Construction Chemicals

Technical Data Sheet
for Europe, Middle East and Africa

ACRYSOL™ RM-2020

HEUR Rheology Modifier

Product Description

ACRYSOL™ RM-2020 product is a non-ionic urethane rheology modifier with a newtonian rheology profile.

Application

ACRYSOL™ RM-2020 Rheology Modifier facilitates formulating coatings with a newtonian rheology profile and high filmbuild, combined with remarkable water and alkali resistance. The use of coalescent for optimising some formulations, does not adversely affect the efficiency of ACRYSOL RM-2020 rheology modifier. It could be used over a wide range of pH and has remarkable water and alkali resistance. ACRYSOL RM-2020 Rheology Modifier is resistant against microbiological and enzymatic attack.

Typical Properties[1)]

Appearance	Milky white to slightly yellow liquid
Solids content	19 … 21 %
Density	1.05 g/cm^3
Viscosity (Brookfield LV, spindle 2 @ 6 rpm, 25°C)	2500 … 3800 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)]

Rheology Profile: ACRYSOL™ RM-2020 Rheology Modifier imparts a newtonian rheology profile to a coating. In gloss and semi-gloss paints this is suitable for giving the good flow and levelling properties required for brush application. For roller application, however, it is suggested to use it in combination with other thickeners. A more pronounced structure is obtained by adding some ACRYSOL SCT-275, whereas a combination with ACRYSOL RM-8W results in a smoother, less structured paint surface.

Dispersing Agents: In most formulations OROTAN™ 731A ER have been found to give good results in ACRYSOL™ RM-2020 Rheology Modifier thickened systems. For high-gloss coatings, however, when enamel binders are used, OROTAN 681 is suggested. It shows a enhanced overall performance and acting like flow modifiers, gives a greater degree of gloss reproducibility.

pH: Coatings thickened with ACRYSOL™ RM-2020 Rheology Modifier are best formulated at around pH 8.0 as a high pH can cause polymer swelling. In turn, this can lead to high viscosity paints and instability In ammonia free, low VOC formulations, it has been proven that potassium tetra- phosphate (KTPP) maintains the pH and therefore improves the stability.

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

Formulation Guidelines[2)]

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-2020 Rheology Modifier is most efficient with hydrophobic latexes. This hydrophobicity may vary 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 insoluble coalescent, such as Texanol, have little or no effect on the medium shear viscosity of a paint thickened with an associative thickener. Water soluble coalescent, however, may reduce the low shear viscosity. Products such as ethylene glycol and propylene glycol will have the least effect, while BUTYL CARBITOL ™ solvent will have the greatest effect among the coalescent tested to date. As in the case of surfactants, the level of coalescent that is introduced with a predispersed colourant must be accounted for.
One outcome of this coalescent interaction is the potential to use these products for low shear viscosity adjustments. This can be done very effectively, but with a cost penalty and a potential reduction in water resistance due to the water solubility of these products.

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

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-2020 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.

Storage and Handling

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.

Product Stewardship

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Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

Additional Information

For more information you may call the following numbers:

Europe*)	**+800-3-694-6367 (toll free)**
Italy	**800-783-825 (toll free, national)**
Europe, Middle East, Africa	**+31-11567-2626 (toll call)**
South Africa	**+800-99-5078 (toll free, national)**

*) 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.