Technical Data Sheet

ACRYSOL™ RM-845 Rheology Modifier

Hydrophobically modified ethylene oxide urethane (HEUR) mid-shear Rheology Modifier forlatex paints, based on proprietary technology

Regional Product Availability

EMEA

Description

ACRYSOL™ RM-845 Rheology Modifier is a hydrophobically modified ethylene oxide urethane (HEUR) Rheology Modifier. Based on an innovative proprietary technology, this mid-shear high solids (27%) water based product is supplied solvent-free*, at an as-supplied viscosity that still allows easy pumping and dosing.

ACRYSOL™ RM-845 Rheology Modifier offers the typical properties HEUR technology can bring to paint formulations like excellent flow and levelling, gloss development, for both interior and exterior applications. ACRYSOL™ RM-845 Rheology Modifier is most effective at building viscosity at mid shear rates and has a pseudoplastic rheology profile similar to ACRYSOL™ RM-8, ACRYSOL™ RM-825 and ACRYSOL™ RM-8W.

ACRYSOL™ RM-845 Rheology Modifier has the advantage of combining three benefits of Rheology Modifiers in the same product, namely, advanced environmental profile, high efficiency and ease of use.

Key Features

- Efficient mid shear viscosity building
- Solvent-free* and low odor Rheology Modifier
- Low as-supplied viscosity
- High resistance to spattering
- Low overnight viscosity change
- Excellent water and alkali resistance

Benefits

- Low dosage levels needed to achieve good paint consistency
- Good sag resistance with very good flow and levelling
- Can be used in environmental-friendly coatings
- Easy to pump and dose during paint manufacturing
- Improved paint application properties

* Solvents are not intentionally added and are not knowingly introduced from another raw material.

Typical Properties

These properties are typical but do not constitute specifications.

Property	Value
Appearance	Hazy liquid
Solids, by weight, %	27.0
Brookfield viscosity, cP	2500 max. as supplied
Specific gravity (wet polymer)	1.04
Solvent	Water
Chemistry	HEUR *
pH	~ 4

*Hydrophobically modified ethylene oxide urethane

FORMULATING GUIDELINES

Incorporation

ACRYSOL™ RM-845 Rheology Modifier is based on an innovative proprietary technology to produce polyurethane based Rheology Modifiers (HEURs). Due to this distinctive technology, the viscosity of the as-supplied product is relatively low, making the polymer solution easy to poor and pump and therefor facilitates easy accurate dosing in the paint. In-can viscosity develops at typical paint pH (pH > 8) with straightforward processing.
ACRYSOL™ RM-845 Rheology Modifier can be added to the mill-base or to the let down step of the formulation process. The product can be diluted readily with water if desired.

Formulation space

ACRYSOL™ RM-845 Rheology Modifier can be used in different formulations based on different binder chemistries. It is particularly well suited for the manufacture of solvent free, low odour paints and complies with most eco-labelling requirements (Swan label, Eco label, Blue Angel,etc.).

Rheology profile

ACRYSOL™ RM-845 Rheology Modifier has a pseudoplastic rheology profile, comparable to ACRYSOL™ RM-8 and ACRYSOL™ RM-825 Rheology Modifiers as well as several competitive HEUR polymers. It can be used as the only thickener but is suggested for use in combination with a high shear builder in order to optimize the viscosity profile of the paint formulation. ACRYSOL™ RM-5000 and ACRYSOL™ RM-2020 E Rheology Modifiers are excellent examples of high shear builders which complement ACRYSOL™ RM-845 Rheology Modifier in a wide range of formulations.

pH Control

Paints should be formulated at a minimum pH of 8 for optimized viscosity.

Dispersing Agents

Dispersing agents with low ionic content have demonstrated to work well with ACRYSOL™ RM-845 Rheology Modifier. OROTAN™ 165 and OROTAN™ 731-A ER Pigment Dispersant are all very compatible and OROTAN™ 1124 Pigment Dispersant can be suggested as well. For environmentally advanced, low odour paints we suggest the ammonia and solvent-free* OROTAN™ 731-A ER Pigment Dispersant.

* Ammonia and Solvent are not intentionally added and are not knowingly introduced from another raw material.

Depending on formulation type, usage levels of 0.7-1.0% calculated on total powder have been found adequate. Dispersants which introduce a high level of electrolytes into the paint formulation, such as polyacid homopolymers, should be avoided as they may cause syneresis.

Surfactants, Wetting Agents and Cosolvents

See below under “Interactive effects with the Paint System”.

INTERACTIVE EFFECTS WITH THE PAINT SYSTEM

Thickening Mechanism

ACRYSOL™ RM-845 Rheology Modifier offer paint rheology primarily through associative interaction. Hydrophobic elements of the molecular structure tend to associate with other hydrophobic elements in the paint, mostly latex binder and opaque polymers. Association with inorganic pigments is less frequent, but can exist. This leads to a network of associations which modify the rheological profile of the paint and gives it the desired flow behavior. The associative behavior however also means that the rheology of the paint is influenced by a range of elements other than the thickener itself.

The following factors have a direct impact on the efficiency of ACRYSOL™ RM-845 Rheology Modifier in latex paints:

- Latex polymer particle size and distribution
- Latex polymer composition and stabilisation
- Surfactants and cosolvents

Latex Polymer Particle Size and Distribution

The primary interaction with ACRYSOL™ RM-845 Rheology Modifier is the surface of the binder particles. As a consequence, a greater surface area of the binder will lead to stronger association. Greater association leads to 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. In multi modal binders the distribution of particle sizes, from large to small determines the associative conditions rather than the average particle size.

Latex Polymer Composition

ACRYSOL™ RM-845 Rheology Modifier is most efficient when used with hydrophobic latexes. The degree of hydrophobicity may vary with the latex composition or the stabilising system.

Surfactants

The hydrophobic moities of surfactants can compete with the associative interactions between the Rheology Modifier and latex polymer. If the surfactant-binder interactions are sufficiently strong, they will displace the Rheology Modifier interactions and decrease the paint viscosity. This means that special attention is needed to the type and amount of surfactant used in 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.

Cosolvents

Water insoluble cosolvents, such as UCAR™ Filmer IBT, have little or no effect on the medium shear viscosity of a paint thickened with an associative thickener.

Water soluble cosolvents, however, may reduce the low shear viscosity. Products such as propylene glycol will have the least effect, while butyl CARBITOL™ solvent will have the greatest effect among the cosolvents tested to date. As in the case of surfactants, the level of cosolvent that is introduced with a predispersed colorant must be accounted for.

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 or national 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 or national regulations. Contact your Dow Coating Materials Technical Representative for more information.

Chemical Registration

Many countries within EMEAI require the registration of chemicals, either imported or produced locally, prior to their commercial use. Violation of these regulations may lead to substantial penalties imposed upon the user, the importer or manufacturer, and/or cessation of supply. It is in your interests to ensure that all chemicals used by you are registered. Dow does not supply unregistered products unless permitted under limited sampling procedures as a precursor to registration.

Note on EMEAI Product Line

Product availability and grades vary throughout the countries in the EMEAI area. Please contact your local Dow Coating Materials representative for further information and samples.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

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.

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www.dow.com

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