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Material Safety Data Sheet

1-hydroxy ethylidene-1,1-diphosphonic acid (HEDP)

Section 1: Chemical Product and Company Identification

Molecular formula:C₂H₈O₇P₂

CAS Nr: 2809-21-4

Molecular weight: 201.99

Synonyms:HEDP

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Section 2: Composition and Information on Ingredients

Composition:

| Name | CAS # | %By Weight |
|--------------------------------------------|-----------|------------|
| 1-hydroxy ethylidene-1,1-diphosphonic acid | 2809-21-4 | 90 |

Section 3: Hazards Identification

Emergency overview

Form: powder
Colour: white crystalline
Odour: slight to none

Human health effects

Risk of serious damage to eyes.

Environmental effects

On the basis of available information, this material is not expected to produce any significant adverse environmental effects when recommended use instructions are followed.

Section 4: First Aid Measures

General

Grossly contaminated clothing.
Take off immediately all contaminated clothing.
Wash before re-use.

Eye contact

Rinse immediately with plenty of water.
Continue for at least 15 minutes.
Obtain medical attention from an eye specialist.

Skin contact

Wash immediately with plenty of water.
Continue for at least 15 minutes.
Obtain medical advice if there are persistent symptoms.
Remove contaminated clothing.

Inhalation

Remove patient to fresh air.
Obtain medical advice if there are persistent symptoms.

Ingestion

Give water to drink.
Obtain medical advice.

Section 5: Fire and Explosion Data

Extinguishing media

Water spray, foam, dry chemical, or carbon dioxide

Exposure hazards

Decomposes in a fire giving off irritant fumes.

Combustion products

carbon monoxide (CO), carbon dioxide, phosphines

Protective equipment

Firefighters, and others exposed, wear self-contained breathing apparatus.

Equipment should be thoroughly decontaminated after use.

Section 6: Accidental Release Measures

Personal precautions

Use personal protection recommended in section 8.

Environmental precautions

Keep out of drains and water courses.

Methods for cleaning up

Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Neutralize washings with soda ash or lime.

Flush spill area with water.

Section 7: Handling and Storage

Handling

Do not get in eyes, on skin, or on clothing.

Avoid breathing vapour or mist.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

Engineering measures

Provide natural or mechanical ventilation to minimize exposure.

If practical, use local mechanical exhaust ventilation at sources of air contamination such as processing equipment.

Provide local exhaust ventilation.

Storage

Keep in a cool, dry, well ventilated place.

Stable under normal conditions of handling and storage.

Temperature > -25 oC

Use these materials for equipment glass lining, PVC, polypropylene, glass reinforced plastic, polyethylene.

Unsuitable materials of construction mild steel, carbon steel, aluminum, other metals.

Section 8: Exposure Controls/Personal Protection

Occupational exposure limit

No specific occupational exposure limit has been established.

Respiratory protection

Avoid breathing vapour or mist.

Use approved respiratory protection equipment when airborne exposure is excessive.

If used, full facepiece replaces the need for face shield and/or chemical goggles.

Consult the respirator manufacturer to determine the appropriate type of equipment for a given application.

Observe respirator use limitations specified by the manufacturer.

In case of insufficient ventilation, wear suitable respiratory equipment.

Hand protection

Wear chemical resistant gloves. Suitable materials : PVC, nitrile (rubber).

Eye protection

Wear chemical goggles.

Have eye wash facilities immediately available at any location where eye contact can occur.

Skin protection

Although this product does not present a significant skin concern, minimize skin contamination by following good industrial practice.

Wash thoroughly after handling.

Wear suitable protective clothing.

Section 9: Physical and Chemical Properties

| | |
|---------------------------------------------------------|-------------------------------------------------------------------------------------|
| pH: | <=2.0 10 g/l @ 25 °C |
| Flash point: | Non flammable aqueous solution. |
| Water solubility: | Completely miscible |
| Partition coefficient n-octanol/water (log Pow): | -3,5 @ 20 °C |
| Dynamic viscosity | 46,0 mPa.s @ 20 °C 20,2 mPa.s @ 40 °C 10,3 mPa.s @ 60 °C 5,0 mPa.s @ 90 °C |
| Other information | |
| Freezing point: | -25 °C |

Section 10: Stability and Reactivity Data

Conditions to avoid

Do not expose to extreme temperatures.

Materials to avoid

Attacks many metals.

Corrosive to aluminum and mild steel.

Contact with strong oxidizing agents.

Contact with strong bases.

Hazardous reactions

Hazardous polymerization does not occur.

Hazardous decomposition products

Decomposition products: carbon monoxide (CO), carbon dioxide, phosphorus oxides (PxOy).

Section 11: Toxicological Information

Acute animal toxicity

data Oral

LD50 ,rat, 2.400 mg/kg ,

Dermal

LD50 , rabbit, 7.940 mg/kg ,

Eye irritation

rabbit, Risk of serious damage to eyes.

Skin irritation

rabbit, Not irritating to skin. 24 h

Repeat dose toxicity:

rat & dog, diet, subchronic,

Minor effects (less than lesions) were present in some animals at the end of the observation period.

Repeat dose toxicity:

rat & dog, diet, chronic,

Minor effects (less than lesions) were present in some animals at the end of the observation period.

Repeat dose toxicity:

dog, subcutaneous, chronic,

Adverse effects observed in repeat dose studies.

Target organs

affected bone

Developmental toxicity

rat & rabbit, gavage, No birth defects were noted in rats given the active ingredient orally during pregnancy.

Reproductive toxicity

rat, diet, 2 generation This material had no effect on reproduction or fertility.

Mutagenicity

No genetic effects were observed in standard tests using bacterial and animal cells.

Section 12: Ecological Information

Data is for parent acid.

Environmental Toxicity

Invertebrates: 48 h, EC50 Water flea (*Daphnia magna*) 527 mg/l

Fish: 96 h, LC50 Rainbow trout (*Oncorhynchus mykiss*) 368 mg/l

96 h, LC50 Bluegill sunfish (*Lepomis macrochirus*) 868 mg/l

Algae: 96 h EC50 Algae 7.2 mg/l

Algal growth inhibition is due to ability of this product to complex materials not to toxicity per se.

Environmental fate

COD (Chemical oxygen demand) 263 mg/g

ThOD (Theoretical oxygen demand) 280 mg/g

Biodegradation Zahn-Wellens Dissolved Organic Carbon removed 33 % 28 d

Modified OECD Screening theoretical CO₂ evolution 2 % 70 d

Modified SCAS Dissolved Organic Carbon removed 90 %

Closed Bottle BOD₃₀/COD 5 % Degrades after acclimatization

Bioconcentration factor (BCF) not expected to bioaccumulate

Section 13: Disposal Considerations

All local and national regulations should be followed.

Small quantities : Adjust pH between 6 and 9 and flush away with plenty of water.

Section 14: Transport Information

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

| | |
|-------------------------------------|------------------|
| Hazard Class | 8 |
| Hazard Identification number | UN3261 |
| Packing Group | Packing Group II |

Section 15: Other Regulatory Information

EC label
EU Dangerous Preparations Directive 1999/45/EC.
Xi - Irritant
R41 - Risk of serious damage to eyes.
S25-Avoid contact with eyes.
S26-In case of contact with eyes,rinse immediately with plenty of water and seek medical advice
S28-After contact with skin,wash immediately with plenty of water
S39-Wear eye/face protection

Contains
1-hydroxy ethylidene-1,1-diphosphonic acid
Other regulation
Germany-WGK(Wassergefährdungsklasse):2.

Section 16: Other Information

References: Not available.
Other Special Considerations: Not available.
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