Product Safety Assessment

**VITHANE™ Water-Based Resins**


Select a Topic:

- Names
- Product Overview
- Manufacture of Product
- Product Description
- Product Uses
- Exposure Potential
- Health Information
- Environmental Information
- Physical Hazard Information
- Regulatory Information
- Additional Information
- References

Names

- VITHANE™ resins
- VITHANE W 6595 water-based resin
- VITHANE W 6620 water-based resin
- VITHANE W 6946 water-based resin
- VITHANE W 6960 water-based resin
- VITHANE W 6958 water-based resin

**Product Overview**

- VITHANE™ water-based resins are a family of polyurethane elastomers manufactured and marketed by Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company, and its affiliated companies. “Elastomers” are resilient polymers that can bend or stretch and then return to their original shape. VITHANE water-based resins are formulated as milky-white anionic emulsions. For further details, see **Product Description**.

- VITHANE water-based resins are used in the production of synthetic leather. Footwear, apparel, and other goods are manufactured from synthetic leathers made with these VITHANE products. For further details, see **Product Uses**.

- VITHANE water-based resins are for commercial use. Worker exposure is possible during manufacture, transport, or application. Consumers may purchase finished goods, such as footwear or apparel, manufactured with VITHANE resins. For further details, see **Exposure Potential**.

- Direct eye contact with these products may cause slight irritation. Prolonged or repeated skin contact may cause slight irritation. Inhalation of product vapor or mist can cause headache, nausea, and irritation of the nose, throat, and lungs. Prolonged or repeated overexposure to a solvent in some of these products can cause effects on the liver, kidneys, and adrenal glands. For further details, see **Health Information**.

- The polyurethane resins in VITHANE water-based resins are expected to slowly degrade in the environment. Due to their high molecular weight, the resins are not expected to accumulate in the food chain (bioconcentration potential is low) and they are not expected to be toxic to fish or other aquatic organisms. Diethylene glycol dimethyl ether, a component of some formulations, is biodegradable, has a low tendency to accumulate in the food chain, and is practically nontoxic to aquatic organisms on an acute basis. For further details, see **Environmental Information**.

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Product Safety Assessment: VITHANE™ Water-Based Resins

- VITHANE™ water-based resins are stable under recommended storage and normal use conditions. These products are noncombustible. For further details, see Physical Hazard Information.

**Back to top**

**Manufacture of Product**

- **Locations** – A foreign affiliated company of Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company, produces VITHANE™ resins at facilities in Mozzate, Italy.
- **Process** – VITHANE water-based resins are formulated in batch operations using proprietary Rohm and Haas materials and technology.

**Back to top**

**Product Description**

VITHANE™ water-based polyurethane resins are formulated as milky-white or translucent anionic emulsions with 35 to 40% solids. The water is removed during processing. Cured (solidified) VITHANE resins form strong flexible films or “skins” that are resistant to scratches, yellowing, and attack by water. VITHANE polyurethane films range from very soft and pliable to stiff to suit a wide variety of applications.

**Back to top**

**Product Uses**

VITHANE™ water-based resins are used as topcoats, basecoats, or adhesives in the production of synthetic leathers and textiles. Synthetic leathers made with VITHANE resins are used for the following applications:
- Footwear (e.g., uppers for shoes and safety shoes)
- Upholstery – furniture (e.g., sofa), automotive (e.g., dashboard, gearshift, etc.)
- Apparel and accessories (e.g., handbags, belts, etc.)
- Bags, linings, general purpose
- Garments (e.g., labels, jackets, etc.)

**Back to top**

**Exposure Potential**

VITHANE™ water-based resins are used in the production of synthetic leather and textiles. Based on this, the public could be exposed through:
- **Workplace exposure** – Exposure can occur in facilities that manufacture these resins, during transport, or during synthetic leather manufacture. VITHANE water-based resins are produced, distributed, and stored in closed systems. Those working with these products 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 exposure. See Health Information.
- **Consumer exposure to VITHANE water-based resins** – These products are not sold directly to consumers. Synthetic leather manufactured with VITHANE resins may be used to manufacture footwear, apparel, or other consumer goods. Consumers would contact only the cured resin, which is considered harmless. See Health Information.
- **Environmental releases** – Due to the use pattern for these VITHANE resins, releases to the environment are expected to be minimal. In the event of a spill, the focus is on immediate cleanup.

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containment to prevent contamination of soil, surface water, or groundwater. If released, the polyurethane resins will tend to coagulate in water and will be removed in biological wastewater-treatment facilities by adsorption to biosolids. The diethylene glycol dimethyl ether component will tend to remain in water. Since this component is biodegradable, it is expected to be removed from water and soil environments, including wastewater-treatment facilities.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, dike the area with sand or soil to contain the spill. Collect spilled product in suitable and properly labeled containers. Clean-up personnel must wear personal protective equipment. Spilled product can create slippery conditions.

- **In case of fire** – Evacuate personnel and deny unnecessary entry. Use extinguishing measures that are suitable for the surrounding materials. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Follow emergency procedures carefully.

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

**Health Information**

Health information for VITHANE™ water-based resins is summarized on the relevant Safety Data Sheets. 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 with additional health risks. The Safety Data Sheet is the preferred source for specific information. The following health information refers to the polyurethane resin dispersed in water encountered during manufacturing. The resulting fully cured polyurethane resin is a solid film or adhesive that is considered harmless.

- **Eye contact** – Direct contact with liquid or mist may cause slight eye irritation depending on the 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** – Diethylene glycol dimethyl ether, a component in some of these VITHANE resin formulations, has been reported to effect the liver, kidney, and adrenal gland. For more information, consult the dipropylene glycol dimethyl ether Product Safety Assessment.

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

**Environmental Information**

The polyurethane resins in VITHANE™ water-based resins will tend to coagulate in water and bind to soil, suspended particles, or sediment. Diethylene glycol dimethyl ether, a component of some formulations, has low volatility and is soluble in water. When introduced, the compound has a low tendency to volatilize from water and minimal tendency to bind to soil and sediment.

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Created: July 2, 2012 The Dow Chemical Company Page 3 of 5
Although the polyurethane resins are essentially nonbiodegradable, they are expected to slowly degrade in the environment, including degradation by physical action or exposure to sunlight. The resins would likely be removed in biological wastewater-treatment facilities by adsorption to biosolids. Diethylene glycol dimethyl ether is unlikely to persist in the environment. The compound is biodegradable, which suggests that it will be removed from water and soil environments, including biological wastewater-treatment facilities.

The polyurethane resins are not expected to accumulate in the food chain (bioconcentration potential is low) due to their high molecular weight, and they are not expected to be toxic to fish or other aquatic organisms. Diethylene glycol dimethyl ether is not likely to accumulate in the food chain and is practically nontoxic to fish and other aquatic organisms on an acute basis.

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

Physical Hazard Information

VITHANE™ water-based resins are stable under recommended storage and normal use conditions. These products are noncombustible.

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 VITHANE™ water-based resins. 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 (http://www.dow.com/assistance/dowcig.htm)
- Contact Us (http://www.dow.com/assistance/thoughts.htm)
- VITHANE™ W 6958 NMP-Free Aliphatic Aqueous Polyurethane Skin, Technical Data Sheet, Rohm and Haas Europe Services APS, Edition No. 3, reviewed July 21, 2010
- VITHANE™ Resins Product Line Leaflet, ed 6, Rohm and Haas Europe Services, April 2011


References

3. VITHANE™ Resins Product Line Leaflet, ed 6, Rohm and Haas Europe Services, April 2011.

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NOTICES:

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