Construction Chemicals

Technical Data Sheet
for Europe, Middle East and Africa

ACRYSOL™ RM- 12W

HEUR Rheology Modifier

Product Description

ACRYSOL™ RM-12W Rheology Modifier is a non ionic urethane rheology modifier, designed to formulate high performance, environmentally friendly, low VOC interior/exterior coatings.

Application

ACRYSOL™ RM-12W Rheology Modifier offers high low-shear viscosity with extreme shear thinning rheology (extreme pseudo plasticity) and remarkable thickening efficiency. This behaviour allows excellent sag resistance with minimal effect on flow and levelling. The highly shear thinning nature of the product make it suitable for spray applications. It could be used over a wide range of pH and has excellent water and alkali resistance. ACRYSOL RM-12W Rheology Modifier is resistant against microbiological and enzymatic attack.
ACRYSOL RM-12W Rheology Modifier is delivered as a solvent* free liquid and is therefore very easy to incorporate during the manufacturing process.
ACRYSOL RM-12W Rheology Modifier is best utilised as a co-thickener with other associative thickeners, such as ACRYSOL RM-2020, but can be used alone in coating intended for spray applications.

*Organic solvent is not intentionally added AND is not knowingly introduced from other raw material.

Typical Properties[1)]

Appearance	Milky white to slightly yellow liquid
Solids content	18 … 20%
pH	5 … 8
Density	1.04 g/cm^3
Viscosity (Brookfield LV, spindle 3 @ 30 rpm, 25°C)	500 … 3500 mPa·s

[1)] Please note that the values shown are typical values for your guidance. They are not to be taken as specifications and are subject to certain variability. Please consult the sales specifications for details.

Formulation Guidelines[2)]

Thickener Combinations: ACRYSOL™ RM-12W Rheology Modifier can be combined with other rheology modifiers to tailor the viscosity profile of the paint. Combinations with ACRYSOL RM-2020 for increased high shear viscosity and ACRYSOL RM-8W for increased mid shear viscosity have proven to be very successful in this respect.

[2)] The formulation guidelines are given to help formulators : see disclaimers and notice on the last page

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Formulation Guidelines[2)]

ACRYSOL™ RM-12W Rheology Modifier should not be pre-blended with other rheology modifiers prior to paint addition. The rheology modifiers must be added separately to the coating formulation. If ACRYSOL RM-12W Rheology Modifier is being added to a formulation in which there may be strong interactions (i.e. latex, pigment, dispersant, solvent, surfactant), it should be diluted with water prior adding it to the formulation.

Dispersing Agents: Dispersing agents with low ionic content have proven to work well with ACRYSOL RM-12W Rheology Modifier. OROTAN™ 165, OROTAN 681 and

OROTAN 731A ER are all very compatible. For low odour coatings we recommend the ammonia*) and solvent*) free OROTAN 731A ER. Dispersants which introduce a high level of electrolytes into the paint formulation, such as polyacid homopolymers, should be avoided, as they may cause syneresis.

pH: Being non-ionic, ACRYSOL RM-12W Rheology Modifier is usable over a wide pH range and in most formulations pH is not a critical factor. For most latex coating formulated with ACRYSOL RM-12W Rheology Modifier, a pH between 7.0- 9.0 will give best stability and rheology control.

Latex polymer particle size and distribution: The primary site for the associative characteristics of a rheology modifier is the surface of the binder particles. As a consequence, a greater surface area will lead to stronger association. Greater association leads to an increased efficiency.

For a given volume of unimodal latex binder, a small particle size binder will have a greater total surface area than a larger particle size binder. Thus, the rheology modifier will work more efficiently with the smaller particle size binder.

When a binder contains a distribution of particle sizes, the answer is not as clear. Here the distribution of particle sizes from large to small will determine the associative conditions more realistically than average particle size.

Latex Polymer Composition: ACRYSOL RM-12W Rheology Modifier is most efficient with hydrophobic latexes but works with hydrophilic ones as well. The hydrophobicity varies with the latex composition or the stabilising system.

Surfactants: The hydrophobic nature of surfactants allows them to compete with the associative capacity of the rheology modifier for the latex polymer surfaces. If the surfactant is able to displace the rheology modifier, the viscosity that is inherent to the rheology modifier polymer interaction can be reduced considerably. This means that special attention is needed for the type and amount of surfactant that is used, and to the combination with the binder. In addition, consideration must be given to the surfactants introduced with the colorant system. Predispersed colorants generally contain surfactants for stability and to facilitate colour acceptance. Each colorant may have a different type and level of surfactant.

Coalescent: Water immiscible solvent like Texanol produces an increase in low shear viscosity. This increase in low shear viscosity is not apparently affected by combining with Propylene Glycol. This combination of Texanol and Propylene Glycol is a realistic component in coating manufacturing, and can be utilised in a controlled manner to increase the thickening effects.

[2)] The formulation guidelines are given to help formulators : see disclaimers and notice on the last page

*) Ammonia and/or organic solvent is not intentionally added AND is not knowingly introduced from other raw material.

Formulation Guidelines[2)]

ACRYSOL™ RM-12W Rheology Modifier should be added slowly and steadily near the periphery of the mixing tank. The rate of addition should be such as to allow uniform incorporation of the thickener. Rapid addition may cause excessive thickening or flocculation due to high-localised thickener concentrations. Dilution with water is preferred. It is recommended that the thickener be added in the paint letdown tank, after other liquid ingredients but before the latex. This order of addition provides the most
uniform dispersion. A portion of the thickener can be reserved for viscosity adjustment at the end of the letdown.

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Health and Safety Considerations

Safety Data Sheets (SDS) are available from The Dow Chemical Company. SDS are provided to help customers satisfy their own handling, safety and disposal needs and those that may be required by locally applicable health and safety regulations. SDS are updated regularly, therefore, please request and review the most current SDS before handling or using any product. For further questions consult your Dow contact person.

Storage and Handling

ACRYSOL™ RM-12W Rheology Modifier should be stored at temperatures between 5°C and 40°C in tightly sealed containers. Avoid freezing of the material! Local legislation on storage must be followed.

We recommend using the product under safety precautions as described in the SDS. Avoid contact with eyes and skin. Large quantities should be handled in a correctly ventilated area. Material can create slippery conditions

As the product contains water corrosion-resistance equipment should be used for processing. Low shear pumps like diaphragm pumps should be used.

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