

**ACRYSOL™ RM-2020 Rheology Modifier**

Hydrophobically-modified Ethylene oxide Urethane (HEUR)

Regional Product Availability

- Europe, Middle East and Africa

Description

ACRYSOL™ RM-2020 Rheology Modifier is a non-ionic urethane rheology modifier, providing high shear viscosity.

It is specifically designed for applications where a low odour or low VOC is required. It can be used either alone or in combination with thickeners effective in the low shear range to reach the desired rheological profile.

ACRYSOL RM-2020 Rheology Modifier allows formulations with a Newtonian rheology profile combined with excellent water and alkali resistance.

Typical Applications

High performance inks formulation

Key Features

- Excellent flow and leveling
- Solvent free - low odor
- Excellent water and alkali resistance
- Use over a wide pH range
- Ease of handling

Typical Physical Properties

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

Property	Value
Appearance	Hazy liquid
Active Solids Content (%)	20
Viscosity Brookfield (mPa.s), LV, Spindle #2, 6 rpm, 25°C	3200
Specific gravity (wet polymer)	1.05
Solvent	Water
Chemistry	HEUR (Hydrophobically modified polyethylene oxide urethane)

Recommended Operating Conditions

The rheology modifying mechanism of ACRY SOL™ RM-2020 Rheology Modifier is associative. Hydrophobic elements of the molecular structure tend to associate with other hydrophobic elements in the ink. These other hydrophobic elements are mostly binders and opaque polymers. Association with inorganic pigments is less frequent, but can exist. This network of associations modifies the rheological profile of the ink and gives the desired flow.

However, associative also means that the rheology of the ink is influenced by a whole range of elements other than the thickener itself. The following factors have a direct impact on the efficiency of ACRY SOL™ RM-2020 Rheology Modifier:

- 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 polymer, 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.

- Polymer Composition

ACRY SOL™ RM-2020 Rheology Modifier is most efficient with hydrophobic latexes. This hydrophobicity may vary with the binder composition or the stabilizing system.

- Surfactants

The hydrophobic nature of surfactants allows them to compete with the rheology modifier for the polymer surfaces. If the surfactant is able to displace the rheology modifier, the viscosity can be reduced considerably.

⇒ This means that special attention is needed for the type and amount of surfactant that is used.

- Co-solvents

Water insoluble cosolvents have little or no effect on the medium shear viscosity.

Water soluble cosolvents, however, may reduce the low shear viscosity. Products such as ethylene glycol and propylene glycol will have the least effect, while Butyl Carbitol will have the greatest effect among the cosolvents tested to date. One outcome of this co-solvent interaction is the potential to use these products for low shear viscosity adjustments.

- Dispersing Agents

Dispersing agents with low ionic content have proven to work well with ACRY SOL™ RM-2020 Rheology Modifier.

⇒ In most formulations OROTAN™731E ER has been found to give good results.

**Recommended
Operating
Guidelines**

ACRYSOL™ RM-2020 Rheology Modifier is supplied as a pourable and pumpable liquid, free of solvent and with very low odor. It can be added to the mill-base or during letdown.

**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 Technical Representative for more information.

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