The product is hygroscopic and melts down on long term exposure to air.

A de-glassing process (crystallisation) can occur.

10.3. Possibility of hazardous reactions

Reacts with alkalis (salt formation) under evolution of heat.

Corrosive to metals at high temperatures.

The concentrated aqueous solution reacts with many metals forming highly flammable hydrogen gas.

In closed rooms an explosive gas/air mixture can be formed.

10.4. Conditions to avoid

Contact with alkali and metals.

10.5. Incompatible materials

Alkalis (see subsection 10.3.)

10.6. Hazardous decomposition products

In the case of high temperatures can occur fumes of phosphorus oxides.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

In applying the analogy principle and the read-across approach (cf. ECHA -Guidance on information requirements and chemical safety assessment, Chapter R.6: QSARs and grouping of chemicals, May 2008), data of orthophosphoric acid to describe the health hazards of the UVCB substance are used. No toxic effects are produced by the sodium dihydrogenorthophosphate formed during the hydrolysis (see the corresponding REACH dossier).

11.1.1. Acute toxicity

For the UVCB substance are no data available.

For orthophosphoric acid that forms on prolonged standing or on heating an aqueous solution of the UVCB substance the following LD₅₀ values were determined:

LD₅₀ (oral, rat): 1530 – 3500 mg / kg body weight (see REACH Registration dossier orthophosphoric acid)

LD₅₀ (dermal, rabbit): 2740 mg / kg body weight (see REACH Registration dossier orthophosphoric acid)

LC₅₀ (inhalativ, rabbit): 1.689 mg/l/1h

11.1.2. Skin corrosion/irritation

Causes skin burns (see REACH Registration dossier Orthophosphoric acid, determined by OECD Guideline 431 (In Vitro Skin Corrosion: Human Skin Model Test)).

11.1.3. Serious eye damage/eye irritation

Causes severe burns of the eye (see REACH Registration dossier Orthophosphoric acid, derived from the result for the skin).

11.1.4. Respiratory or skin sensitisation

Unknown

11.1.5. Germ cell mutagenicity

No effects were detectable in *S. typhimurium* tester strains following sublethal pH decrease (OECD Guideline 471 (Bacterial Reverse Mutation Assay), see REACH Registration dossier.

11.1.6. Carcinogenicity

Unknown

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11.1.7. Reproductive toxicity

Unknown

11.1.8. Specific target organ toxicity — single exposure

Unknown

11.1.9. Specific target organ toxicity — repeated exposure

Unknown

11.1.10. Aspiration hazard

Unknown

11.2 Information on other hazards

No Informations available.

SECTION 12: Ecological information

12.1. Toxicity

In applying the analogy principle and the read-across approach (cf. ECHA -Guidance on information requirements and chemical safety assessment, Chapter R.6: QSARs and grouping of chemicals, May 2008), data of orthophosphoric acid to describe the ecotoxicological hazards of the UVCB substance are used.

12.1.1. Acute aquatic toxicity

Fish toxicity

Species: *Lepomis macrochirus* (bluegill sunfish, 96h): medium lethal pH is 3 – 3.25

Daphnia toxicity

EC₅₀ (*Daphnia magna*, 48 h): >376 mg/L (OECD Test Guideline 202)

Algae toxicity

EC_{r50} (*Pseudokirchneriella subcapitata*, 72h): 77.9 mg/L (OECD Test Guideline 201)

EC_{b50} (*Pseudokirchneriella subcapitata*, 72h): 32.0 mg/L (OECD Test Guideline 201)

12.1.2. Chronic aquatic toxicity

NOEC (*Daphnia magna*): 81 mg/l (OECD Test Guideline 202)

NOEC (*Pseudokirchneriella subcapitata*): < 7,5 mg/L (OECD Test Guideline 201)

The UVCB substance is hazardous to fish, daphnia and algae by lowering the pH of the water over a prolonged period during which hydrolysis takes place. This non-negligible effect is taken into account by the classification with

Aquatic Chronic 4; H413

This classification corresponds to the principle noted in the CLP Regulation that a probable risk (so-called "safety net") should be indicated (see Table 4.1.0 under point 4.1.2.6 in Annex I, part 4. ENVIRONMENTAL HAZARDS of the CLP Regulation).

12.2. Persistence and degradability

The UVCB substance in an aqueous environment is converted slowly into orthophosphoric acid and sodium dihydrogenorthophosphate. These substances have a fertilizing effect in the soil. The UVCB substance is not a persistent substance

12.3. Bioaccumulative potential

Phosphates are vital factors in the cycle of animals and plants, and not fall into this category.

12.4. Mobility in soil

Depends on the water solubility of the phosphates which are formed in the soil.

12.5. Results of PBT and vPvB assessment

Not applicable to inorganic substances.

12.6. Endocrine disrupting properties

There is no evidence of endocrine disrupting properties of the present UVCB substance according to the criteria of the Commission Delegated Regulation (EU) 2017/2100 or the Commission Regulation (EU) 2018/605.

12.7. Other adverse effects

The UVCB substance must not enter the sewage system, as in surface waters because there is a risk of over-fertilization (eutrophication, flowering waters).

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

After pretreatment, the product must be supplied in accordance with the hazardous waste regulations to an approved hazardous waste landfill.

Do not dispose of the sewage system!

Waste disposal code: 060104

SECTION 14 : Transport information

14.1. UN number or ID number

UN3260

14.2. UN proper shipping name

ADR/RID/ADN :

CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S., (metaphosphoric acid)

IMDG-Code :

CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S., (metaphosphoric acid)

ICAO-TI/IATA-DGR:

Corrosive solid, acidic, inorganic, n.o.s., (metaphosphoric acid)

14.3. Transport hazard class(es)

8 (Corrosive substances)



14.4. Packing group

III

14.5. Environmental hazards

Labelling as environmentally hazardous substance:

ADR/RID/ADN/IMDG-Code: no

ICAO-TI/IATA-DGR: no

Marine pollutant: no

14.6. Special precautions for user

see Sections 6 - 8

14.7. Maritime transport in bulk according to IMO instruments

Does not apply, it is a solid product and is not a bulk good.

14.8. Additional information

ADR Tunnel restriction code (E)

SECTION 15: Regulatory information

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

15.1.1. EU regulations

Safety Data Sheet:

Regulation (EC) No 1907/2006 (REACH), Annex II (SDS), amended by Regulation (EU) 2020/878

Classification and labelling:

CLP (EU-GHS) Regulation (EC) No 1272/2008

15.1.2. Basic national regulations (Germany)

Act for the protection of young people at work (JArbSchG)

Observe employment restrictions according to § 22 for teens.

Act for the protection of mothers at work, in education and in study (MuSchG)

Inadmissible activities and working conditions according to §§ 11 and 12 MuSchG for expectant and nursing mothers.

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Act on protection against hazardous substances (Chemicals Act (ChemG))
Regulation on protection against hazardous substances (Hazardous Substances Regulation (GefStoffV))
Regulation on bans and restrictions on the marketing and delivery of certain substances, mixtures and products pursuant to the Chemicals Act (ChemVerbotsV)
Ordinance on facilities for handling substances that are hazardous to water (AwSV) of 18 April 2017.

Water hazard class (WGK) 1 (slightly hazardous to water), see AwSV, Annex 1, subsections 4.2 and 4.4, and classification of orthophosphoric acid (identification number: 392, WGK=1, see database Rigoletto)

15.2. Chemical Safety Assessment

A Chemical Safety Assessment and the drafting of a Chemical Safety Report is not required as the registration of the substance has been carried out for a tonnage band of 1 to 10 tonnes / year (see article 14 (1) of the Regulation (EC) No 1907/2006). A Chemical Safety Report in accordance with Annex I to Regulation (EC) No 1907/2006 is therefore not available.

SECTION 16: Other information

16.1. Indication of changes

Complete revision of the SDS based on Regulation (EU) 2020/878.
Changes have been made in Sections 1, 2, 9, 11, 12, 14, 15, and 16.

16.2. Codes of hazard classes and hazard statements

(a) hazard classes and hazard categories in subsection 2.1.1.

Skin Corr. 1B - Skin corrosion, Category 1B
Aquatic Chronic 4 - Hazardous to the aquatic environment, Category 4

b) Hazard statement according to Regulation (EC) No 1272/2008, the text of which was not given in section 3

H314 Causes severe skin burns and eye damage

16.3. Literature and sources

A detailed description of the substances resulting from the polycondensation of the phosphoric acids can be found in the standard work of J.R. van Wazer "Phosphorus and Compounds", Vol. I: Chemistry, Interscience Publishers, Inc., New York, 1958, in the section "Preparation and Properties of Condensed Phosphoric Acids" at pages 770-773.

Regulations

Regulation (EG) Nr. 1907/2006 (REACH), was last amended by Regulation (EU) 2021/1297 CLP (EU-GHS)-Verordnung (EG) Nr. 1272/2008, was last amended by Regulation (EU) 2021/849

REACH Registration dossier

Amorphous condensation products of orthophosphoric acid and sodium carbonate (3-6 : 1) (REACH Registration No: 01-2120774027-53-0000)

Orthophosphoric acid (REACH Registration No: 01-2119485924-24)

Trisodium trimetaphosphate (REACH Registration No: 01-2119474214-42, and 01-2119966157-29)

Sodium dihydrogenorthophosphate (REACH Registration No: 01-2119489796-13)

16.4. Methods in accordance with Chapter 2, Article 9, of Regulation (EC) No 1272/2008 to assess the information that has been used for the purpose of classification:

Health and environmental hazards: use of "read across" principle (orthophosphoric acid)

16.5. Abbreviations and acronyms

ACS American Chemical Society (Specification of Reagent chemicals)
ADN Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR Accord européen relatif au transport international des marchandises

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	Dangereuses par Route - European arrangements about the international transport of dangerous goods on the streets.
CAS	Chemical Abstracts Service
CLP	Classification, Labelling, Packaging
DIN	German Institute for Standardization Incorporated Society - Deutsches Institut für Normung e. V.
DNEL	Derived No Effect Level
ECHA	European Chemicals Agency
EFSA	European Food Safety Authority
EC	European Community
EC	Effective concentration
EC _r	Effective concentration (Growth rate)
EC _b	Effective concentration (Biomass)
EN	European Standards
EU	European Union
GHS	Globally Harmonized System of Classification, Labelling and Packaging of Chemicals
ICAO-TI	International Civil Aviation Organization - Technical Instructions for the Safe Transport of Dangerous Goods by Air
IATA-DGR	International Air Transport Association - Dangerous Goods Regulation
IMDG-Code	International Maritime Code for Dangerous Goods
IMO	International Maritime Organization
IOEL	Indicative Occupational Exposure Limit
LC	Lethal Concentration
LD	Lethal Dose
NOEC	No Observed Effect level Concentration
N.O.S.	Not Otherwise Specified
PBT	Persistent, Bioaccumulative, Toxic
PNEC	Predicted No Effect Concentration
REACH	Regulation, Evaluation and Authorization of Chemicals
RID	Règlement concernant le transport International ferroviaire de marchandises Dangereuses - Regulation for the international transport of dangerous goods in the rail transport.
UN	United Nations
UVCB	substance of <u>U</u> nknown or <u>V</u> ariable composition, <u>C</u> omplex reaction products or <u>B</u> iological materials.
vPvB	very persistent and very bioaccumulative
	16.6. Further information
	This information is based on our present knowledge, they do not constitute an assurance of product properties and establishes no contract legal rights.