

ZEELCHEM™ 101 — HEDP 60

HEDP 60 % — 1-Hydroxyethylidene-1,1-Diphosphonic Acid

Technical Data Sheet · Revision 00 · Date of issue 19-10-2026

ISO 9001:2015 · ISO 22000:2018 · ISO 14001:2015 CERTIFIED MANUFACTURER · MADE IN INDIA

Product name	ZEELCHEM™ 101 HEDP 60
Chemical name	HEDP 60 % — 1-Hydroxyethylidene-1,1-Diphosphonic Acid
Synonyms / abbreviation	HEDP
CAS No.	2809-21-4
Molecular formula	C ₂ H ₈ O ₇ P ₂
Molecular weight	206.03
Category	Water Treatment Phosphonate
HS code (indicative)	2931.49
Physical form	Colourless to light-yellow transparent liquid

PRODUCT DESCRIPTION

ZEELCHEM™ 101 is HEDP (1-hydroxyethylidene-1,1-diphosphonic acid, also known as etidronic acid) supplied as a 60 % aqueous solution. It is an organophosphonate scale and corrosion inhibitor that forms stable, water-soluble chelates with calcium, magnesium, iron, copper and zinc, and remains effective at temperatures up to about 250 °C.

HEDP inhibits calcium carbonate scale at sub-stoichiometric (threshold) doses, and at higher doses forms a protective film on steel that gives cathodic corrosion inhibition. Its hydrolytic stability is far better than that of inorganic polyphosphates, so it does not revert to orthophosphate and does not feed calcium phosphate deposits.

Beyond water treatment, HEDP is a chelant and peroxide stabiliser in textile bleaching, a sequestrant in detergents, a complexing agent in cyanide-free electroplating, and an ingredient in metal cleaning and descaling formulations.

KEY FEATURES & BENEFITS

- Threshold inhibition of CaCO₃ and CaSO₄ scale
- Cathodic corrosion inhibition; synergy with zinc and molybdate
- Chelates Ca, Mg, Fe, Cu, Zn ions
- Thermally stable up to approx. 250 °C
- Better hydrolytic stability than polyphosphates
- Peroxide stabiliser for textile and pulp bleaching

TYPICAL SPECIFICATIONS

Parameter	Specification	Test method
Appearance	Colourless to light-yellow transparent liquid	Visual (25 °C, clear glass)
Active content (as HEDP)	58.0 – 62.0 %	Ion chromatography / titration

Parameter	Specification	Test method
Phosphorous acid (as PO_3^{3-})	$\leq 2.0 \%$	Ion chromatography / iodometric
Phosphoric acid (as PO_4^{3-})	$\leq 0.8 \%$	Spectrophotometric (molybdate)
Chloride (as Cl^-)	$\leq 0.02 \%$	Argentometric titration
pH (1 % aqueous solution)	≤ 2.0	pH meter, 1 % aq., 25 °C
Density at 20 °C	$\geq 1.40 \text{ g/cm}^3$	Density bottle / hydrometer, 20 °C
Iron (as Fe^{3+})	$\leq 10 \text{ mg/L}$	Spectrophotometric (1,10-phenanthroline)

Values are typical specifications. Each consignment is supplied with a batch Certificate of Analysis (COA). Custom specifications are available on request.

APPLICATIONS

- Cooling towers and closed loops
- Boilers and steam systems
- Oilfield and gas-field water
- Textile bleaching and dyeing
- Detergents and industrial cleaners
- Cyanide-free electroplating
- Metal surface cleaning and descaling
- RO antiscalant formulations

DOSAGE & METHOD OF USE

As a scale inhibitor: 1 – 10 mg/L. As a corrosion inhibitor: 10 – 50 mg/L, usually with zinc salts or polymers. As a cleaning agent: 1 – 2 % solution. Exact dosage depends on water analysis and system design.

Dose with a metering pump into a point of good mixing. The product may be diluted with good-quality (soft or demineralised) water; dilute solutions should be prepared fresh. Compatible with other ZEELCHEM™ polymers and phosphonates; check compatibility before blending with strong oxidisers or cationic products.

PACKAGING

65.0 kg net HDPE carboy. Each carboy is labelled with product name, batch number, net weight and GHS hazard information.

STORAGE & SHELF LIFE

Store in original closed HDPE / stainless-steel containers in a cool, dry, well-ventilated and shaded area away from strong alkalis and oxidisers. Avoid freezing and prolonged direct sunlight. Shelf life: 12 months in unopened packing.

SAFETY & HANDLING



Signal word: **DANGER**

H290: May be corrosive to metals.

H314: Causes severe skin burns and eye damage.

Acidic product. Wear chemical goggles, nitrile/PVC gloves and protective clothing. In case of eye or skin contact, rinse with plenty of water for at least 15 minutes and seek medical advice. Refer to the ZEELCHEM™ SDS (GHS / CLP format) before handling. Full information is given in the ZEELCHEM™ Safety Data Sheet (SDS/MSDS).

QUALITY & REGULATORY

- Manufactured under an ISO 9001:2015 quality management system; ISO 22000:2018 and ISO 14001:2015 certified.
- Batch traceability with retained samples; COA with every consignment.
- SDS prepared to GHS (UN Rev. 10), ISO 11014, Indian MSIHC Rules 1989 (Schedule 9), EU REACH Annex II and US OSHA HCS formats.
- Transport: UN 3265, CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S., Class 8, PG III (ADR / IMDG / IATA).

The information in this data sheet is based on our present knowledge and experience and is given in good faith. It does not constitute a warranty of specific properties or suitability for a particular application. Users should carry out their own tests. ZEEL PRODUCT accepts no liability for use outside our recommendations.