

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

CAS No. **2809-21-4**  
Molecular weight **206.02**  
Formula **C<sub>2</sub>H<sub>8</sub>O<sub>7</sub>P<sub>2</sub>**

Item	Specification
Appearance	Clear, colourless to pale yellow aqueous solution
Active content (as HEDP) %	60 min
Phosphorous acid (as PO <sub>3</sub> <sup>-3</sup> ) %	1.0 max
Phosphoric acid (as PO <sub>4</sub> <sup>-3</sup> ) %	0.6 max
Chloride ( as Cl) %	0.01 max
pH value (1% solution)	2.0 max
Density (20°C) g/cm <sup>3</sup>	1.40 min
Fe, mg/L	10.0 max
Colour APHA ( Hazen)	10.0 max
Ca sequestration (mg CaCO <sub>3</sub> /g)	500.0 min

### Properties

HEDP is an organophosphoric acid corrosion inhibitor. It can chelate with Fe, Cu, and Zn ions to form stable chelating compounds. It can dissolve the oxidized materials on these metals' surfaces. HEDP shows excellent scale and corrosion inhibition effects under temperature 250°C. HEDP has good chemical stability under high pH value, hard to be hydrolysed and hard to be decomposed under ordinary light and heat conditions. It's acid/alkali and chlorine oxidation tolerance are better than that of other organophosphoric acids (salt). HEDP can react with metal ions in water systems to form hexa-element chelating complex, with calcium ions in particular. Therefore, HEDP has good anti-scale and visible threshold effects. When built together with other water treatment chemicals, it shows good synergistic effects.

The solid state of HEDP is a crystalline powder, suitable for usage in winter and freezing districts. Due to its high purity, it can be used as a cleaning agent in electronic fields and as an additive in daily chemicals.

### **Usage**

HEDP is used as a scale and corrosion inhibition in circulating cool water systems, oil field and low-pressure boilers in fields such as electric power, chemical industry, metallurgy, fertilizer, etc. In light woven industry, HEDP is used as detergent for metal and non-metal. In the dyeing industry, HEDP is used as peroxide stabilizer and dye-fixing agent; in non-cyanide electroplating, HEDP is used as chelating agent. The dosage of 1-10 mg/L is preferred as a scale inhibitor, 10-50 mg/L as corrosion inhibitor, and 1000-2000 mg/L as detergent. Usually, HEDP is used together with poly-carboxylic acid.

### **Package and Storage**

HEDP Liquid: 200 L plastic drums, IBC (1000 L), customer's requirement.

Storage for ten months in a dark and dry place.

### **Safety Protection**

Acid, avoid contact with eye and skin; once contacted flush with enough water.