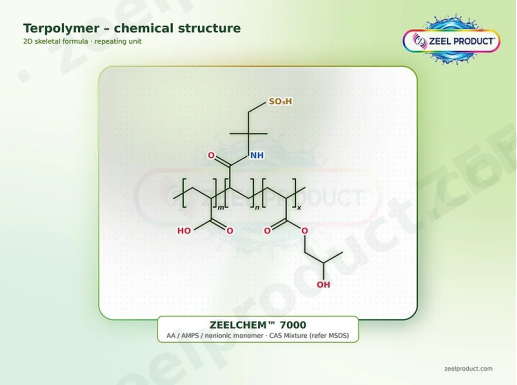
TECHNICAL DATA SHEET (TDS)

Carboxylate–Sulphonate–Nonionic Terpolymer — ZEELCHEM™ 7000

Three-monomer terpolymer for the toughest cooling water: high cycles, high pH, phosphate, zinc and iron together.



Product code	ZEELCHEM™ 7000
Chemical type	Terpolymer
CAS No.	Mixture (refer MSDS)
HS Code	3906 90 90

1. Product description

ZEELCHEM™ 7000 is a terpolymer built from three monomers. A carboxylic monomer (acrylic acid) gives threshold inhibition. A sulphonic monomer (AMPS) gives calcium tolerance and phosphate/zinc stabilisation. A nonionic monomer (hydroxy-ester type) gives extra adsorption and dispersion on particulate surfaces.

With three functional groups on one chain, the terpolymer controls calcium carbonate, calcium phosphate, zinc, iron, manganese and silt at the same time. It is the premium choice for high-cycle, high-pH cooling towers, all-organic and stabilised phosphate programs, and plants that want to cut blowdown and save water. ZEEL PRODUCT manufactures ZEELCHEM™ 7000 in Vadodara for supply across India.

2. Typical properties

Parameter	Typical value
Appearance	Colourless to light yellow, clear liquid
Chemical type	Carboxylate / sulphonate / nonionic terpolymer
Solid content	≥ 30.0 %
Free monomer	≤ 0.50 %
pH (1 % aqueous solution)	2.0 – 3.0
Density at 20 °C	≥ 1.15 g/cm³
Average molecular weight	4,000 – 10,000
Calcium tolerance	Excellent
CAS No.	Mixture – refer MSDS
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	Carboxylate / sulphonate / nonionic terpolymer
Formula / structure	AA / AMPS / nonionic monomer
Molecular weight (Mw)	4,000 – 10,000
CAS No.	Mixture (refer MSDS)
Also known as	Terpolymer scale inhibitor; carboxylate–sulphonate–nonionic terpolymer; AA/AMPS/hydroxy-ester terpolymer; multi-functional antiscalant polymer

4. Mechanism of action

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- Carboxylate (–COO^-): threshold inhibition and crystal distortion for $CaCO_3$ and $CaSO_4$.
- Sulphonate (–SO_3^-): calcium tolerance at high pH and hardness, plus stabilisation of calcium phosphate and zinc hydroxide/phosphate.
- Nonionic segment: extra adsorption on particle surfaces through hydrogen bonding and steric effects. This improves dispersion of iron oxide, clay and organics, and helps against fouling where charge alone is not enough.

5. Applications

Application	Function
High-cycle / zero-blowdown cooling towers	Runs at 6–10+ cycles of concentration to save make-up water.
Stabilised phosphate & zinc programs	Controls calcium phosphate scale while phosphate and zinc protect steel.
All-organic (non-phosphorus) programs	Polymer core with PBTC and azoles for low-P discharge rules.
Power plants, refineries, fertiliser & steel	Heavy-duty cooling circuits with high heat flux and poor make-up water.
RO antiscalant formulations	Premium polymer for phosphate, silica and metal-oxide control.
Closed cooling loops	Long-term dispersant.

6. Recommended dosage

Application	Typical dosage
High-stress cooling tower	3 – 20 mg/L as product
Stabilised phosphate program	1.5 – 2.5 mg/L product per mg/L PO_4
All-organic program	20 – 35 % of formulation
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

- One polymer controls carbonate, phosphate, zinc and iron
- Allows higher cycles, less blowdown, water saving
- Excellent at high pH and hardness
- Supports non-phosphorus green programs
- Thermal and chlorine stable
- Lower total polymer dose than blends

8. Compatibility & formulation

ZEELCHEM™ 7000 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, protected from sunlight and frost. Use HDPE, PP, PVC or SS316 for handling. Shelf life is 12 months in original sealed packing.

Safety: Mildly acidic; may cause eye and skin irritation. Use goggles and gloves. Rinse with water on contact. See the ZEELCHEM™ 7000 MSDS.

A-23, Reva Duplex, Near Shyamal Greens, Behind Bharat Petrol Pump, Ankhol, New Waghodia Road, Vadodara, Gujarat – 390019, India
Tel: +91 97245 93964 / +91 97238 59512 · Email: zeelproduct@gmail.com · www.zeelproduct.com · www.zeelproduct.net
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10. Packing

Standard packs	65 kg HDPE carboy · 260 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

A-23, Reva Duplex, Near Shyamal Greens, Behind Bharat Petrol Pump, Ankhol, New Waghodia Road, Vadodara, Gujarat – 390019, India
Tel: +91 97245 93964 / +91 97238 59512 · Email: zeelproduct@gmail.com · www.zeelproduct.com · www.zeelproduct.net
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