



## Technical Data Sheet

# ACRYSOL™ RM-12W

## HEUR Rheology Modifier

### Product Description

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

### Application

ACRYSOL™ RM-12W provides high low-shear viscosity with extreme shear thinning rheology (extreme pseudoplasticity) and excellent 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 ideal for spray applications. It could be used over a wide range of pH and has excellent water and alkali resistance. ACRY SOL™ RM-12W is resistant against microbiological and enzymatic attack.

ACRYSOL™ RM-12W is delivered as a solvent\* free liquid and is therefore very easy to incorporate during the manufacturing process.

ACRYSOL™ RM-12W is best utilised as a co-thickener with other associative thickeners, such as ACRY SOL™ RM-2020, but can be used alone in paints intended for spray applications.

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

### Typical Properties<sup>1)</sup>

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

<sup>1)</sup> 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

**Thickener Combinations:** ACRY SOL™ RM-12W can be combined with other rheology modifiers to tailor the viscosity profile of the paint. Combinations with ACRY SOL™ RM-2020 for increased high shear viscosity and ACRY SOL™ RM-8W for increased mid shear viscosity have proven to be very successful in this respect. ACRY SOL™ RM-12W 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 ACRY SOL™ RM-12W 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 ACRY SOL™ RM-12W. OROTAN™ 165, OROTAN™ 681 and OROTAN™ 731A ER are all very compatible. For environmentally friendly, low odour coatings we recommend the ammonia\* and solvent\* free OROTAN™ 731A



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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 nonionic, ACRYSOL™ RM-12W is usable over a wide pH range and in most formulations pH is not a critical factor. For most latex paints formulated with ACRYSOL™ RM-12W, 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 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.

ACRYSOL™ RM-12W 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.

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



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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 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.

<b>Additional Information</b>	For more information you may call the following numbers:							
	<table><tr><td><b>Europe*)</b></td><td><b>+800-3-694-6367 (toll free)</b></td></tr><tr><td><b>Italy</b></td><td><b>800-783-825 (toll free, national)</b></td></tr><tr><td><b>Europe, Middle East, Africa</b></td><td><b>+31-11567-2626 (toll call)</b></td></tr><tr><td><b>South Africa</b></td><td><b>+800-99-5078 (toll free, national)</b></td></tr></table> <p>*) International toll free from Austria, Belgium, Denmark, Finland (prefix 990), France, Germany, Hungary, Ireland, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.</p>	<b>Europe*)</b>	<b>+800-3-694-6367 (toll free)</b>	<b>Italy</b>	<b>800-783-825 (toll free, national)</b>	<b>Europe, Middle East, Africa</b>	<b>+31-11567-2626 (toll call)</b>	<b>South Africa</b>
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