



Technical Data

ACUMER™ 9210

Dispersant Polymer for Mineral Slurries

Product Description

ACUMER™ 9210 is the sodium salt of an acrylic homopolymer useful for dispersing a variety of inorganic pigments. Its molecular weight, structure and composition have been selected to optimize dispersant properties. Without dispersant, the particles in a slurry aggregate, resulting in an unstable dispersion with unacceptably high viscosity. ACUMER 9210 adsorbs pigment particles, and the polymer negative charges stabilize the dispersion by electrostatic and steric repulsion. Inorganic dispersing agents that are small molecules only stabilize the dispersion by electrostatic repulsion.

ACUMER 9210 acts as dispersant and stabilizer allowing:

- Stabilizing slurries of re-dispersed kaolin powders
- High solids concentration slurries with low viscosities
- High stability slurries

Features and Benefits

- Contains no phosphorus, making its use acceptable where legislation requires that discharge waters contain no or low phosphorus
- Exhibits exceptional stability in the presence of hypochlorite
- Exhibits a very good thermal and mechanical stability
- Offers a very strong dispersant activity

Applications

ACUMER 9210 has mainly been developed to meet the dispersancy performances requested by mixed slurries based on feldspath, quartz, clay and ceramic slurries.

Dosage

ACUMER 9210 is effective at low dosage between 0.1 to 0.5% polymer solids on slurry solids, depending on the nature of the slurry and on the grinding (coarse or fine particles).

Kaolin Clay

Without dispersant, the particles in a slurry aggregate, resulting in an unstable slurry with unacceptable high viscosity.

ACUMER 9210 mining polymer stabilizes high solids slurries, lowers the viscosity to relatively low levels at the time of initial formulation, and maintains a low viscosity during storage.

Re-dispersion of Dry Kaolin Clay

Kaolin clay is sometimes dried and shipped long distances to reduce transport costs and is re-slurried at the destination. ACUMER 9210 is particularly effective for stabilizing these "re-dispersed" slurries up to 74.5% solids.

The following data show the ability of ACUMER™ 9210 to effectively stabilize re-dispersed kaolin clays at 74.5% solids level. Figure 1 indicates that dosage levels of 0.16 - 0.20% (dry polymer/dry kaolin) result in essentially the same viscosity slurry.

Figure 1. Dosage of ACUMER™ 9210 (Dry Polymer/Dry Kaolin)

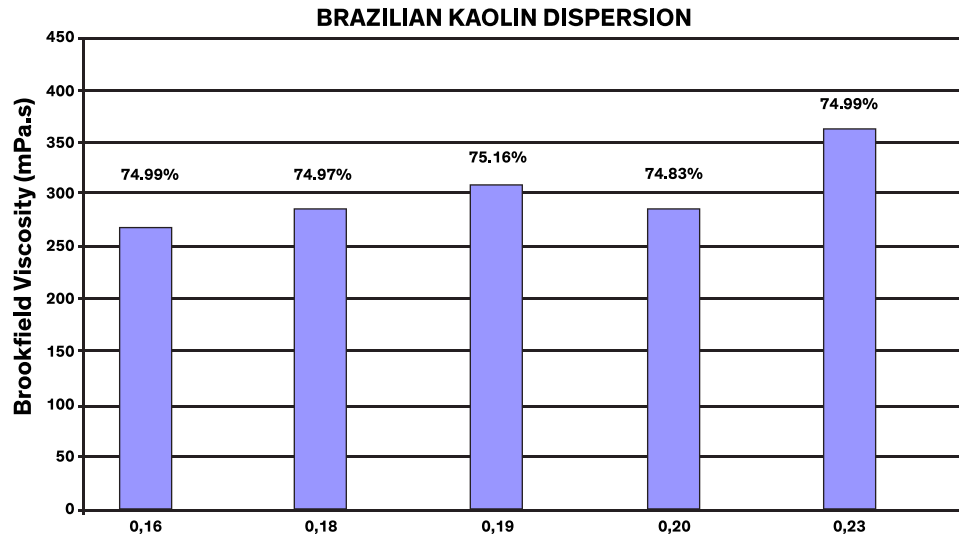


Figure 2 indicates that at 74% solids (or 74.7% solids according to K.I. measurement), optimal dispersant dosage is about 0.16% (expressed as dry polymer per dry kaolin).

Figure 2.

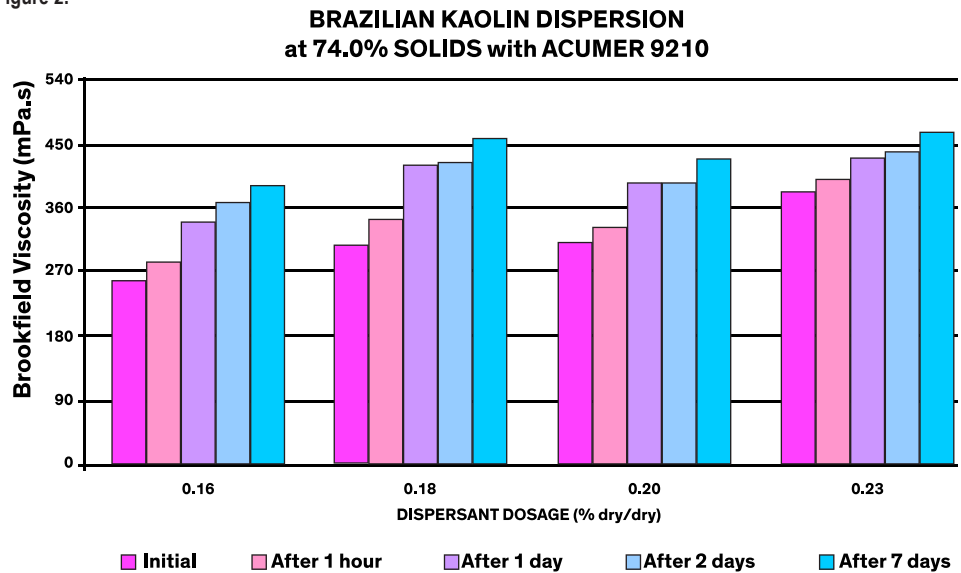
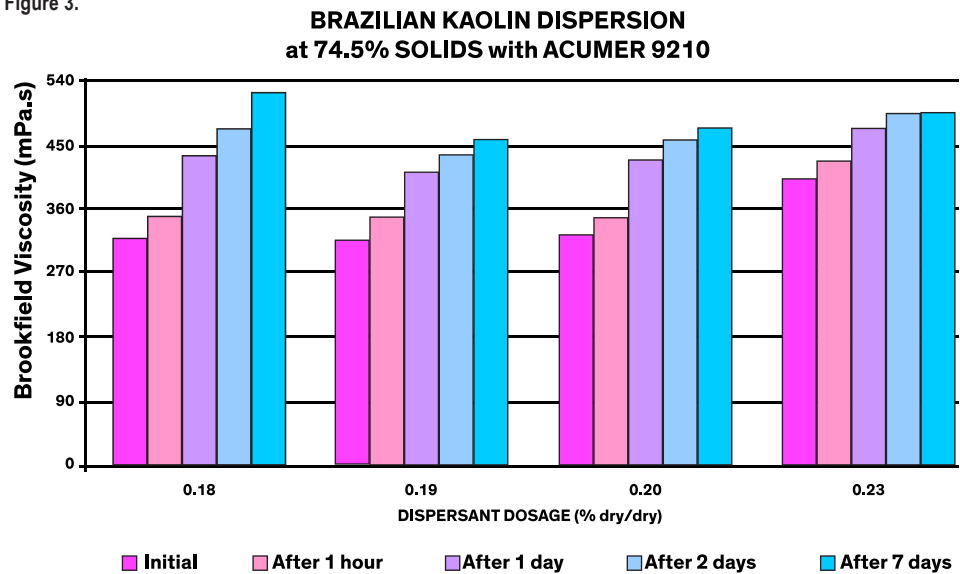


Figure 3 indicates that at 74.5% solids (or 75.2% solids according to K.I. measurement) optimum dispersant dosage is about 0.19% (expressed as dry polymer per dry Kaolin).

Figure 3.



Ceramic Application

ACUMER™ 9210 is recommended in the ceramic industry to disperse and stabilize ceramic slurries.

In the production of ceramic pieces, dispersing agents are used in wet grinding of raw materials to increase solids content and improve stabilization of the slurries. Inorganic dispersants, such as tripolyphosphate (TPP), sodiumhexametaphosphate (SHMP) and metasilicates (MS), have been used for a long time.

However, the introduction of a new range of polymeric dispersants gave rise to major improvements in some of the significant parameters, and in particular:

- Viscosity at low and high shear rate (relates to slurry workability)
- Thixotropy (relates to slurry stability in time)
- Yield stress value (relates to slurry workability and stability)

Method of Use

Polymeric organic dispersants give so great an improvement in the slurry rheological behavior that they can be used in combination with inorganic dispersant. These combinations of organic/inorganic dispersants are very cost effective.

Figures 4 and 5 show an optimization of the dispersant system of a ceramic slurry by the use of ACUMER™ 9210.

Figure 4. Dispersing Agent Optimization (68% solids ceramic blend slurry)

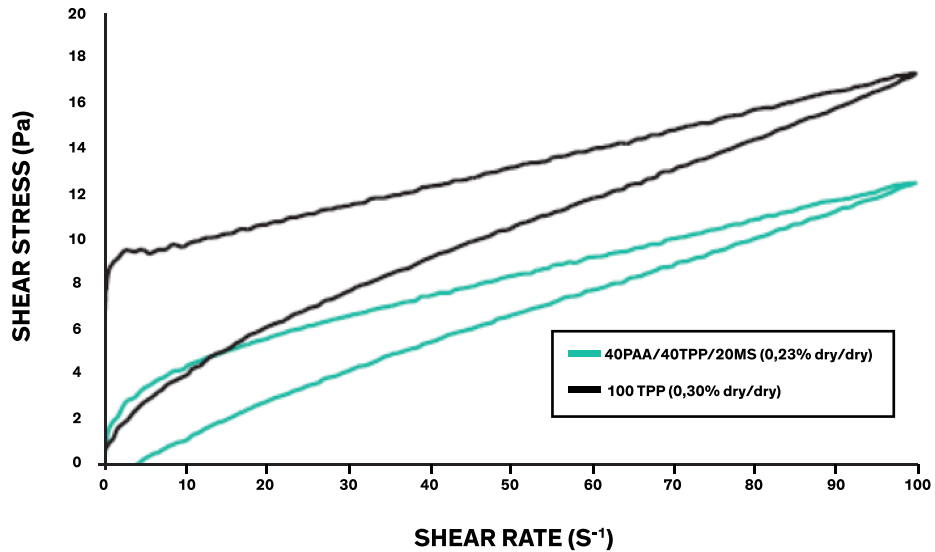
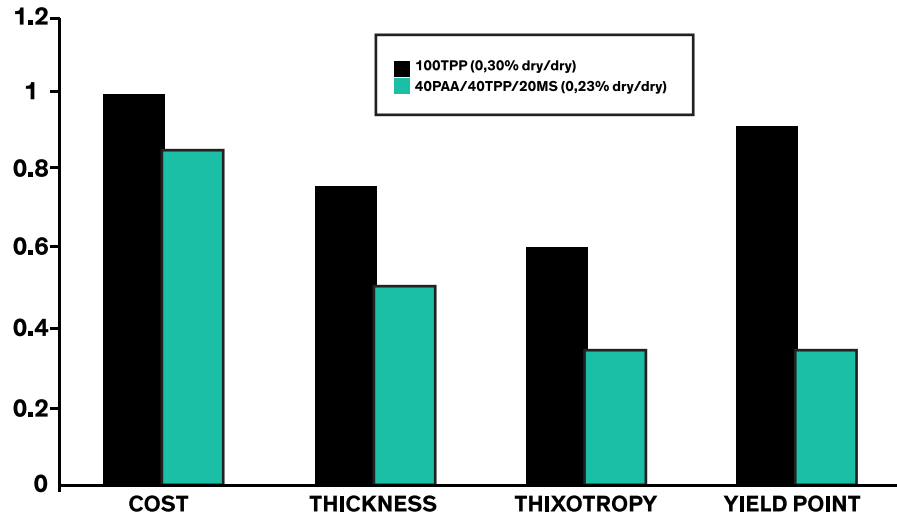


Figure 5. Cost/Performance



This comparison was done with 2002 raw material prices. With the cost of TPP increasing dramatically, the use of ACUMER 9210 in this application should be even more advantageous.

FDA Clearance

ACUMER 9210 complies with the FDA Food Additives regulations indicated below, provided that the final formulation meets the limitations and other conditions prescribed by the regulation.

- 21 CFR 173.310 Boiler water additives
- 21 CFR 175.105 Adhesives
- 21 CFR 176.170 Components of paper, paperboard in contact with aqueous and fatty food
- 21 CFR 176.180 Components of paper, paperboard in contact with dry food

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