



## ACRYSOL™ TT-935 Rheology Modifier

### Description

ACRYSOL™ TT-935 Rheology Modifier offers a low cost/high performance alternative to cellulosic thickeners in interior flat to semigloss latex paints. Not only is ACRYSOL TT-935 Rheology Modifier lower in cost than most commonly used grades of cellulosic and modified HEC thickeners, it can facilitate paints with outstanding resistance to roller spattering and better film build and leveling in most formulations. ACRYSOL TT-935 Rheology Modifier is easy to handle and incorporate into the paint and is inherently resistant to microbial and enzymatic degradation, thereby avoiding viscosity loss over time, one of the most costly problems encountered by latex paint manufacturers.

Features	Benefits
More cost effective than cellulose	Lower raw material costs
Better spatter resistance than cellulose	Improved application
Easy to incorporate into formulations	Reduced labor costs
Superior film build	Better hiding (brush and roller)
Better leveling in most formulations	More attractive applied coatings

### Typical Physical Properties

(These properties are typical but do not constitute specifications).

Property	Typical Values
Type	anionic HASE*
Appearance	off-white, milky liquid
Solids, %	30
pH (as supplied)	3.2
Brookfield Viscosity, cP (as supplied)	30
Density at 25° C, lb/U.S. gal	
wet	8.85
dry	10.2
Acid titer (solids basis), meq/g	5.23**
Bulking value, wet	0.1134

\*hydrophobically modified alkali- swellable acrylic polymer.

\*\*Info on base used for titer being obtained.

## Formulating

### Lower Cost AND Exceptional Thickening Efficiency

Not only is ACRY SOL™ TT-935 Rheology Modifier less costly on a dry pound basis than hydroxyethyl cellulose (HEC) it is typically more efficient than most commonly used grades resulting in lower usage levels in most latex paint formulations. ACRY SOL TT-935 is a low viscosity liquid which can offer savings in paint manufacturing cost since it can be added as supplied to the pigment grind or letdown, either manually or by metering equipment. It also help eliminate the housekeeping costs associated with the use of dry powders supplied in bags. ACRY SOL TT-935 Rheology Modifier thickens through associative mechanisms as well as through swelling in alkaline systems.

TABLE 1

TYPICAL THICKENING EFFICIENCIES ACRY SOL™ TT-935 Rheology Modifier VS. HYDROXYETHYL CELLULOSE (FLAT WALL PAINT FORMULATION XF-VA-6)				
	Lb Dry Thickener Required for 90 KU HEC Viscosity Grades			
	ACRY SOL TT-935	M	MH	H
Binder				
RHOPLEX™ AC-417 Emulsion	2.3	3.8	3.3	3.0
Vinyl/Acrylic A	3.9	5.2	4.6	4.2
Vinyl/Acrylic B	2.4	—	4.3	4.0
Vinyl/Terpolymer	2.2	—	3.5	3.2

Thickening varies slightly from formulation to formulation depending on the particular latex binder used and the formulation ingredients. ACRY SOL TT-935 Rheology Modifier compares favorably with the most common grades of HEC normally used to thicken latex paints, regardless of the formulation. Table 1 shows a comparison of ACRY SOL TT-935 with three different molecular weight grades of HEC in a typical interior flat wall paint. ACRY SOL TT-935 Rheology Modifier is the most efficient in these evaluations with three vinyl/acrylic binders as well as with RHOPLEX™ AC-417 Emulsion, a 100% acrylic binder.

### Less Roller Spatter/Better Film Build

Like other associative thickeners, ACRY SOL TT-935 Rheology Modifier offers outstanding resistance to roller spatter. Paints thickened exclusively with ACRY SOL TT-935 spatter much less than paints thickened with even the lowest viscosity grades of HEC commonly used in wall paints. The film build of paints thickened with ACRY SOL TT-935 Rheology Modifier is better than that of HEC-thickened paints and, in most formulations, leveling is also superior. This combination contributes to better hiding whether the paint is applied by roller or brush.

Because ACRY SOL TT-935 Rheology Modifier can be used as the sole thickener in interior latex paints, outstanding resistance to roller spatter is easy to achieve. When conventional thickeners are used in conjunction with ACRY SOL TT-935, spatter resistance may be decreased, but it may still be an improvement over that provided by conventional thickeners alone.

### Exceptional Rheology

ACRYSOL™ TT-935 Rheology Modifier produces a pseudoplastic rheology, but one that is less shear thinning than HEC. When vinyl/acrylic flat wall paints were thickened with ACRYSOL TT-935 or a medium high viscosity grade of HEC to the same Krebs-Stormer consistency, the paint thickened with ACRYSOL TT-935 Rheology Modifier provided the highest viscosity at high shear rates giving greater film build when applied by brush or roller.

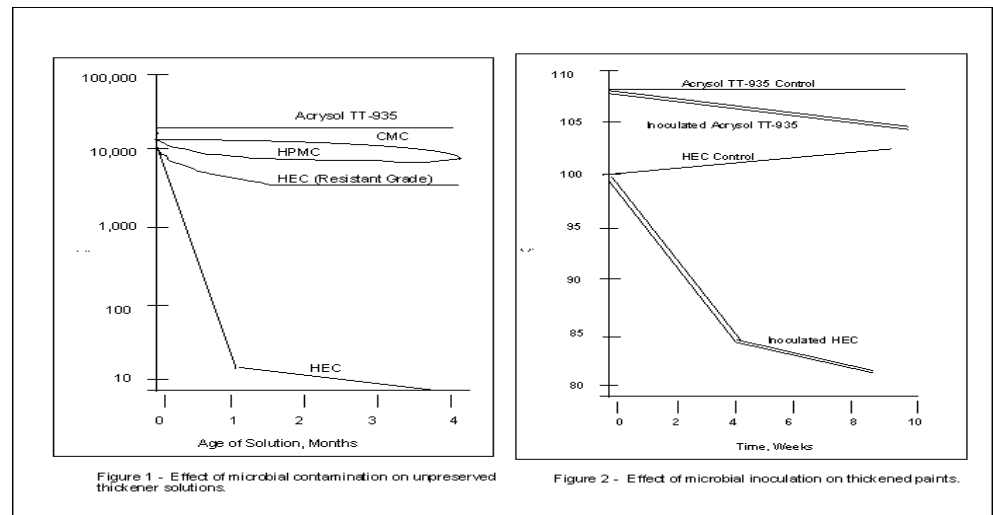
ACRYSOL TT-935 Rheology Modifier also maintained the lowest viscosity at low shear rates, resulting in exceptional leveling. The magnitude of the film build and flow and leveling improvements achieved with ACRYSOL TT-935 will vary depending on formulation variables.

### Microbe and Enzyme Resistance

As a synthetic acrylic polymer, ACRYSOL TT-935 Rheology Modifier is inherently resistant to the microbes and enzymes that can break down cellulosic thickeners and lead to loss of viscosity. Figure 1 compares the viscosity history of aqueous solutions of ACRYSOL TT-935 and cellulosic thickeners of the same initial viscosity but without added preservatives. Even though the solutions were not inoculated, within a day, bacterial counts of over 100,000 per milliliter were measured in all of them.

During the 14 week test period, the solution thickened with ACRYSOL TT-935 Rheology Modifier maintained essentially constant viscosity while a nonresistant cellulosic grade became water thin and even the enzyme resisting grades lost more than two-thirds of their viscosity.

Figure 2 shows the viscosity of two vinyl/acrylic flat wall paints after inoculation with a culture of microbes assembled from contaminated latex paints. Although there was no microbe growth, the enzyme present caused the HEC- thickened paint to drop 18 KU in nine weeks while the viscosity of the paint thickened with ACRYSOL TT-935 Rheology Modifier fell by only 4 KU.



**Ease and Convenience of Handling**

Because ACRY SOL™ TT-935 Rheology Modifier is supplied as a low viscosity emulsion, it is easy to pour or pump and is thus amenable to bulk handling and/or automatic metering equipment. ACRY SOL TT-935 Rheology Modifier can be added directly to the paint with no predilution or presolubilized as long as sufficient base is added to the paint prior to the ACRY SOL TT-935 and sufficient mixing is available.

Since ACRY SOL TT-935 Rheology Modifier is an alkali-swellable material, sufficient base must be present in the paint to prevent destabilization of other paint ingredients.

**Full Gloss Development**

ACRY SOL TT-935 Rheology Modifier can be used in interior semigloss paints because it thickens principally by an associative mechanism that results in nonfloculated paints. However, it is more shear thinning and will not provide the degree of flow and film build typically provided by ACRY SOL DR-5500 or ACRY SOL RM-2020 which are usually preferred for this application.

**Handling  
Precautions**

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

**Storage**

Store products in tightly closed original containers at temperatures recommended on the product label.

**Disposal  
Considerations**

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Coating Materials Technical Representative for more information.

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