



ACUMER™ 3100
Iron Oxide Dispersant

Typical Properties

These properties are typical but do not constitute specifications.

Property	Typical Values
Appearance	Clear solution to slightly hazy
Chemical nature	Carboxylate/Sulfonate/Nonionic functional terpolymer
Average molecular weight	4500 (Mw)
Total solids (%)	43.5
Active solids (%)	39.5
pH as is (at 25°C)	2.5
Bulk density (at 25°C)	1.20
Brookfield Viscosity (mPa.s/cps at 25°C)	200
Neutralization	0.13g of NaOH (100%) per g of ACUMER 3100

Chemistry and Mode of Action

ACUMER™ 3100 terpolymer contains three functional groups: strong acid (sulfonate), weak acid (carboxylate) and a nonionic that provide optimal dispersancy for most particules under a broad range of operating conditions:

- ACUMER 3100 carboxylate groups are most strongly attracted to particles surfaces, allowing strong dispersant absorption onto particles.
- ACUMER 3100 sulfonate groups are only weakly attracted to the particle surface and retain some residual negative charge to provide repulsion preventing particles from aggregating into larger particles which can settle and deposit on tube surfaces and low flow areas.
- ACUMER 3100 nonionic groups further enhance dispersancy by providing steric repulsion between particles.

Dispersancy Performance

ACUMER™ 3100 polymer is an exceptional dispersant, especially for dispersing both dried and hydrated iron oxide, hydroxyapatite and calcium carbonate. It is also an excellent stabilizer for corrosion inhibitors such as phosphate, phosphonates and zinc.

Suggested Applications

- Dispersant and stabilizer that can be used in cooling water programs

ACUMER™ 3100 terpolymer excels in harsh cooling water conditions, such as extremely high or low Ryznar Indexes, high iron concentrations, high levels of zinc or phosphate added as treatment to the system. ACUMER 3100 is particularly recommended in advanced all-organic programs. The product can maintain excellent heat transfer by its exceptional dispersancy and, in addition, will help corrosion inhibition by controlling film formation of the organic corrosion inhibitors onto metal surfaces.

- Control of boiler sludge

ACUMER 3100 terpolymer is the product of choice for boiler water treatment formulations as it provides unsurpassed control of boiler sludge. The polymer makes it possible to easily transport iron with calcium and phosphate containing sludges for removal during blowdown. Superior iron oxide dispersant, ACUMER 3100 is particularly recommended to control hydrated iron oxide in condensate return line.

Thermal/Hydrolytic Stability

ACUMER™ 3100 terpolymer is highly resistant to breakdown in aqueous solution under conditions of high temperature, pressure and pH. As a safety measure ACUMER 3100 is not recommended for boilers operating at pressure greater than 900 psig.

ACUMER 3100 is very resistant to hydrolysis as well. The product does not lose its performance capability after storage at pH 13.5 for 6 months at ambient temperature.

Approval

ACUMER™ 3100 is TUV approved for use in boilers under the reference: 06-KG-66.

Handling Precautions	Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.
Storage	Store products in tightly closed original containers at temperatures recommended on the product label.
Disposal Considerations	Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.
	It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.
Chemical Registration	Many countries require the registration of chemicals, either imported or produced locally, prior to their commercial use. Violation of these regulations may lead to substantial penalties imposed upon the user, the importer or manufacturer, and/or cessation of supply.
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Customer Notice	Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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