

ZEELCHEM™ 1000 — Polyacrylic Acid

Polyacrylic Acid (PAA)

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™ 1000 Polyacrylic Acid
Chemical name	Polyacrylic Acid (PAA)
Synonyms / abbreviation	PAA
CAS No.	9003-01-4
Molecular formula	(C ₃ H ₄ O ₂) _n
Molecular weight	Low MW, approx. 1,800 – 5,000
Category	Water Treatment Polymer
HS code (indicative)	3906.90
Physical form	Colourless to light-amber, transparent viscous liquid

PRODUCT DESCRIPTION

ZEELCHEM™ 1000 is a low-molecular-weight homopolymer of acrylic acid (PAA) supplied as a 48 % aqueous solution. It is a non-toxic, phosphorus-free scale inhibitor and dispersant that controls calcium carbonate and calcium sulphate scale through threshold inhibition and crystal-lattice distortion, and keeps suspended solids, silt, clay and iron oxide dispersed in recirculating water.

In open recirculating cooling water systems, ZEELCHEM™ 1000 is normally combined with phosphonates such as HEDP (ZEELCHEM™ 101) or ATMP (ZEELCHEM™ 111) and with zinc salts in alkaline treatment programmes, where the polymer improves threshold inhibition and prevents deposition of phosphonate–calcium and zinc hydroxide precipitates.

Because of its narrow molecular-weight distribution and high carboxyl density, the polymer adsorbs strongly on growing crystal faces and on particle surfaces. This gives excellent dispersion of calcium carbonate, kaolin and pigment slurries, which is why PAA is also widely used in detergent, textile, paper and ceramic processing.

KEY FEATURES & BENEFITS

- Excellent threshold inhibition of CaCO₃ and CaSO₄ scale
- Strong dispersion of silt, clay, iron oxide and suspended solids
- Phosphorus-free, non-toxic and readily formulated
- Synergistic with HEDP, ATMP, PBTC and zinc salts
- Stable under alkaline conditions and at elevated temperature
- Low free-monomer content for safe handling

TYPICAL SPECIFICATIONS

Parameter	Specification	Test method
Appearance	Colourless to light-amber transparent viscous liquid	Visual (25 °C, clear glass)

Parameter	Specification	Test method
Solid content	≥ 48.0 %	Gravimetric, oven 120 °C
Free monomer (as CH ₂ =CHCOOH)	≤ 0.50 %	Bromination titration / HPLC
pH (1 % aqueous solution)	2.0 – 3.0	pH meter, 1 % aq., 25 °C
Density at 20 °C	≥ 1.20 g/cm ³	Density bottle / hydrometer, 20 °C
Average molecular weight	1,800 – 5,000 (low MW)	GPC (gel permeation chromatography)
Solubility	Completely miscible with water	Visual, 1:10 in water

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

APPLICATIONS

- Open recirculating cooling towers
- Low-pressure boilers and steam generators
- Oilfield water injection and produced water
- Detergent and cleaning formulations
- Textile pre-treatment and dyeing
- Paper coating and pigment dispersion
- Ceramic and mineral slurry dispersion
- Industrial process water

DOSAGE & METHOD OF USE

Typical dosage as a scale inhibitor in cooling water is 1 – 15 mg/L, depending on make-up water chemistry, cycles of concentration and the companion inhibitors used. As a dispersant in slurry and detergent applications, 0.2 – 2.0 % on the weight of solids is typical. Final dosage should be set from a water analysis and confirmed by our technical team.

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

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

STORAGE & SHELF LIFE

Store in closed HDPE containers in a cool, shaded, ventilated area between 5 °C and 40 °C. Avoid freezing and direct sunlight; mix gently before use if slight stratification is seen. Shelf life: 12 months in unopened packing.

SAFETY & HANDLING



Signal word: **WARNING**

H315: Causes skin irritation.

H319: Causes serious eye irritation.

Mildly acidic polymer solution. Use goggles and gloves; avoid contact with eyes and prolonged skin contact. Rinse spills with water. Refer to the ZEELCHEM™ SDS (GHS 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: Not regulated as dangerous goods (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.