SAFETY DATA SHEET
Propylphosphonic acid anhydride - 50% in Ethyl acetate

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

1.1. Product identifier
Product name
Propylphosphonic acid anhydride - 50% in Ethyl acetate
Product number
FP11273
CAS number
68957-94-8
EC number
614-857-9

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses
Laboratory reagent. Manufacture of substances. Research and development.

1.3. Details of the supplier of the safety data sheet
Supplier
Carbosynth Ltd
8&9 Old Station Business Park
Compton
Berkshire
RG20 6NE
UK
+44 1635 578444
+44 1635 579444
info@carbosynth.com

1.4. Emergency telephone number
Emergency telephone
+44 7887 998634

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification (EC 1272/2008)
Physical hazards
Health hazards
Skin Corr. 1B - H314 Eye Dam. 1 - H318 STOT SE 3 - H336
Environmental hazards
Not Classified

2.2. Label elements
EC number
614-857-9

Hazard pictograms

Signal word
Danger

Hazard statements
H225 Highly flammable liquid and vapour.
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H336 May cause drowsiness or dizziness.
Propylphosphonic acid anhydride - 50% in Ethyl acetate

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
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.
P501 Dispose of contents/ container in accordance with national regulations.

Contains

Propylphosphonic acid anhydride, Ethyl acetate

2.3. Other hazards

No data available.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl acetate</td>
<td>50%</td>
</tr>
<tr>
<td>CAS number: 141-78-6</td>
<td>EC number: 205-500-4</td>
</tr>
<tr>
<td>Classification</td>
<td></td>
</tr>
<tr>
<td>Flam. Liq. 2 - H225</td>
<td></td>
</tr>
<tr>
<td>Eye Irrit. 2 - H319</td>
<td></td>
</tr>
<tr>
<td>STOT SE 3 - H336</td>
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</table>

<table>
<thead>
<tr>
<th>Propylphosphonic acid anhydride</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number: 68957-94-8</td>
<td>EC number: 422-210-5</td>
</tr>
<tr>
<td>Classification</td>
<td></td>
</tr>
<tr>
<td>Skin Corr. 1B - H314</td>
<td></td>
</tr>
<tr>
<td>Eye Dam. 1 - H318</td>
<td></td>
</tr>
</tbody>
</table>

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information
Get medical advice/attention if you feel unwell.

Inhalation
Remove person to fresh air and keep comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. If breathing stops, provide artificial respiration. Get medical attention if symptoms are severe or persist.

Ingestion
Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Give plenty of water to drink. Get medical attention if symptoms are severe or persist.

Skin contact
Remove contaminated clothing. Rinse with water. Continue to rinse for at least 15 minutes. Wash contaminated clothing before reuse. Get medical attention if symptoms are severe or persist.

Eye contact
Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes. Get medical attention if symptoms are severe or persist.

4.2. Most important symptoms and effects, both acute and delayed
Propylphosphonic acid anhydride - 50% in Ethyl acetate

General information

See Section 11 for additional information on health hazards.

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

Notes for the doctor

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Extinguish with alcohol-resistant foam, carbon dioxide or dry powder.

5.2. Special hazards arising from the substance or mixture

Specific hazards

None known.

Hazardous combustion products

Thermal decomposition or combustion products may include the following substances:

Harmful gases or vapours. Oxides of carbon. Oxides of phosphorus.

5.3. Advice for firefighters

Special protective equipment for firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents. Use protective equipment appropriate for surrounding materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions

Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Avoid inhalation of vapours. Provide adequate ventilation. Eliminate all sources of ignition. Vapours may form explosive mixtures with air. Vapours may accumulate on the floor and in low-lying areas. Keep unnecessary and unprotected personnel away from the spillage.

6.2. Environmental precautions

Environmental precautions

Avoid discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up

Wear protective clothing as described in Section 8 of this safety data sheet. Absorb spillage with sand or other inert absorbent. Clear up spills immediately and dispose of waste safely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Provide adequate ventilation. For waste disposal, see Section 13.

6.4. Reference to other sections

Reference to other sections

For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions

Wear protective clothing as described in Section 8 of this safety data sheet. Wash hands thoroughly after handling. Provide adequate ventilation. Avoid contact with skin and eyes. Avoid inhalation of vapours. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge.

7.2. Conditions for safe storage, including any incompatibilities
Propylphosphonic acid anhydride - 50% in Ethyl acetate

Storage precautions
Keep container tightly closed. Store in a cool and well-ventilated place. Keep containers upright. Store contents under inert gas. Store away from incompatible materials (see Section 10). Protect from moisture. Keep away from heat. Store at room temperature.

7.3. Specific end use(s)
Specific end use(s)
The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Ethyl acetate
Long-term exposure limit (8-hour TWA): WEL 200 ppm
Short-term exposure limit (15-minute): WEL 400 ppm

Propylphosphonic acid anhydride
No exposure limits known for ingredient(s).
WEL = Workplace Exposure Limit

Enthalpy acetate (CAS: 141-78-6)

DNEL
Workers - Inhalation; systemic effects: 1468 mg/m³
Workers - Inhalation; local effects: 1468 mg/m³
Workers - Dermal; Long term systemic effects: 63 mg/kg
Workers - Inhalation; Long term systemic effects: 734 mg/m³
Workers - Inhalation; Long term local effects: 734 mg/m³
Consumer - Inhalation; local effects, systemic effects: 734 mg/m³
Consumer - Dermal; Long term systemic effects: 37 mg/kg
Consumer - Inhalation; Long term systemic effects: 367 mg/m³
Consumer - Oral; Long term systemic effects: 4.5 mg/kg
Consumer - Inhalation; Long term local effects: 367 mg/m³

PNEC
Soil; 0.24 mg/kg
marine water; 0.026 mg/l
Fresh water; 0.26 mg/l
Sediment (Marinewater); 0.125 mg/kg
Sediment (Freshwater); 1.25 mg/kg

8.2. Exposure controls

Appropriate engineering controls
Provide adequate ventilation.

Eye/face protection
Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses. Personal protective equipment for eye and face protection should comply with European Standard EN166.

Hand protection
Wear protective gloves. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection
Wear appropriate clothing to prevent repeated or prolonged skin contact.

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Respiratory protection

Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is ‘CE’-marked. Gas and combination filter cartridges should comply with European Standard EN14387. Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140.

Environmental exposure controls

Keep container tightly sealed when not in use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance
Liquid.

Colour
Colourless. to Yellow. to Light brown.

Odour
No data available.

Odour threshold
No data available.

pH
No data available.

Melting point
No data available.

Initial boiling point and range
65°C @ 1013 hPa

Flash point
-4°C Closed cup.

Evaporation rate
No data available.

Flammability (solid, gas)
No data available.

Upper/lower flammability or explosive limits
Upper flammable/explosive limit: 11.5 g/100 g Lower flammable/explosive limit: 2.1 g/100 g

Vapour pressure
No data available.

Vapour density
No data available.

Relative density
1.069 g/cm³

Solubility(ies)
No data available.

Partition coefficient
No data available.

Auto-ignition temperature
No data available.

Decomposition Temperature
No data available.

Viscosity
No data available.

Explosive properties
No data available.

Oxidising properties
No data available.

9.2. Other information

Molecular weight
318.18

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity
No data available.
Propylphosphonic acid anhydride - 50% in Ethyl acetate

10.2. Chemical stability
Stability
Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions
Possibility of hazardous reactions
Vapours may form explosive mixtures with air.

10.4. Conditions to avoid
Conditions to avoid
Heat, sparks, flames. Water, moisture.

10.5. Incompatible materials
Materials to avoid
Strong oxidising agents.

10.6. Hazardous decomposition products
Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity - oral
Notes (oral LD₅₀)
Based on available data the classification criteria are not met.

Acute toxicity - dermal
Notes (dermal LD₅₀)
Based on available data the classification criteria are not met.

Acute toxicity - inhalation
Notes (inhalation LC₅₀)
Based on available data the classification criteria are not met.

Skin corrosion/irritation
Animal data
Skin Corr. 1B - H314 Causes severe burns.

Serious eye damage/irritation
Serious eye damage/irritation
Eye Dam. 1 - H318 Corrosive to skin. Corrosivity to eyes is assumed.

Respiratory sensitisation
Respiratory sensitisation
Based on available data the classification criteria are not met.

Skin sensitisation
Skin sensitisation
Based on available data the classification criteria are not met.

Germ cell mutagenicity
Genotoxicity - in vitro
Based on available data the classification criteria are not met.

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

IARC carcinogenicity
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
Reproductive toxicity - fertility
Based on available data the classification criteria are not met.

Reproductive toxicity - development
Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure
STOT - single exposure
STOT SE 3 - H336 May cause drowsiness or dizziness.
Propylphosphonic acid anhydride - 50% in Ethyl acetate

<table>
<thead>
<tr>
<th>Target organs</th>
<th>Central nervous system</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specific target organ toxicity - repeated exposure</strong></td>
<td></td>
</tr>
<tr>
<td>STOT - repeated exposure</td>
<td>Not classified as a specific target organ toxicant after repeated exposure.</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Based on available data the classification criteria are not met.</td>
</tr>
</tbody>
</table>

**General information**
The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

**Inhalation**
Corrosive to the respiratory tract. Symptoms following overexposure may include the following: Severe irritation of nose and throat.

**Ingestion**
May cause chemical burns in mouth, oesophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.

**Skin contact**
Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.

**Eye contact**
Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

**Route of exposure**
Ingestion Inhalation Skin and/or eye contact

**Target organs**
Central nervous system
Propylphosphonic acid anhydride - 50% in Ethyl acetate

SECTION 12: Ecological information

Ecotoxicity

Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Toxicity

Based on available data the classification criteria are not met.

12.2. Persistence and degradability

Persistence and degradability

The degradability of the product is not known.

12.3. Bioaccumulative potential

Bioaccumulative potential

No data available on bioaccumulation.

Partition coefficient

No data available.

12.4. Mobility in soil

Mobility

No data available.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment

No data available.

12.6. Other adverse effects

Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information

Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID) 2924
UN No. (IMDG) 2924
UN No. (ICAO) 2924
UN No. (ADN) 2924

14.2. UN proper shipping name

Proper shipping name (ADR/RID) FLAMMABLE LIQUID, CORROSIVE, N.O.S. (mixtures of Propylphosphonic acid anhydride and Ethyl acetate)

Proper shipping name (IMDG) FLAMMABLE LIQUID, CORROSIVE, N.O.S. (mixtures of Propylphosphonic acid anhydride and Ethyl acetate)

Proper shipping name (ICAO) FLAMMABLE LIQUID, CORROSIVE, N.O.S. (mixtures of Propylphosphonic acid anhydride and Ethyl acetate)

Proper shipping name (ADN) FLAMMABLE LIQUID, CORROSIVE, N.O.S. (mixtures of Propylphosphonic acid anhydride and Ethyl acetate)

14.3. Transport hazard class(es)
Propylphosphonic acid anhydride - 50% in Ethyl acetate

ADR/RID class 3
ADR/RID subsidiary risk 8
ADR/RID classification code FC
ADR/RID label 3
IMDG class 3
IMDG subsidiary risk 8
ICAO class/division 3
ICAO subsidiary risk 8
ADN class 3
ADN subsidiary risk 8

Transport labels

14.4. Packing group
ADR/RID packing group II
IMDG packing group II
ICAO packing group II
ADN packing group II

14.5. Environmental hazards
Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user
EmS F-E, S-C
ADR transport category 2
Emergency Action Code •3WE
Hazard Identification Number (ADR/RID) 338
Tunnel restriction code (D/E)

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

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Propylphosphonic acid anhydride - 50% in Ethyl acetate

EU legislation

15.2. Chemical safety assessment
No chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
CAS: Chemical Abstracts Service.
ATE: Acute Toxicity Estimate.
LC₅₀: Lethal Concentration to 50 % of a test population.
LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
EC₅₀: 50% of maximal Effective Concentration.
PBT: Persistent, Bioaccumulative and Toxic substance.
vPvB: Very Persistent and Very Bioaccumulative.

Training advice
Only trained personnel should use this material.

Revision date
14/10/2019

Revision
2

Supersedes date
06/09/2018

SDS number
157802

Hazard statements in full
H225 Highly flammable liquid and vapour.
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.