

Chemische Fabrik Wülfel	Safety Data Sheet in accordance with Regulation (EC) No 1907/2006  <b>Phosphomolybdic acid hydrate</b>	State: 01/11/2021 Author: U. Köhler  Version: 2.0 Page 1 of 9
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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

#### 1.1.1. Chemical name: **Phosphomolybdic acid hydrate**

p. a. or as ACS quality

EC No: 234-713-5

CAS No: 51429-74-4

REACH registration number: none

The amount produced annually by Chemische Fabrik Wülfel is below the REACH registration limit of one ton (Article 6 (1) of Regulation (EC) No. 1907/2006 (REACH Regulation)).

### 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: Manufacture: Lac industry (light-fast colour paints)

PW: Widespread use by professional workers (Food analysis, chemical analysis in Biochemistry and clinical chemistry)

Sector of use

Technical function

SU24: Scientific research and development (analytical chemistry)  
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, Germany

Tel.: 0049 511 98496-0, Fax: 0049 511 98406-40

eMail: person with expertise [cfw@wuelfel.de](mailto:cfw@wuelfel.de),

Web: [www.wuelfel.de](http://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

#### 2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP Regulation)

The substance is in the hydrate form, which contains at least 20 water molecules.

For this reason, when testing for oxidizing properties, a negative test result is obtained for test method A.17 of Regulation (EC) No. 440/2008). Therefore the hydrate has no oxidizing properties.

Skin Corr. 1B; H314

Aquatic Chronic 4; H413

### 2.2. Label elements

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

##### Hazard pictogram



GHS05

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**Signal word: Danger**

**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.  
P310 Immediately call a POISON CENTER/doctor/...  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Storage:**

P405 Store locked up.

**Disposal:**

P501 Dispose of contents/container to hazardous waste disposal or to manufacturer

**2.3 Other hazards**

The mixture does not meet the PBT / vPvB criteria.  
There are no indications of endocrine disrupting properties of molybdophosphoric acid according to the criteria of Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.  
See also sections 5, 6, 10, 11, 12, 15.

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

**3.1. Substances**

Chemical name	CAS No	EC No	REACH Registration No	% w/w	Classification according to Regulation (EC) No 1272/2008
Phosphomolybdic acid hydrate	51429-74-4	234-713-5	-	≥ 99,0	Skin Corr. 1B; H314 Aquatic Chronic 4; H413

Common name: Phosphomolybdic acid hydrate  
12-Molybdatophosphoric acid hydrate  
IUPAC nomenclature: Trihydrogentetracosamolybdato(3-)-μ-oxododecaoxy[μ12[phosphato(3-)-O:O:O:O':O':O':O":O":O":O"':O"':O"''':O'''O''']]dodecamolybdate(3-) hydrate  
Formula:  $H_3[P(Mo_3O_{10})_4] \cdot (H_2O)_x$  (x = 20 - 24)

**3.2. Mixtures**

The product is a substance.

**3.3. Additional information**

The text of H-Statements is given in section 16.

**SECTION 4: First aid measures**

**4.1. Description of first-aid measures**

**4.1.1. General informations**

Remove all contaminated clothing.

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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. It 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!). Consult a doctor if skin irritation persists.

**4.1.4. Following ingestion**

Rinse mouth and drink plenty of water. Do not induce vomiting. Seek medical advice.

**4.1.5. Following inhalation of fumes**

After inhalation of acid fumes as soon as possible a glucocorticoid aerosol, e.g. 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**

Phosphomolybdic acid hydrate is not burning.

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**

Phosphomolybdic acid hydrate must not be discharged into drains or waterways.

**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 resulting solution is colourless.

Dispose as heavy metal containing special waste.

**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 Section 2.2.1!

Use acid-resistant equipment only.

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## 7.2. Conditions for safe storage, including any incompatibilities

Packaging material of the manufacturer: plastic containers.

Storage: Phosphomolybdic acid hydrate has to be stored dryly in tightly closed, acid-resistant containers, in well ventilated areas, separately from food, beverages and animal feed.

Storage temperature:  $\leq 5\text{ }^{\circ}\text{C}$  (prolonged storage at higher temperatures causes gradual decomposition (formation of water-insoluble molybdic acid)).

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

Storage category: 8B (non-combustible corrosive substances) according to TRGS 510 (Storage of hazardous substances in nonstationary containers), Annex 4.

## 7.3. Specific end uses

Laboratory analysis, spray reagent, manufacturing of light-fast paints

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No limits are set for Phosphomolybdic acid hydrate.

### 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

Not required.

##### 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 (octahedral crystals)
Colour	bright yellow to orange yellow
Odour	odourless
Melting point/freezing point	78 – 98 °C (at 1013 hPa) determined with EC test method A.1
Boiling point or initial boiling point and boiling range	not determined, since decomposition under water loss, at very high temperatures decomposition with formation of phosphorus and molybdenum oxides
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 300 °C
pH	2.3 ± 0.2 (0.3% solution) at 20 °C according to OECD test guideline 122
Kinematic viscosity	not applicable, since inorganic solid
Solubility	at 20 °C:

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	in water: readily soluble in ethanol; readily soluble in ether ((diethyl ether, methyl t-butyl ether (MTBE))): highly soluble
Partition coefficient n-octanol/water (log value)	not determined, since inorganic solid
Vapour pressure	< 10 <sup>-1</sup> Pa
Density and/or relative density	2.52 g/cm <sup>3</sup> according to OECD test guideline 109
Relative vapour density	not determined because the vapor pressure is too low
Particle characteristics	octahedral crystals

## 9.2. Other information

As a typical feature of a heteropoly acid is emphasized the high solubility in ether, e. g. Diethyl ether or Methyl t-butyl ether (MTBE).

During prolonged exposure to the air Phosphomolybdic acid hydrate loses crystal water.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reacts with reducing agents and alkalis (salt formation) under evolution of heat  
Forms with ammonium ions a yellow insoluble precipitate of Ammonium molybdato-phosphate (analytics: detection of ammonium ions).

### 10.2. Chemical stability

No decomposition under intended use.  
During prolonged exposure to the air Phosphomolybdic acid hydrate loses crystal water.  
The acid weathers in the air and often the color turns to green blue by reduction processes (formation of molybdenum blue).

### 10.3. Possibility of hazardous reactions

Exothermic reaction with alkalis.  
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, metals, and strong reducing agents.

### 10.5. Incompatible materials

Alkalis and metals (see sub-section 10.3.)

### 10.6. Hazardous decomposition products

At very high temperatures, harmful fumes of molybdenum oxide and corrosive acting phosphorus oxides are formed.  
Molybdenum(VI) oxide has carcinogenic properties (classification with Carc. 2, H351).

## 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 can be used to describe the health hazards of Phosphomolybdic acid hydrate.

#### 11.1.1. Acute toxicity

No data available for Phosphomolybdic acid hydrate.

Common symptoms of acute poisoning molybdenum intoxication are gout-like symptoms, joint

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pain and liver enlargement.

After high doses, toxic effects on the liver and kidneys.

**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**

Up to this time there are no indications of this effect.

**11.1.5. Germ cell mutagenicity**

Up to this time there are no indications of this effect.

**11.1.6. Carcinogenicity**

Up to this time there are no indications of this effect.

**11.1.7. Reproductive toxicity**

Up to this time there are no indications of this effect.

**11.1.8. Specific target organ toxicity (single exposure)**

Up to this time there are no indications of this effect.

**11.1.9. Specific target organ toxicity (repeated exposure)**

Up to this time there are no indications of this effect.

**11.1.10. Aspiration hazard**

Up to this time there are no indications of this effect.

**11.2 Information on other hazards**

No Informations available.

**SECTION 12: Ecological information**

**12.1. Toxicity**

Quantitative data on the ecotoxicological effects of the acid are not available.

Phosphomolybdic acid is harmful to fish and Daphnia by lowering the pH of the water.

This non-negligible effect is accounted for by the classification with: Aquatic Chronic 4; H413.

This classification corresponds to the principle enshrined in the CLP regulation that a probable hazard (so-called "safety net") should be taken into account (see Table 4.1.0 under point 4.1.2.6 of Annex I, Part 4. ENVIRONMENTAL HAZARDS of the CLP Regulation).

Molybdenum compounds generally have a harmful effect on fish, daphnia and algae in aquatic systems.

The calculated LC and EC values are above the classification limits (see also the REACH registration dossiers of sodium molybdate, molybdenum(VI) oxide and molybdic acid).

**12.2. Persistence and degradability**

Quantitative data on the persistence of acid are not available.

**12.3. Bioaccumulative potential**

Quantitative data do not exist. Molybdenum is a component of certain enzymes. It is of great importance as a trace element for plants.

**12.4. Mobility in soil**

Quantitative data on the mobility of the acid in the soil are not available.

**12.5. Results of PBT and vPvB assessment**

Not applicable to inorganic substances.

**12.6. Endocrine disrupting propertie**

There are no indications of endocrine disrupting properties of molybdophosphoric acid according to the criteria of Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

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### 12.7. Other adverse effects

The acid should not be discharged into the sewer system, since lowering the pH and an entry of a heavy metal.

## 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.

Dispose small amounts to hazardous waste disposal or to the manufacturer.

Do not dispose of in the sewage system!

Waste disposal code: 060106\*(other acids)

## SECTION 14 : Transport information

### 14.1. UN number

UN3260

### 14.2. UN proper shipping name

#### ADR/RID/ADN:

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

#### IMDG-Code:

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

#### ICAO-TI/IATA-DGR:

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

### 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

Not relevant, it is a solid product and no a bulk material.

### 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)

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### 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.

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)

The product is registered with the Federal Institute for Risk Assessment (BfR) according to §16e ChemG.

The BfR product number is 7429270.

### 15.2. Chemical Safety Assessment

A chemical safety assessment and a chemical safety report in accordance with Annex I to Regulation (EC) No 1907/2006 are not available.

## SECTION 16: Other information

### 16.1. Indication of changes compared to version 1.0

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.

H413 May cause long lasting harmful effects to aquatic life.

### 16.3. Literature and sources

#### Directives and 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 dossiers:

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

**Sodium molybdate** (REACH Registration No 01-2119489495-21)

**Molybdenum(VI) oxide (Molybdenum trioxide)** (REACH Registration No 01-2119488038-30)

**Molybdic acid** (REACH Registration No 01-2120115844-58)

### 16.4. Abbreviations used

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.
EC	European Commission
EC	Effective Concentration
ECHA	European Chemicals Agency
EN	European Standards
EU	European Union
GHS	Globally Harmonized System of Classification, Labelling and Packaging of Chemicals
IATA-DGR	International Air Transport Association-Dangerous Goods Regulation
ICAO-TI	International Civil Aviation Organization-Technical Instructions for the Safe Transport of Dangerous Goods by Air
IMDG-Code	International Maritime Code for Dangerous Goods
IMO	International Maritime Organization
IUPAC	International Union of Pure and Applied Chemistry
LC	Lethal Concentration
LD	Lethal Doses
N.O.S.	Not Otherwise Specified
PBT	Persistent, Bioaccumulative, Toxic
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.
TRGS	Technical Rules for Hazardous Substances
UN	United Nations
vPvB	very persistent and very bioaccumulative
<b>16.5. Further information</b>	
This information is based on our present knowledge, they do not constitute an assurance of product properties and establishes no contract legal rights.	