

## ACUMER™ 2000 Scale Inhibitor and Dispersant

### Typical Properties

These properties are typical but do not constitute specifications.

Appearance	Clear Solution to slightly hazy
Chemical nature	Carboxylate/Sulfonate copolymer
Average molecular weight	4500 (Mw)
Total solids (%)	43
pH as is (at 25°C)	4
Bulk density (at 25°C)	1.21
Viscosity Brookfield (mPa.s/cps at 25°C)	400

### Chemistry and Mode of Action

ACUMER 2000 copolymer combines two functional groups: strong acid (sulfonate) and weak acid (carboxylate) that provide optimal anti-scale/dispersant efficiency through the following different mechanisms:

- Solubility enhancement by threshold effect, which reduces precipitation of low solubility inorganic salts.
- Crystal modification, which deforms the growing inorganic salt crystal to give small, irregular, readily fractured crystals that do not adhere well to surfaces and can be easily removed during cleaning operations.
- Dispersing activity, which prevents precipitated crystals or other inorganic particules from agglomerating and depositing on surfaces. The sulfonate groups increase the negative charge of the carboxylate groups adsorbed onto particles and, by then, reinforce the repulsion between the particles, preventing them from aggregating into larger particles which can settle and deposit on tube surfaces and low flow areas.

### Stabilization/Dispersancy Performance

ACUMER 2000 polymer is designed to provide superior stabilization of calcium phosphate. It also demonstrates excellent stabilization of zinc and calcium carbonate. In addition ACUMER 2000 is a strong dispersant in keeping the silt and commonly encountered inorganic particules suspended and in preventing their settling out onto heat transfer surfaces.

### Applications

- Stabilizer/Anti-scale deposition polymer for cooling water treatment

Taking advantage of all its complementary properties and high performance as a stabilizer, anti-scalent and dispersant, ACUMER 2000 is particularly recommended for the majorities of the cooling water treatment programs:

- Phosphate based programs.
- Zinc based programs.
- Advanced All Organic programs in which ACUMER 2000 helps corrosion inhibitors, such as phosphonates, onto metal surfaces.

ACUMER 2000 has a synergic effect with the other additives in preventing scale as well as corrosion.

### Benefits of ACUMER 2000

- Exhibits excellent thermal and chemical stability and can be used and stored over a broad range of temperatures and pH's. This stability enables the formulator to manufacture one-package treatments at high pH for maximum shelf life.

- Provides superior iron tolerance when most of the commercially available polymers are deactivated in the presence of soluble iron in the system.
- Keeps surfaces clean for maximum heat transfer and corrosion resistance.

### Test Method

If a traceable polymer is required, OPTIDOSE™ 2000 offers identical performance to ACUMER 2000, with the ability to detect 0.5 ppm - 15 ppm without interferences.

### Material Safety Data Sheets

Rohm and Haas Company maintains Material Safety Data Sheets (MSDS) on all of its products. These contain important information that you may need to protect your employees and customers against any known health and safety hazards associated with our products. We recommend you obtain copies of MSDS for our products from your local Rohm and Haas technical representative or the Rohm and Haas Company. In addition, we recommend you obtain copies of MSDS from your suppliers of other raw materials used with our products.

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