

MATERIAL SAFETY DATA SHEET

HEDP

1 Chemical Product & Company Information :

CHEMICAL NAME 1-Hydroxyethylidene-1, 1-Diphosphonic Acid (HEDP)

CAS#: 2809-21-4

TRADE NAME:Phosphonic Acid, (1-Hydroxyethylidene) Di; (1-Hydroxyethylidene) Diphosphonic acid;HEDP

COMPANY: SPE CHEMICALS CO.,LTD

ADDRESS:ROOM 1615,NO 345 JINXIANG ROAD,PUDONG,SHANGHAI ,CHINA
201206

TEL:+86-21 51386314

2.Ingredient

INGREDIENT	CAS #	PERCENTAGE
1-Hydroxyethylidene-1, 1-Diphosphonic Acid	2809-21-4	58 - 62

3. HAZARDS IDENTIFICATION

PHYSICAL FORM: Clear to yellow liquid.

MAJOR HEALTH HAZARDS: Respiratory tract burns, mucous membrane burns, skin irritation, eye irritation.

PHYSICAL HAZARDS: Dust / air mixtures may ignite or explode

POTENTIAL HEALTH EFFECTS

INHALATION: Short Term Exposure: Burns

Long Term Exposure: Same as effects reported in short term exposure

SKIN CONTACT: Short Term Exposure: Irritation, itching

Long Term Exposure: Same as effects reported in short term exposure.

EYE CONTACT: Short Term Exposure: Irritation, itching

Long Term Exposure: Same as effects reported in short term exposure.

INGESTION: Short Term Exposure: Burns

Long Term Exposure: Same as effects reported in short term exposure.

4. FIRST AID MEASURES

INHALATION: When safe to enter area, remove from exposure. Use a bag valve mask or similar device to perform

artificial respiration (rescue breathing) if needed. Get medical attention.

SKIN CONTACT: Remove contaminated clothing, jewelry and shoes immediately. Wash with soap or mild detergent

and large amounts of water until no evidence of chemical remains (at least 15 – 20 minutes). Get medical attention, if needed.

EYE CONTACT: Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.

INGESTION: Never make an unconscious person vomit or drink fluids. Give water or milk. If vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARD: Slight fire hazard. Dust/air mixtures may ignite or explode.

EXTINGUISHING MEDIA: Regular dry chemical, carbon dioxide, water, and regular foam.

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Use extinguishing agents appropriate for surrounding fire.

Do not get water directly on material.

LARGE FIRES: Flood with fine water spray. Reduce vapors with water spray. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL SPILL: Do not touch spilled material. Stop leak if possible without personal risk.

SMALL SPILLS: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal.

SMALL DRY SPILLS: Move containers away from spill to a safe area.

LARGE SPILLS: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry.

7. HANDLING AND STORAGE

HANDLING: Do not get into eyes, on skin, or on clothing. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

STORAGE: Store in cool, dry, well ventilated area above 0oC. Product is stable under normal conditions of handling and storage.

Emptied containers retain vapor and product residue. Observe all recommended

safety precautions until container is cleaned, reconditioned, or destroyed. The reuse of this material's container for non-industrial purposes is prohibited and any reuse must be in consideration of the data provided in this material safety data sheet.

SUITABLE MATERIALS OF CONSTRUCTION: Glass lining, PVC, polypropylene, glass reinforced plastic, and polyethylene.

UNSUITABLE MATERIALS OF CONSTRUCTION: Mild steel, carbon steel, aluminum, and other metals.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS: No occupational exposure limits established. **VENTILATION:** Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

PROTECTIVE MATERIAL TYPES: Rubber

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any dust, mist and fume respirator. Any air-purifying respirator with a high-efficiency particulate filter. Any powered, air-purifying respirator with a dust, mist and fume filter. Any powered, air-purifying respirator with a high-efficiency particulate filter.

For unknown concentrations or immediately dangerous to life or health – Any supplied-air respirator with full face-piece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full face-piece.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State : Liquid

Appearance : Clear, colorless to pale straw

Odour : Odorless

Molecular Formula : C-H3-C-(H2-O3-P) 2-O-H

Boiling Point : 226oF, 108oC

Melting point : < 34oF, < 1oC

Specific gravity : 1.40 - 1.45

pH : 2 - 3

Vapour Pressure : 23.8 @ 77oF

Vapour Density : 0.8

Decomposition Temperature : Unknown

Evaporation Rate : 1 (N-Butyl Acetate = 12)
Water solubility : Complete
Viscosity : Unknown
Corrosion Rate (IPY) : Unknown

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperature and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Dangerous gases may accumulate in confined spaces. May ignite or explode on contact with combustible materials.

INCOMPATIBILITIES: Bases, amines, metals, reducing agents, oxidizing materials.

Alkalies: Violent reaction

Amines: Incompatible

Metals: May be corrosive in the presence of moisture

Metal salts of sulfides: May release toxic gases

Oxidizers: Fire and explosion hazard.

Sulfites: May release toxic gases

HAZARDOUS DECOMPOSITION: Thermal decomposition products: phosphine, inorganic acids, oxides of phosphorus.

POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: 1800 mg/kg oral-mouse LD50

LOCAL EFFECTS: Irritant skin, eye corrosive, inhalation ingestion.

ACUTE TOXICITY LEVEL: Moderately toxic: ingestion

REPRODUCTIVE EFFECTS DATA:

40 mg/kg intraperitoneal-mouse TDLo 7 day/s pregnant female continuous;

200 mg/kg intraperitoneal-mouse TDLo 7 day/s pregnant female continuous;

200 mg/kg intraperitoneal-mouse TDLo 7 day/s pregnant female continuous

200 mg/kg intraperitoneal-mouse TDLo 8 day/s pregnant female continuous;

200 mg/kg subcutaneous-mouse TDLo 13 day/s pregnant female continuous;

1400 mg/kg subcutaneous-mouse TDLo 11-17 day/s pregnant female continuous;

HEALTH EFFECTS

INHALATION:

Acute Exposure: Aqueous solutions have been reported to be corrosive to all mucous membranes.

Chronic Exposure: No data available.

SKIN CONTACT: Acute Exposure: Aqueous solutions may cause burning and itching.

Chronic Exposure: Repeated or prolonged exposure to irritants may cause dermatitis.

EYE CONTACT: Acute Exposure: Aqueous solutions may cause burning and itching.

Chronic Exposure: Repeated or prolonged exposure to irritants may cause

conjunctivitis.

INGESTION: Acute Exposure: Aqueous solutions have been reported to be corrosive to all mucous membranes.

Chronic Exposure: Administration of 50, 150 or 500 mg/kg/day for 24 months resulted in reduced body

weights and changes in liver, spleen and kidney weights or weight ratios in the high dose group. The

no-effect level was considered to be 150 mg/kg/day.

12. ECOLOGICAL INFORMATION

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 (*Selenastrum capricornutum*) 3 mg/l

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

ENVIRONMENTAL FATE

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.

13. DISPOSAL CONSIDERATIONS

Consult regulatory officials for performance standards.

14. TRANSPORT INFORMATION

DOT Proper Shipping Name : Corrosive liquid, acidic, organic, n.o.s. (phosphonic acid)

DOT Class : 8

DOT ID Number : UN 3265

DOT Pack Group : III

DOT Label : Corrosive

IMO Proper Shipping Name : Corrosive liquid, acidic, organic, n.o.s. (phosphonic acid)

IMO UN Number : 3265

IMO UN Class : 8

IMO Subsidiary Risk Label : -

IATA UN ID Number : 3265

IATA Proper Shipping Name : Corrosive liquid, acidic, organic, n.o.s. (phosphonic acid)

MSDS of HEDP

IATA Label : Corrosive
AFI Proper Shipping Name : Corrosive liquid, acidic, organic, n.o.s.
AFI Class : 8
AFI ID Number : UN 3265
AFI Pack Group : III
AFI Label : Corrosive
n.o.s. Shipping Name : 1-Hydroxyethylidene-1,1-Diphosphonic Acid

15. REGULATORY INFORMATION

TSCA Status : Y
TSCA 12(b) export notification : Not listed
CERCLA Section 103 (40 CFR 302.4) : N
SARA Section 302 (40 CFR 355.30) : N TPQ
SARA Section 304 (40 CFR 355.40) : N RQ
SARA Section 313 (40 CFR 372.65) : N
California Prop 65 Status : N
SARA Acute Hazard : Y
SARA Chronic Hazard : N
SARA Fire Hazard : N
SARA Reactivity Hazard : N
SARA Sudden Release Hazard : N
WHMIS Classification : N
INTERNATIONAL REGULATIONS:
EU Risk and Safety Phrases:
R : 22-36-38
Harmful if swallowed. Irritating to eyes. Irritating to skin
S : 2-13-24-25-26-36-46
Keep out of reach of children. Keep away from food, drink and animal feeding stuffs. Avoid contact with skin. Avoid contact with eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing. If swallowed, seek medical advice immediately and show this container or label.

16. OTHER INFORMATION

Shandong Taihe Water Treatment Co.,Ltd believe that the information contained in each material safety data sheet ("MSDS"), technical data sheet ("TDS"), product information brochure and/or information contained herein (including data and statements) is accurate as of the date of publication. The MSDSs, TDSs, product information brochures, and information contained herein are referred to collectively as the "Data Sheets". It is the responsibility of the user to obtain and use the most recent version of the Data Sheets. Each Data Sheet relates only to the specific product designated therein and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods

MSDS of HEDP

of use of the product and information are beyond the control of Gulbrandsen, expressly disclaims any and all liability as to any consequential damages or results obtained or arising from any use of the products or the information contained in the Data Sheets. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE AS CONCERNS THE DATA SHEETS OR THE RELATED PRODUCTS. No statement made in the Data Sheets or by any employee or agent of Gulbrandsen shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents. No employee, agent, distributor, or sales representative is authorized to vary the terms of the above paragraph, to make any statements, representations, or warranties inconsistent with the above paragraph, or to provide any information that is at variance with the above paragraph. All materials related to the product are subject in all respects to the above paragraph and to the extent that they are inconsistent with the above paragraph, the terms of the above paragraph shall control.