Product Safety Assessment

**ACULYN™ Anionic Rheology Modifiers**


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**Product Overview**

- **ACULYN™** anionic rheology modifiers are water-based acrylic polymer formulations designed for personal-care applications. A “rheology modifier” enhances the flow characteristics of a liquid. ACULYN anionic rheology modifiers act as thickeners and stabilizers. These products are formulated as milky-white liquids.¹ For further details, see **Product Description**.

- ACULYN anionic rheology modifiers are added to personal-care formulations to improve product stability and flow quality. These polymers impart a soft, nongreasy, nonsticky feel to personal-care products. ACULYN anionic rheology modifiers are particularly useful for clear gels and solutions. Applications include facial creams and lotions, shampoos, hair dyes, and sunscreens.²,³ For further details, see **Product Uses**.

- Worker exposure to ACULYN rheology modifiers is possible during manufacture, transport, or use. Consumers may use personal-care products that contain these polymers.⁴ For further details, see **Exposure Potential**.

- The polymers in ACULYN anionic rheology modifiers have a well-established toxicological profile and are safe for normal use. In the industrial setting, eye or skin contact with undiluted product may cause slight irritation. Inhalation of product vapor or mist during processing may cause irritation of the nose, throat, and lungs.⁵ For further details, see **Health Information**.

- ACULYN anionic rheology modifiers are acrylic polymers suspended in water. If released to the environment, the polymers would be expected to be inert. Due to their high molecular weight, acrylic polymers are not expected to accumulate in the food chain and have no

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- known ecotoxicological effects on fish or other aquatic organisms. For further details, see Environmental Information.
- ACULYN anionic rheology modifiers are stable under recommended storage and use conditions. For further details, see Physical Hazard Information.

Manufacture of Product

- **Locations** – Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company, manufactures ACULYN™ rheology modifiers at multiple facilities in North America, in France and in Taiwan in quantities sufficient to meet global demand.
- **Process** – ACULYN anionic rheology modifiers are produced and formulated in batch operations using proprietary materials and technology. The general structure of ACULYN anionic acrylic polymers is shown below.

![Diagram of ACULYN anionic acrylic polymers]

ACULYN™ anionic rheology modifiers are thickening agents designed for use in water-based personal-care products. They are formulated as dispersions of acrylic polymers in water. The common name assigned by the Personal Care Products Council is acrylates copolymer. ACULYN anionic rheology modifiers consist of two types of products: HASE associative thickeners (hydrophobically modified alkali-soluble emulsions) and ASE nonassociative thickeners (alkali-swellable emulsions). Both range from 20 to 30% solids.

Product Uses

ACULYN™ anionic rheology modifiers are globally approved for use in personal-care formulations. These polymers impart a soft, nongreasy, nonsticky feel to personal-care products. ACULYN anionic rheology modifiers improve product stability and flow quality in the following types of personal-care products:

- **Shampoos** – antidandruff, conditioning, 3-in-1 products
- **Shower and bath gels** – clear and exfoliating
- **Sunscreens** – including spray formulations
- **Skin-care products** – moisturizing skin creams and lotions
- **Facial washes** – products containing salicylic acid, exfoliants
- **Hair-styling products** – clear gels, pomades
- **Liquid hand soaps**
Exposure Potential

ACULYN™ anionic rheology modifiers are used in the production of personal-care products. Based on this, exposure could occur through:

- **Workplace exposure** – Those working with ACULYN rheology modifiers in manufacturing and/or formulating operations could be exposed during maintenance, sampling, testing, or other procedures. Each manufacturing facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit exposure. See Health Information.

- **Consumer exposure to ACULYN™ anionic rheology modifiers** – These polymers are not sold for direct consumer use, but they are formulated at low levels into personal-care products, such as hair- and skin-care products, used by the general public. The polymers in ACULYN anionic rheology modifiers have a well-established toxicological profile and are safe for normal use. Always read and follow product label instructions. See Health Information.

- **Environmental releases** – Because these polymers are formulated into personal-care products, small quantities could enter wastewater-treatment facilities when consumer products are washed off or discarded. If released to water the acrylic polymer would initially disperse in water, and eventually settle into the sediment. These polymers will degrade slowly in the environment, and will likely be removed by biological wastewater-treatment facilities by adsorbing onto sludge. These polymers are not acutely toxic to fish or other aquatic organisms. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, the focus is on immediate containment to prevent contamination of soil and surface or ground water. Evacuate personnel upwind and away of spill or leak. Appropriate protective equipment must be worn when handling spills of these products. Dike the spill and absorb with inert solids such as sand or soil. Collect liquids and solid diving material in suitable separate containers. Spilled material can create slippery conditions. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – These products will not burn until all water has evaporated. Product residue can burn. Use extinguishing media appropriate for the surrounding fire. Firefighters should wear positive-pressure, self-contained breathing apparatus and protective firefighting clothing. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

**Health Information**

The safety of acrylates copolymer has been assessed by the Cosmetic Ingredient Review (CIR) Expert Panel. The CIR Expert Panel evaluated the scientific data and concluded that acrylate copolymers are safe for use in cosmetics and personal-care products when formulated to avoid skin irritation. Simply put, ACULYN™ anionic polymers are safe and appropriate for use in a broad range of rinse-off and leave-on personal-care applications.

- **Eye contact** – Direct contact with undiluted product can cause slight irritation.

- **Skin contact** – Prolonged or repeated contact can cause slight irritation.

- **Inhalation** – Inhalation of product vapor or mist can cause irritation of the nose, throat, and lungs. Headache and nausea are also possible.

- **Ingestion** – These products are nontoxic.

For more information, see the relevant Safety Data Sheet.

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Environmental Information

The acrylic polymers in ACULYN™ anionic rheology modifiers would be expected to be inert in the environment. If released to surface waters, the acrylic polymers would initially remain dispersed in water, and eventually settle into the sediment. These polymers will likely be removed by biological wastewater-treatment facilities by adsorbing onto biosludge solids.

Although acrylic polymers are generally considered non-biodegradable, they are likely to degrade slowly in the environment, including degradation by physical action or upon exposure to sunlight. Because of their high molecular weight, these acrylic polymers would not be expected to accumulate in the food chain (low bioconcentration potential). ACULYN™ anionic polymers are nontoxic to fish and other aquatic organisms on an acute basis.

For more information, see the relevant Safety Data Sheet.

Physical Hazard Information

ACULYN™ anionic rheology modifiers are stable under recommended storage and use conditions. Keep these products from freezing.

Vapors can be evolved when products are heated during processing operations.

For more information, see the relevant Safety Data Sheet.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of ACULYN™ anionic 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

- Contact Us (www.dow.com/assistance/thoughts.htm)
- Anionic ACULYN™ Rheology Modifiers and Stabilizers, Brochure, Rohm and Haas Company, Form No. PC002007 revised, April 2008

For more business information about ACULYN rheology modifiers, visit the Dow ACULYN for Personal Care webpage at www.dow.com/products/product_line_detail.page?product-line=1000056.
References

3. ACULYN for Personal Care webpage (www.dow.com/products/product_line_detail.page?product-line=1000056&display-mode=highlight&region=&start-index=0&all-results)
5. ACULYN 33 Polymer Material Safety Data Sheet, Rohm and Haas Company, January 5, 2009, pages 1–2 and 4.
10. ACULYN for Personal Care webpage (www.dow.com/products/product_line_detail.page?product-line=1000056&display-mode=highlight&region=&start-index=0&all-results)

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