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The information in this brochure is provided in good faith. To our knowledge it reflects the truth.

# FLOSPERSE™ Dispersants

SNF, since 1978, is a leading manufacturer of water-soluble and water-swellaable polyacrylamide and its various ionic derivatives (i.e. non-ionic, anionic, cationic and amphoteric polymers) and of different molecular weight levels (from 2,000 for dispersants up to 30,000,000 for flocculants). Currently SNF has more than 35% market share globally with these polymers for many industrial applications such as water treatments, pulp and paper, oil field, and mining.

SNF has extended its technology of the water-soluble polymers to develop and manufacture a variety of specialty polycarboxylates. These polycarboxylates are (Meth) Acrylate Homo and Copolymers. These products are commercially available in either aqueous solution or microbeads form.

## ● *Their key applications are the following:*

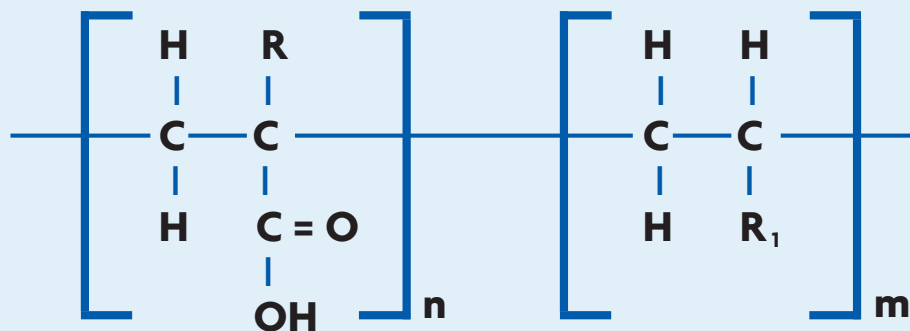
- anti-scalants for a number of inorganic scales in many different environments
- dispersants (deflocculants) to reduce bulk viscosity of high-solid slurries and to maintain stability of finely-divided particle dispersion
- specialty additives in many detergent formulations.



# FLOSPERSE™ Dispersants

## Properties of SNF polycarboxylates

The polymer is either a homopolymer or a copolymer of (meth) acrylic acid with a number of different co-monomers, and the general structure is depicted below:



**R = H, CH<sub>3</sub>**

**R<sub>1</sub> = special functional group of a comonomer such as a sulfonate monomer**

**m = 0** for homopolymer of acrylic acid or methacrylic acid

The carboxylic acid group in the polymer backbone may be neutralized with sodium, potassium, or ammonium hydroxides to give the corresponding salts.

The **FLOSPERSE™** dispersant product line contains both homopolymers as well as specialty copolymers of different compositions and various levels of molecular weights (2,000 to 100,000). The properties of these specialty copolymers can be engineered by properly selecting the monomers and their relative compositions and through choice and control of the polymerization process. SNF provides both liquid and solid grades of polymer to meet the many different application needs: aqueous solutions of various concentrations and pH, as well as microbeads solid form. Details of the products are shown in the corresponding technical data sheets for specific industry applications.

# FLOSPERSE™ Dispersants

## ● Antiscalants

The formation of inorganic scales (e.g.  $\text{CaCO}_3$ ,  $\text{CaSO}_4$ ,  $\text{BaSO}_4$ ) especially at metal surfaces, is a frequent problem with water used in industrial systems such as boilers, cooling towers, mining and mineral processing (e.g. heap leaching) and oil fields. Chemicals such as antiscalants can inhibit scale formation generally through three separate mechanisms:

- Threshold Inhibition ---by interfering with the growth of scale crystals. In this case, the dosage is far below the normal stoichiometric amount ( i.e. a few parts per million can stabilize hundreds or thousands of times as many scale-forming ions).
- Dispersion ---by dispersing particles. It prevents their agglomeration forming larger adherent particles.
- Chelation ---by complexing inorganic ions stoichiometrically.

**FLOSPERSE™** polycarboxylates are threshold inhibitors. A very small amount of **FLOSPERSE™** will distort the rates of crystallization through surface adsorption thus blocking the active growth sites. **FLOSPERSE™** will also modify the crystal morphology and density of surface nucleation sites. **FLOSPERSE™** dispersants are very effective inhibitors for  $\text{CaCO}_3$ ,  $\text{CaSO}_4$  and  $\text{BaSO}_4$  scales.

## ● Dispersants for Various Industrial Segments

Many industrial products and processes require that solids be mixed in a finely divided state within a liquid medium (water or mixtures of water and water-miscible solvents). These dispersions must be stable for a required period of time prior to or during their use. **FLOSPERSE™** specialty polycarboxylates are a series of dispersants that will provide this stability to a dispersion and at a low dosage. The properties of **FLOSPERSE™** polycarboxylates, when properly designed (polymer compositions and molecular weight), will allow them to adsorb efficiently onto a solid substrate (finely dispersed particles). The particles having **FLOSPERSE™** adsorbed on them will be maintained in a stable dispersion state through a complex and system-dependent mechanism involving electrostatic repulsion, steric hindrance or a combination of the two (electrosterical effect).

**FLOSPERSE™** products, in sodium salt form, are efficient dispersants for:

- Clay slurries (kaolin)
- Titanium dioxide
- Calcium carbonate
- Pigment suspensions.
- Drilling Fluids in Oil & Gas production
- Ore-in-Water Slurries (Iron, Gold, ...)
- Water-Based Paints
- High performance Ceramics