Product Safety Assessment
RHOPLEX™ TR-407 Emulsion

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Select a Topic:

Names

- RHOPLEX™ TR-407 emulsion
- Acrylic polymer
- Acrylic resin
- Emulsion polymer

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Product Overview

- RHOPLEX™ TR-407 acrylic emulsion is an acrylic polymer dispersed in water. The polymer has reactive groups that cure to form cross-links.[1] For further details, see Product Description.
- RHOPLEX TR-407 emulsion is designed for use as binder for textiles and nonwoven fabrics.[2] For further details, see Product Uses.
- RHOPLEX TR-407 emulsion is not sold for direct consumer use, but consumers may come in contact with dried and cured product when handling certain textile, nonwoven, or high-loft fabrics. For further details, see Exposure Potential.
- Eye or skin contact can result in slight irritation. Inhalation of vapor or mist can cause headache, nausea, and irritation of the nose, throat, and lungs. This product contains small amounts of formaldehyde and may generate more during cure. Formaldehyde is a possible human carcinogen.[1]For further details, see Health Information.
- RHOPLEX TR-407 emulsion has limited biodegradability, but readily absorbs onto typical soils and biosolids and would be separated during normal wastewater-treatment processes. It would not be expected to bioconcentrate and would be of low concern with respect to aquatic toxicity.[1]For further details, see Environmental Information.
- RHOPLEX TR-407 emulsion is stable and does not undergo any known hazardous reactions.[1]For further details, see Physical Hazard Information.

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Manufacture of Product

- **Capacity** – Rohm and Haas, a wholly owned subsidiary of The Dow Chemical Company, produces acrylic emulsion polymers in a number of U.S. locations.
- **Process**[3] – In emulsion polymerization, liquid monomers are added directly to water containing surfactant. The monomers are emulsified and then polymerize in small droplets in

a continuous water medium. Polymerization normally proceeds via free-radical chemistry using a suitable initiator. The properties of the resultant polymer depend on the monomers and additives used and the reaction conditions employed.

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Product Description[1]

RHOPLEX™ TR-407 acrylic emulsion is a stable microsuspension (emulsion) of acrylic polymer in water. The product is a milky-white liquid consisting of about 45% polymer solids, traces of residual monomer and formaldehyde (CAS No. 50-00-0), and water. The polymer has reactive groups that cure to form cross-links between the polymer chains, forming a thermoset polymer.

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Product Uses[2,3]

RHOPLEX™ TR-407 acrylic emulsion is recommended for bonding fibers in textiles and nonwoven fabrics, especially when extra strength or durability is desired.

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Exposure Potential[1]

RHOPLEX™ TR-407 acrylic emulsion is used in the production of industrial and consumer products. Based on the uses for these products, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in an acrylic emulsion manufacturing facility or in textile, nonwoven, or high-loft fabrics manufacturing facilities that use this product. Those working with this product in manufacturing 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, ventilation, and safety equipment in place to limit unnecessary exposure. See Health Information.
- **Consumer exposure to products containing RHOPLEX TR-407 emulsion** – Rohm and Haas does not sell this product for direct consumer use, but consumers may contact dried and cured product when handling certain textile, nonwoven, or high-loft fabrics. Consumers should read product labels carefully for safety information. See Health Information.
- **Environmental releases** – Small quantities of this product may be released into the environment during processing. In the event of a release, the focus is on containing the spill to prevent contamination of soil and surface or ground water. Small spills should be absorbed with inert materials such as sand or soil. Because it will coagulate and bind to soil and biosolids, this product would be removed by wastewater-treatment facilities. It is of low concern with respect to aquatic toxicity. 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 product should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Respiratory protection is recommended for cleaning up spills and leaks because the odor may be unpleasant. Keep spills and cleaning runoff out of municipal sewers and open bodies of water. See Environmental, Health, and Physical Hazard Information.
- **In case of fire –** Deny unnecessary entry into the area. Although the product is not combustible, it can spatter when heated above 100°C (212°F), and the dried residue can burn. Use extinguishing techniques that are suitable for the materials surrounding the fire.

Firefighters should wear positive-pressure, self-contained breathing apparatus and protective firefighting clothing when fighting the fire. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

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Health Information[1]

Eye contact – Direct eye contact with this product can cause slight irritation.

Skin contact – Prolonged or repeated skin contact can cause slight irritation.

Inhalation – Inhalation of vapor or mist from this product can cause headache, nausea, and irritation of the nose, throat, and lungs.

Other – This product contains small amounts of formaldehyde (CAS No. 50-00-0) and may generate additional formaldehyde during cure. Formaldehyde is classified as a possible human carcinogen.

For more information, see the relevant Safety Data Sheet.

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Environmental Information[1]

Because of its high molecular weight and low water solubility, RHOPLEX™ TR-407 acrylic emulsion would not be expected to bioconcentrate (accumulate in the food chain). The biodegradation of this product is considered limited. However, this product would likely absorb onto soil or typical wastewater-treatment biosolids. Thus this product is considered bioeliminable and would be separated from liquid effluents.

To dispose of the product properly, coagulate the emulsion by the stepwise addition of ferric chloride and lime. Separate the coagulant from the clear liquid and flush the liquid to a chemical sewer. Dispose of the solid material in accordance with local, state, and federal regulations.

Based on comparison with similar materials, RHOPLEX TR-407 emulsion would be of low concern with respect to aquatic toxicity.

For more information, see the relevant Safety Data Sheet.

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Physical Hazard Information[1]

RHOPLEX™ TR-407 acrylic emulsion is a stable product that does not undergo any known hazardous reactions. Although the product is not combustible, it can spatter when heated above 100°C (212°F), and the dried residue can burn. To maintain product quality, avoid extreme temperatures during storage. Keep the product from freezing. Do not store in direct sunlight. At elevated temperatures, such as a fire, thermal decomposition of this product may yield acrylic monomers.

For more information, see the relevant Safety Data Sheet.

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Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of RHOPLEX™ TR-407 emulsion. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet or Contact Us.

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Additional Information

- Safety Data Sheet (www.dow.com/products/product_detail.page?display-mode=msds&product=1120341)
- Contact Us (http://www.dow.com/assistance/thoughts.htm)
- *RHOPLEX TR-407: Firm, Mechanically Stable, Acrylic Binder for Nonwovens*, Technical Data (www.dow.com/products/product_detail.page?display-mode=tds&product=1120341)
- RHOPLEX TR self-crosslinking acrylic emulsions web page (www.dow.com/products/product_line_detail.page?product-line=1120055)
- Linak, Eric, and Kishi, Akihiro, "Marketing Report: Acrylic Surface Coatings," *Chemical Economics Handbook*, SRI Consulting, December 2006 (http://www.sriconsulting.com/CEH/Public/Reports/592.5500/)

For more business information about RHOPLEX TR emulsions, visit the RHOPLEX TR self-crosslinking acrylic emulsions web page at www.dow.com/products/product_line_detail.page?product-line=1120055.

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References

[1] *RHOPLEX™ TR-407 Material Safety Data Sheet*, The Dow Chemical Company
[2] *RHOPLEX TR-407: Firm, Mechanically Stable, Acrylic Binder for Nonwovens*, Technical Data
[3] Linak, Eric and Kishi, Akihiro, "CEH Marketing Report: Acrylic Surface Coatings," *Chemical Economics Handbook*, SRI Consulting, December 2006, pages 10, 33, and 36.

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NOTICES:

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