



# Flexisperse™ 880

*Stressed Conditions antiscalant polymer*

## Overview

- Aqueous, acrylic acid/maleic acid copolymer
- Designed as an excellent general purpose antiscalant, effective in “stressed” conditions of high water alkalinity, high electrolyte conditions and high temperature
- Cost effective alternatives to maleic homopolymers
- Prevents formation of a wide variety of scales through multiple mechanisms, primarily threshold effect and crystal distortion
- Superior crystal modifier for carbonate and sulfate scales
- Effective threshold inhibitor for common scales
- Effective at reducing fiber encrustation of insoluble salts in high hardness wash conditions

## Applications

- Industrial Water Treatment as a General Purpose Antiscalant for severe service conditions
- Hard surface and Clean-in-Place cleaning formulations
- Advanced laundry detergents
- Oil Field scale inhibitor for preventing scale in well formation and production equipment

## Technical Information

Flexisperse 880 is a maleic copolymer specifically designed for stressed conditions including high water hardness and high alkalinity. With unique composition and optimized molecular weight, Flexisperse 880 is a high performance scale inhibitor polymer for the Industrial Water Treatment industry, used to control the formation of  $\text{CaCO}_3$ ,  $\text{CaSO}_4$  and other mineral salt scales on heat exchange surfaces of cooling towers and boilers under severe service conditions.

Flexisperse 880 is a functional cobuilder ingredient in automatic warewashing, Industrial and Institutional clean-in-place formulations, and high builder laundry detergents. Benefits include decreases organic soil deposition, reduces precipitation and scale formation, and prevents buildup of calcium carbonate on fabrics and allows extended use of soda ash as an economical builder.

In Oil Field applications, Flexisperse 880 helps to control scale development in well formations as well as production equipment. Flexisperse 880 is a functional dispersant/deflocculation agent and flow modifier for drilling fluids.

## Formulary

Use at a rate of 5-10 ppm solids to control scale build-up in cooling towers, boilers and heat exchangers. In Oil Field applications, 5-10 ppm solids is effective for scale control on equipment and downhole.

## Typical Properties

PROPERTY	VALUE
Appearance	Clear to hazy liquid
Color	Colorless to light yellow
Odor	Mild
Ionic character	Anionic
Water solubility	Soluble
Average molecular weight (Mw)	5,000-7,000
Viscosity @25°C (Brookfield), MPa·s/cps	50-150
Total solids, %	39.0-41.0
pH (as is)	5.0±0.5
Density@25°C	1.20±0.1 g/ml
Boiling Point	100°C
Flash point	None (aqueous)
Storage	Stable to freezing
Shelf life	12 months

## Packaging and Handling

Flexisperse 880 is available in:  
Bulk (44,000 lbs)  
275 gallon totes (Net Wt. 2750 lbs)  
55 gallon plastic drums (Net Wt. 550 lbs)

Refer to the Safety Data Sheet (SDS) for information on the safe use, handling, and disposal of this product.

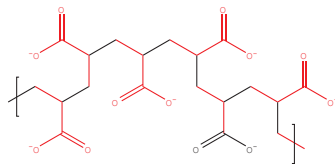
DOT Classification: Non-Regulated

Whether you're looking for a replacement product or an ingredient for a specific attribute, give us a call. We can provide assistance based upon your particular formulation requirements and composition; please feel free to contact us.

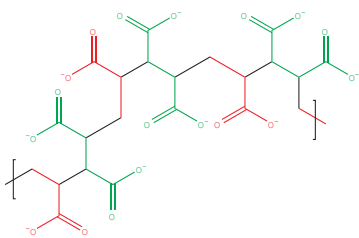
**Please refer to back page for important information**

## Flexisperse 880 Effective Scale Inhibition in “Stressed” Conditions

Stressed conditions comprising environments of high-alkalinity, high-hardness, high-electrolyte concentrations and/or high-temperature, represent extreme conditions that can overwhelm the functionality of simple polyacrylates in controlling hard water scale and deposits.



Poly acrylate



Poly acrylate/maleate

Developed to overcome the deficiencies of acrylic homopolymers for effective scale and deposit control performance in stressed conditions, maleic copolymers exhibit a higher charge density and resist polymer “coiling” and “balling” that can lead to precipitation and loss of functionality. Maleic copolymers have been developed through applications testing and proven in the field as effective tools in controlling scale and hard water salt deposits.

Unlike sequestering agents that function necessarily on a stoichiometric basis, Flexisperse 880 functions at very low ratios of polymer to precipitating salt, for example as little as 5 ppm Flexisperse 880 can avoid precipitation of as much as 500 ppm  $\text{CaCO}_3$ . Similarly unlike stoichiometric sequestering agents, the mixed mechanism of Threshold and Crystal Distortion effects exhibited by Flexisperse 880 does not result in metal complexes that can react or catalyze reactions.

## Flexisperse 880 Functionality

With an optimal molecular weight and molecular weight distribution in the recognized effective range of 5,000- 7,000, Flexisperse 880 treatment inhibits scale formation by two primary non-stoichiometric mechanisms: **Threshold effect** and **Crystal Distortion effect**.

### Threshold effect

Flexisperse 880 exhibits a Threshold/Solubility enhancement effect, associating and complexing with hard water ions to retard the formation of insoluble hard water salts or scale “seeds,” and preventing scale seeds from growing into scale crystals, thereby reducing the precipitation of low solubility inorganic salts.

### Crystal Distortion effect

For formed and growing crystals, Flexisperse 880 polymer strands adsorbed into the crystal matrix and to distort and disrupt the crystal matrix. Crystal Distortion effect results in irregular, readily fracturable particles that do not effectively adhere to surfaces and are more easily removed during cleaning processes.

## Flexisperse 880 Applications

Flexisperse 880 is a functional co-builder ingredient in automatic warewashing, Industrial and Institutional clean-in-place formulations, and highly concentrated detergents. Benefits include decreased organic soil deposition, reduced precipitation and scale formation, and prevention of buildup of calcium carbonate on fabrics and allows extended use of soda ash as an economical builder.

This information relates only to the specific material referred to herein and not to its use in combination with any other material or in any process, unless explicitly stated herein. Such information is, to the best of our knowledge and belief, accurate and reliable as of the date compiled; however, no warranty, guarantee or other representation is made as to its accuracy, reliability, or completeness, or regarding any liabilities arising from others' intellectual property rights. ID# 20200303