ELEMENTIS
A global specialty chemicals company

Enhanced Performance Through Applied Innovation

BENAQUA® 4000

Rheological additive for water-borne systems

GENERAL INFORMATION

BENAQUA 4000 rheological additive is an easily dispersible powder designed for lower-gloss and matt latex paints, textured and high-build coatings and water-borne adhesives. It is especially useful in systems that are diluted with water prior to use.

BENAQUA 4000 provides high viscosity in the low- to medium-shear-rate region. It gives superior sag resistance at low package viscosity compared with conventional thickeners, as well as improved shear-thinning rheology. Textured and stippled effects are enhanced and paints exhibit a richer appearance.

CHEMICAL & PHYSICAL PROPERTIES

Composition	polymer modified clay
Color / Form	off-white, finely divided powder
Density	1,63 g/cm³
Non-volatile content	100%

These are typical properties not to be used for specification purposes.

APPLICATIONS

Adhesives
- Ready mixed
- Powder

Mastics and sealants

Paints
- Dry-fall paints
- High-build paints
- Matt latices
- Plasterboard coatings
- Primers/sealers
- Roads marking paints
- Semi-gloss latices
- Textured paints

KEY PROPERTIES

Rheological properties
- Good mid-shear-rate viscosity
- Excellent shear-thinning
- Excellent suspension

Application performance
- Efficient spray atomisation
- Enhanced textured and stippling effects (roller or spray applied)
- Minimised mud cracking
- Superior sag resistance

Paint stability
- Good storage stability at elevated temperature
- Good freeze/thaw stability
- Enzyme resistance
- Colorant addition stability

Easy to use
- Easily incorporated in the letdown stages or as aqueous pre-gel.mill-base and

INCORPORATION

BENAQUA 4000 additive can be added via a choice of methods, depending on the equipment available and the formulation type. It is not shear sensitive and is easily incorporated directly in the mill-base or via a pre-gel before the letdown stages. The key to developing optimum performance is to achieve good wetting and hydration. Optimum mixing conditions are obtainable with a toothed blade disperser (e.g. Cowles) run at high peripheral speeds, or rotor stator mixers.

Because **BENAQUA 4000** is partially associative, its full thickening efficiency may not be realised until the resin is added to the system. pH adjustment of the batch to pH 8.5 - 10.0 will enhance performance.

Mill-base Addition

BENAQUA 4000 is added to water (pH 8.5- 10.0) and mixed at moderate speed until a smooth dispersion is formed (5 - 10 min.). The remaining ingredients are added and dispersed under high shear. The letdown stage is completed and the batch adjusted to pH 8.8 - 10.0.

1. Water
2. pH to > 8.5 **
3. BENAQUA 4000
   mix under medium shear
4. glycols
5. dispersants
6. defoamers
7. biocides
8. pigments/extenders
   disperse
9. letdown adjust pH to 8.5 - 10.0

continued…

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Alternatively, **BENAQUA 4000** can be added as the last ingredient in the mill-base and dispersed for 15 min. This results in improved pigment wetting, shortened dispersion times and minimum foam development.

** The pH adjustment point will depend on the type of formulation used:

- Low pH binders and/or lower-PVC (<50%) systems – adjust pH of the dispersion water
- Neutral-alkaline binders and/or higher-PVC (>50%) systems, or where the water for dispersion is limited – adjust pH after letdown

Post Mill-base Addition

1. mill-base (dispersed)
2. water (if required)
3. **BENAQUA 4000**
   thoroughly disperse
4. latex resin
5. water

Pre-gel Method

1. water
2. preservative (non-alkaline)
3. **BENAQUA 4000** disperse under optimal conditions for 10 - 15 minutes adjust to pH 8.5–10.0 in the final paint

LEVELS OF USE

The typical levels of use for **BENAQUA 4000** are 0.3% to 2.0% by weight.

HEALTH AND SAFETY

Before using this product please consult our Safety Data Sheet (SDS) for information on safe handling and storage. The SDS can be found on the company website.

STORAGE RECOMMENDATIONS

- Store in a cool, dry environment.
- Avoid exposure to high humidity, as **BENAQUA 4000** is moisture-sensitive and will absorb moisture under such conditions.
- Ensure that bags are securely closed after each use to prevent moisture ingress.
- Do not store **BENAQUA 4000** in temperatures exceeding 40°C, as elevated temperatures can negatively impact the product's shelf life.

SHELF LIFE

BENAQUA 4000 has a shelf life of 2 (two) years from date of manufacture.

QUALITY ASSURANCE

Since 1992 the company is a holder of the ISO 9001 / ISO 9002 certificates, which guarantees that all operations are conducted according to the stipulated standards.

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