Product Safety Assessment

ACRYSOL™ Hydrophobically Modified Ethylene Oxide Urethane (HEUR) Rheology Modifiers

Product Safety Assessment documents are available at www.dow.com/productsafety/finder/.

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Names
• ACRYSOL™ Rheology Modifier
• ACRYSOL RM Rheology Modifier
• ACRYSOL HEUR Rheology Modifier
• ACRYSOL RM-8 Rheology Modifier
• ACRYSOL RM-8W Rheology Modifier
• ACRYSOL RM-12W Rheology Modifier
• ACRYSOL RM-242 Rheology Modifier
• ACRYSOL RM-244 Rheology Modifier
• ACRYSOL RM-825 Rheology Modifier
• ACRYSOL RM-845 Rheology Modifier
• ACRYSOL RM-895 Rheology Modifier
• ACRYSOL RM-995 Rheology Modifier
• ACRYSOL Hydrophobically modified ethylene oxide urethane (HEUR) rheology modifier
• ACRYSOL RM Rheology Modifier
• ACRYSOL RM-1020 Rheology Modifier
• ACRYSOL RM-2020 Rheology Modifier
• ACRYSOL RM-2020NPR Rheology Modifier
• ACRYSOL RM-2020E Rheology Modifier
• ACRYSOL RM-3000 Rheology Modifier
• ACRYSOL RM-5000 Rheology Modifier
• ACRYSOL RM-6000 Rheology Modifier
• ACRYSOL SCT-275 Rheology Modifier

Product Overview
• ACRYSOL™ hydrophobically modified ethylene oxide urethane (HEUR) Rheology Modifiers are water-based polyurethane formulations manufactured by Dow Coating Materials, a division of The Dow Chemical Company. This family of products ranges in color from colorless to hazy, milky white or pale yellow, depending on the formulation. For further details, see Product Description.
• ACRYSOL HEUR Rheology Modifiers are added to interior and exterior latex (water-based) paint formulations to increase the viscosity of the paint. For further details, see Product Uses.
• ACRYSOL HEUR Rheology Modifiers are formulated into latex paints. Workers could be exposed during manufacture, formulation, transport, or use. Consumers could use interior or exterior latex paints containing these products. Always read the product information before use and follow the label/use instructions. For further details, see Exposure Potential.
• Direct eye contact with these products may cause slight-moderate irritation. Prolonged or repeated skin contact may cause slight irritation. Inhalation of product vapor or mist can

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cause headache, nausea, and irritation of the nose, throat, and lungs. For further details, see Health Information.

- ACRYΣOL™ HEUR Rheology Modifiers are blends of polyurethane resins suspended in water. Some formulated polyurethane resins may also contain organic solvents. If released to the environment, the polyurethane resin component would be expected to be inert in the environment. Due to their high molecular weight, the polyurethane resins are not expected to accumulate in the food chain. Based on data from similar materials, the polyurethane resins are not considered harmful to fish or other aquatic organisms on an acute basis. For further details, see Environmental Information.

- ACRYΣOL HEUR Rheology Modifiers are stable under recommended storage and use conditions. Avoid contact with concentrated acids and alkalis. For further details, see Physical Hazard Information.

Manufacture of Product

- Locations – Dow Coating Materials, a division of The Dow Chemical Company, manufactures ACRYΣOL™ HEUR Rheology Modifiers in the USA.

- Process – ACRYΣOL HEUR Rheology Modifiers are manufactured using proprietary Dow materials and processes.

Product Description

ACRYΣOL™ Rheology Modifiers are blends of polyurethane resins dispersed in water. Another name for these products is hydrophobically modified ethylene oxide urethane, or HEUR rheology modifiers. These formulations may contain additives such as diethylene glycol butyl ether or propylene glycol. ACRYΣOL HEUR Rheology Modifiers are low odor, “associative” thickeners. These products perform well over a wide pH range, are resistant to microbial attack, and are formulated over a range of shear viscosities.

Product Uses

ACRYΣOL™ HEUR Rheology Modifiers are added to interior and exterior latex (water-based) paint formulations to increase the viscosity of the paint (increase the thickness). These products are also used for industrial coating applications.

Exposure Potential

ACRYΣOL™ HEUR Rheology Modifiers are added to latex paint formulations and industrial coatings. Based on the uses for these products the public could be exposed through:

- Workplace exposure – ACRYΣOL HEUR Rheology Modifiers are formulated in closed systems using engineering controls that prevent the escape of liquid or vapors and minimize release to the environment. The potential for exposure is further reduced by proper use of personal protective equipment. Workers who formulate these products may be exposed during maintenance, sampling, testing, or other procedures. Worker exposure could also occur during paint application. Each facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit exposure. See Health Information.
• **Consumer exposure to ACRYSOL™ HEUR Rheology Modifiers** – Consumers could come into contact with these products while applying interior or exterior latex paints. Always follow the product label/use instructions to minimize exposure potential. See Health Information.

• **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. If released to water or soil, the polyurethane resin component would be inert in the environment. If released to surface waters, the polyurethane components would initially remain dispersed in water, but eventually settle into the sediments. Based on data from similar materials, polyurethane resins are not biodegradable, but would likely be removed by biological wastewater-treatment facilities via adsorption to biosolids. Based on data from similar materials, polyurethane resins are not considered harmful to fish or other aquatic organisms on an acute basis. See Environmental, Health, and Physical Hazard Information.

• **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill occurs, contain it immediately with sand or soil. Evacuate personnel and ventilate the area. Spilled material can create slippery conditions. Only trained and properly protected personnel must be involved in clean-up operations. Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. See Environmental, Health, and Physical Hazard Information.

• **In case of fire** – These water-based formulations are noncombustible. To extinguish combustible residues of these products, use water spray, carbon-dioxide or dry-chemical extinguisher, or alcohol-based foam. A direct water stream may spread the fire. Keep people away. Isolate the fire and deny unnecessary entry. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

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**Health Information**

Health information for various products is summarized on the relevant Safety Data Sheet. It is important to note that health risks associated with individual products may vary based on their formulation or intended use. These products may contain minor components or additives that have additional health risks. The Safety Data Sheet is the preferred source for specific health information. An overview of health information appears below.

**Eye contact** – Direct contact with liquid or mist may cause slight to moderate eye irritation depending on formulation.

**Skin contact** – Prolonged or repeated skin contact may cause slight irritation.

**Inhalation** – Excessive inhalation of product mist or vapor may cause headache, nausea, dizziness, and irritation of the nose, throat, and lungs.

**Repeated exposure** – In laboratory testing, high oral repeated doses of diethylene glycol monobutyl ether, a component in some ACRYSOL™ HEUR Rheology Modifier formulations, has been reported to cause kidney damage, liver damage, and blood changes. For more information, consult the diethylene glycol butyl ether safety assessment.

**Propylene glycol**, a component in ACRYSOL RM-8 Rheology Modifier, is essentially non-irritating to the skin after prolonged dermal contact. Undiluted propylene glycol is minimally irritating to the eye, and can produce slight transient conjunctivitis (the eye recovers after the exposure is
Propylene glycol does not cause sensitization and shows no evidence of being a carcinogen or of being genotoxic. Exposure to mists may cause eye irritation, as well as upper respiratory tract irritation. Inhalation of the propylene glycol vapors appears to present no significant hazard in ordinary applications. However, limited human experience indicates that inhalation of propylene glycol mists may be irritating to some individuals. Therefore inhalation exposure to mists of these materials should be avoided. In general, Dow does not support or recommend the use of propylene glycol in applications where inhalation exposure or human eye contact with the spray mists of these materials is likely, such as fogs for theatrical productions or antifreeze solutions for emergency eye wash stations. For more information, consult the propylene glycol Product Safety Assessment.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

Environmental Information

ACRYSOL™ HEUR Rheology Modifiers are blends of polyurethane resins suspended in water. If released to the environment, the polyurethane resin component would be inert in the environment, but would likely be removed by biological wastewater-treatment facilities via adsorption to biosolids. If released to surface waters, the polyurethane components would initially remain dispersed in water but eventually settle into the sediments.

Due to their high molecular weight, polyurethane resins do not accumulate in the food chain.

Based on data from similar materials, polyurethane resins are not considered harmful to fish or other aquatic organisms on an acute basis.

Diethylene glycol butyl ether, a component of some product formulations, poses a low risk to the environment. It is readily biodegradable (per OECD 301 screening guidelines, showing more that than 60% of the material biodegrades over a 28-day period when exposed to the typical environmental conditions, including exposure to certain microorganisms). This component will not likely accumulate in the food chain. Diethylene glycol butyl ether glycol is practically nontoxic (EC_{50} >100 mg/L) to aquatic organisms on an acute basis.

Propylene glycol, a component of ACRYSOL™ RM-8 Rheology Modifier, poses a low risk to the environment. It is readily biodegradable (per OECD 301 screening guidelines, showing more that than 60% of the material biodegrades over a 28-day period when exposed to the typical environmental conditions, including exposure to certain microorganisms). This component will not likely accumulate in the food chain. Propylene glycol is practically nontoxic (EC_{50} >1000 mg/L) to aquatic organisms on an acute basis.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

Physical Hazard Information

ACRYSOL™ HEUR Rheology Modifiers are stable under recommended storage and use conditions. Avoid contact with concentrated acids and alkalis.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.
Regulatory Information
Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of ACRYSOL™ HEUR Rheology Modifiers. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet, Technical Data Sheet, or Contact Us.

Additional Information
- Request the relevant Safety Data Sheet from the Dow Customer Information Group at (http://www.dow.com/assistance/dowcig.htm)
- Contact Us (http://www.dow.com/assistance/thoughts.htm)

For more business information about ACRYSOL™ HEUR Rheology Modifiers, visit the Dow website for these products at www.dow.com/products/product_line_detail.page?product-line=1120046.

NOTICES:
As Part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment is intended to give general information about the chemical (or categories of chemicals) addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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