

RHEOLATE[®] 420

Rheological Additive for Latex paints and Other Waterborne Systems

GENERAL INFORMATION

RHEOLATE 420 rheological additive is an economical and versatile alkali swellable thickener in an easy to use emulsion form designed to fully or partially replace cellulosic thickeners in a variety of water-borne systems. **RHEOLATE 420** rheological additive provides a high thickening efficiency in the medium shear rate range and an excellent balance between sag resistance and leveling properties. **RHEOLATE 420** contributes to high shear rate viscosity and provides greater brush drag compared to cellulosic thickeners.

CHEMICAL & PHYSICAL PROPERTIES

Composition	proprietary acrylic emulsion in water
Color / Form	milky white
Density	8.97 lb. / gal (1.076 g / cm ³)
Viscosity	
Brookfield LVT #1 Spindle at 60 RPM	max. 40 mPa · s
Non-volatile content (weight)	30 %
pH	ca. 2.7

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

APPLICATIONS

Applications include:

- gloss latex paints
- semi-gloss latex paints
- matte latex paints
- industrial coatings
- vinyl chloride lattices
- water-reducible alkyds, polyester, epoxy, acrylics, urethanes and others

- Other water-borne systems:
- adhesives
- inks
- sealants

KEY PROPERTIES

RHEOLATE 420 rheological additive features and benefits are

Excellent Thixotropic Rheology

- develops package viscosity efficiently
- imparts anti-settling properties
- reduces syneresis
- yields excellent spray properties
- provides easy brushability
- provides tight roller pattern

Excellent Paint Performance

- reduces spattering during roller application
- provides excellent sag resistance
- provides good leveling performance
- improves freeze / thaw stability

Excellent Film Properties

- maintains gloss levels
- provides good block resistance
- provides good scrub resistance
- improves corrosion resistance
- reduces early blistering in acrylic systems

Enzyme Resistance

- resists viscosity loss
- re-thickens enzyme-spoiled paint

Incorporation

- low viscosity liquid – easily incorporated
- pH activated
- reduces paint preparation time
- avoids handling viscous liquids or dry powders

Compatibility

- compatible with clay-based, cellulosic and associative thickeners

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RHEOLATE® 420

INCORPORATION

Proper pH Adjustment

RHEOLATE 420 is an alkali swellable thickener and requires proper pH adjustment with ammonia or amino methyl propanol for complete activation. In a typical latex paint, a pH of at least 8.0 is recommended. In certain vinyl acrylic paints where pH has a tendency to drift downward, the use of Calcium Carbonate or Wollastonite extenders will help maintain pH during aging. An example of a typical viscosity response for **RHEOLATE 420** in a latex paint is as follows:

Vinyl Acrylic Matte – 0.5 % Active RHEOLATE 420	
pH*	Stormer Viscosity
6.0	70 KU
7.0	75 KU
8.0	87 KU
9.0	89 KU
10.0	89 KU

* Adjusted with Ammonia

Viscosity Equilibration

RHEOLATE 420 requires time to fully activate after addition. In most cases, 80% of the viscosity is achieved after initial addition. Another 10 % is achieved after one hour and full viscosity is normally reached after 24 hours. In any given paint system this viscosity response is reproducible and predictable for quality control purposes.

When replacing a cellulosic thickener, it is best to measure overnight viscosity for comparisons. After the level of addition is determined to reach overnight viscosity, the initial quality control viscosity specification can be adjusted to compensate for the equilibration time of **RHEOLATE 420**.

Time	Stormer Viscosity	
	Vinyl Acrylic Matt	Acrylic Semi-Gloss
Initial	80 KU	88 KU
1 hour	85 KU	92 KU
24 hours	90 KU	95 KU
1 week	90 KU	95 KU

The degree of equilibration depends upon the ingredients in the paint and each formulation should be evaluated separately. Manufacturing should be made aware of this time/viscosity relationship so as to avoid possible overdosing.

Proper Addition Techniques

In most cases, **RHEOLATE 420** can be added to the paint without dilution or pre-neutralization. It is most commonly added to the let down, but a portion can also be incorporated into the millbase if desired. Under slow mixing conditions, dilution with water and/or glycol is recommended. If flocculation is observed, pre-neutralization with ammonia and water (pregel). Is recommended. **RHEOLATE 420** can be made into a flowable pregel as follows:

Water	97 %
RHEOLATE ® 420	3 % on active solids
Ammonia Solution	to pH 9.0
(or AMP-95)	

Heat and Shelf Stability

RHEOLATE 420 produces a stable paint when incorporated into most latex paints. However, if excessive viscosity change is noticed, check for pH drifting – especially in vinyl acrylic paints. If viscosity increases excessively, use a more efficient pigment dispersant. The use of KTPP can be used to aid in heat aging stability.

Separation or Syneresis

RHEOLATE 420 is used as a syneresis control additive when used in combination with urethane associative thickeners. In the rare cases where syneresis is found using **RHEOLATE 420** as the sole thickener, co-thicken with BENTONE EW clay thickener.

RHEOLATE 420 can be combined with other thickeners.

Associative Thickeners

RHEOLATE 420 can be used to modify associative thickeners to overcome potential syneresis and settling problems. For best scrub resistance, use **RHEOLATE 420** in combination with **RHEOLATE 255** urethane associative thickener.

Cellulosic Thickeners

RHEOLATE 420 can be used to replace or modify cellulosic thickeners to improve low-shear-rate viscosity and eliminate or reduce spattering.

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Clay Based Thickeners

RHEOLATE 420 can be used with BENTONE EW and other clay grades in latex and water-reducible coatings to provide superior thickening efficiency and application properties.

LEVELS OF USE

The typical levels of use for **RHEOLATE 420** are 0.3 % to 1.0 % (as delivered) by weight, in paints or inks and up to 9.0% in adhesives and sealants.

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

RHEOLATE 420 should be kept above 4°C (40°F). In the event of accidental freezing, thaw gently, spread portion between glass slides and examine for granules. If found, do not use.

SHELF LIFE

RHEOLATE 420 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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