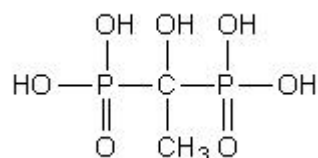


1-Hydroxy Ethylidene-1,1-Diphosphonic Acid (HEDP)



CAS No.	2809-21-4	EINECS No.	220-552-8
Molecular Formula	C ₂ H ₈ O ₇ P ₂	Molecular Weight	206.02

Structural Formula



Product Features

HEDP is an organophosphonate corrosion inhibitor. HEDP shows multifunctional properties that includes scale inhibition and corrosion inhibition. HEDP is noted for excellent CaCO₃ inhibitor and water hardness stabilizer. HEDP is very good complexing agent for metal ions like Fe, Cu, and Zn.

HEDP can react with metal ions in water system to form hexa-element chelating complex, with calcium ion in particular. When built together with other water treatment chemicals, HEDP shows good synergistic effects. HEDP shows excellent stability under high pH value, hard to be hydrolyzed, and hard to be decomposed under ordinary light and heat conditions. HEDP shows excellent scale and corrosion inhibition effects under temperature 250 °C . HEDP acid/alkali and chlorine oxidation tolerance are better than that of other organophosphonate (salts).

HEDP can dissolve the oxidized materials on these metals' surfaces.

HEDP solid form is a white crystalline powder with a melting point of 198-200° C, suitable for usage in winter and freezing districts. Highly soluble in water, acids, alkalis, methanol and ethanol. Because of its high purity, it can be used as cleaning agent in electronic fields and as additives in daily chemicals.

Technical Specification

Parameter	Standard	
	Liquid	solid
Appearance	Clear, colorless to pale yellow aqueous solution	White crystal powder
Active content(HEDP), %	58-62	90.0 min
Active content (HEDP·H ₂ O), %	-	98.0 min
Phosphorous acid (as PO ₃ ³⁻), %	2.0 max	0.8 max
Phosphoric acid (as PO ₄ ³⁻), %	0.8 max	0.5 max
Chloride (as Cl ⁻), ppm	100.0 max	100.0 max
pH (1% water solution)	2.0 max	2.0 max
Density (20°C), g/cm ³	1.43-1.47	-
Fe, mg/L	20.0 max	10.0 max
Color APHA (Hazen)	40.0 max	-
Calcium chelating capacity (mg CaCO ₃ /g)	500.0 min	-

Applications & Usage

HEDP is widely used in several end use applications such as detergents (as chelant), industrial and institutional cleaners, personal care products, water treatment circulating cooling water systems, low-pressure boilers, swimming pool stain prevention, metal ion control, oilfield, textile, paper, peroxide stabilizer, electroplating, HEDP also can be used for formulating RO membrane antiscalants, thermal desalination antiscalants, formulation for treating sterilizers etc.

In light woven industry, HEDP is used as detergent for metal and nonmetal. In dyeing industry, HEDP is used as peroxide stabilizer and dye-fixing agent. In non-cyanide electroplating, HEDP is used as chelating agent.

Scale & Corrosion Inhibition Performance

CaCO ₃ inhibition	CaSO ₄ inhibition	Ca ₃ (PO ₄) ₂ inhibition	BaSO ₄ inhibition	CaF ₂ inhibition
Excellent	Poor	Very Good	Good	Good
Calcium Tolerance	Iron Control	Sequestration	Steel Corrosion inhibition	
Poor	Yes	Good	Very Good	

Package & Storage

HEDP Liquid				HEDP Solid	
25L Drum	200L Drum	1000L IBC	ISO Tank	25kg Bag	Bulk Bag
					
Storage for 10 months in shady room and dry place.					

Hazard & Safety Precaution

Hazard Information	Safety Precaution
 Corrosive, Class 8, UN 3265	
Once contacted with eye and skin, flush with plenty of clean water.	

Alternative Name / Synonyms

- HEDPA;
- Etidronic Acid;
- 1-Hydroxy Ethylidene-1,1-Diphosphonic Acid;
- Hydroxyethylidene-1,1-diphosphonicacid(HEDP);
- 1-Hydroxyethylidenediphosphonic Acid;
- 1-Hydroxy-1,1-EthanediyI ester;
- Oxyethylidenediphosphonic Acid(OEDP)

HEDP Salts

- Disodium Salt of 1-Hydroxy Ethylidene-1,1-Diphosphonic Acid (HEDP.Na2)
- Tetra Sodium Salt of 1-Hydroxy Ethylidene-1,1-Diphosphonic Acid (HEDP.Na4)
- Tetra Sodium of 1-Hydroxy Ethylidene-1,1-Diphosphonic Acid (HEDP.Na4 Granule)
- Potassium salt of 1-Hydroxy Ethylidene-1,1-Diphosphonic Acid (HEDP.K2)