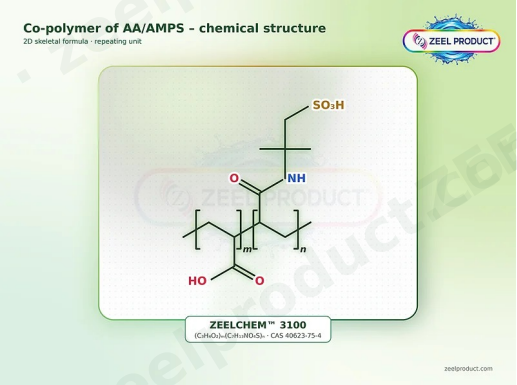
TECHNICAL DATA SHEET (TDS)

Acrylic Acid / AMPS Copolymer (AA/AMPS) — ZEELCHEM™ 3100

Sulphonated copolymer for calcium phosphate, zinc, iron and silica control in high-stress cooling and RO systems.

Product code	ZEELCHEM™ 3100
Chemical type	Co-polymer of AA/AMPS
CAS No.	40623-75-4
HS Code	3906 90 90



1. Product description

ZEELCHEM™ 3100 is a copolymer of acrylic acid and 2-acrylamido-2-methylpropane sulphonic acid (AA/AMPS). The strongly acidic sulphonate group stays ionised at any pH and does not form insoluble salts with calcium. That makes AA/AMPS one of the most effective polymers for calcium phosphate inhibition, zinc stabilisation and iron/manganese dispersion. These are the deposits that ordinary polyacrylates cannot control.

AA/AMPS is the backbone of modern phosphate and zinc-phosphate cooling water programs, high-cycle and high-pH alkaline programs, and many RO antiscalant formulations. ZEEL PRODUCT supplies ZEELCHEM™ 3100 from Vadodara to customers all over India.

2. Typical properties

Parameter	Typical value
Appearance	Colourless to light yellow, clear liquid
Chemical name	Copolymer of acrylic acid and 2-acrylamido-2-methylpropane sulphonic acid
Solid content	≥ 30.0 %
Free monomer (as acrylic acid)	≤ 0.50 %
pH (1 % aqueous solution)	2.5 – 3.5
Density at 20 °C	≥ 1.15 g/cm³
Average molecular weight	5,000 – 12,000
Calcium tolerance	Very high; stable in hard water
CAS No.	40623-75-4
HS Code	3906 90 90

Values are typical and not a specification for any particular batch. Each dispatch is supplied with a batch Certificate of Analysis (COA).

3. Chemical identity & synonyms

Chemical name	Copolymer of acrylic acid and 2-acrylamido-2-methylpropane sulphonic acid
Formula / structure	$(C_3H_4O_2)_m(C_7H_{13}NO_4S)_n$
Molecular weight (Mw)	5,000 – 12,000
CAS No.	40623-75-4
Also known as	AA/AMPS copolymer; acrylic acid–2-acrylamido-2-methylpropane sulphonic acid copolymer; sulphonated copolymer; AA-AMPS scale inhibitor

4. Mechanism of action

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- No calcium precipitation. Sulphonates stay ionised and soluble even in very hard water. The polymer therefore remains in solution to do its work, while carboxylate-only polymers can precipitate as calcium salts.
- Calcium phosphate inhibition. AA/AMPS adsorbs on $Ca_3(PO_4)_2$ and hydroxyapatite nuclei and stops their growth. This lets phosphate corrosion inhibitors work without turning into scale.
- Zinc and iron stabilisation. It keeps Zn^{2+} soluble at pH 7.5–8.5 so zinc stays available for corrosion protection. It also disperses iron and manganese oxides so they do not foul exchangers.
- Silica control. It reduces magnesium silicate and colloidal silica deposits in high-silica make-up water.

5. Applications

Application	Function
Phosphate & zinc-phosphate cooling programs	Prevents calcium phosphate scale and stabilises zinc for corrosion control.
High-pH / high-cycle cooling towers	Lets systems run at higher cycles of concentration to save water.
Iron-rich make-up water	Disperses iron and manganese oxides and corrosion products.
RO / NF antiscalant formulations	Controls calcium phosphate, silica and metal oxide fouling of membranes.
Closed loops & chillers	Dispersant to keep heat-transfer surfaces clean.
Oilfield & mining water	Scale and dispersant for high-TDS water.

6. Recommended dosage

Application	Typical dosage
Phosphate cooling program	5 – 20 mg/L as product (1 – 2 mg/L polymer per mg/L PO_4)
Alkaline high-cycle program	3 – 12 mg/L as product
Iron dispersion	2 – 5 mg/L polymer per mg/L Fe
RO antiscalant formulation	10 – 25 % of formulation
Closed loops	10 – 30 mg/L

Optimum dosage depends on water analysis, temperature, cycles of concentration and system design. Contact ZEEL PRODUCT for a program recommendation.

7. Benefits

- Outstanding calcium phosphate scale inhibition
- Stabilises zinc for corrosion protection
- Disperses iron, manganese and silt
- Very high calcium tolerance at high pH
- Enables higher cycles of concentration
- Thermally and chlorine stable

8. Compatibility & formulation

ZEELCHEM™ 3100 is compatible with other ZEELCHEM™ polymers, phosphonates (HEDP, ATMP, PBTC), zinc salts, molybdate, azoles (BTA, TTA) and common oxidising and non-oxidising biocides at use concentrations. Always run a compatibility test before blending concentrated products.

9. Handling, storage & shelf life

Store in closed HDPE containers at 5 °C – 40 °C, away from direct sunlight and freezing. Acidic, so use non-metallic or SS316 equipment. Shelf life is 12 months in original sealed packing.

Safety: Mildly acidic; may irritate eyes and skin. Wear goggles and gloves. Rinse with water on contact. Refer to the ZEELCHEM™ 3100 MSDS.

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10. Packing

Standard packs	60 kg HDPE carboy · 240 kg HDPE barrel
Documents	TDS, GHS MSDS and batch COA with every order
Supply	Pan-India dispatch from Vadodara, Gujarat

11. Quality & disclaimer

Manufactured under ISO 9001:2015, ISO 14001:2015 and ISO 22000:2018 certified management systems.

The information in this data sheet is based on our present knowledge and laboratory experience and is given in good faith. It does not constitute a warranty of properties for a specific application. Users must determine the suitability of the product for their own use and comply with applicable laws and regulations.

Prepared by: Technical Department

Approved by: QC Manager / Authorised Signatory

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