Product Safety Assessment

**DOW™ Water-based Polyurethane Dispersions**


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**Names**
- **DOW™ Water-based Polyurethane Dispersions**
- **AQUA-LAM™ Dispersions**
- **AQUA-LAM 2000 Dispersions**
- **ROBOND™ Dispersions**
- **ROBOND L-2150**

**Product Overview**
- **DOW™ Water-based Polyurethane Dispersions** consist of a polyurethane laminating adhesive and water or a water/solvent mixture. The dispersions are milky-white liquids. The polyurethane dispersion can be used as a single-component, heat-cured system, or part of a two-component curable system. After curing, the dispersion system creates a strong, flexible laminate with good clarity and thermal stability. For further details, see **Product Description**.
- **DOW Water-based Polyurethane Dispersions** are applied to flexible films and cellulosic substrates in the manufacture of industrial laminates. For further details, see **Product Uses**.
- **DOW Water-based Polyurethane Dispersions** are for commercial use. Worker exposure is possible during manufacture, transport, or application. Exposure is minimized through engineering controls and the use of personal protective equipment. Consumers may use products with packaging that has been sealed with these adhesives. Contact with the cured adhesive is not expected to pose any risk. For further details, see **Exposure Potential**.
- The following health information refers to the liquid dispersion components encountered during manufacturing. Once the liquids are cured, they form a solid laminate that is not expected to pose any risk. Eye contact with the polyurethane-based liquid dispersion may cause slight irritation. Prolonged or repeated skin contact with these liquids may irritate and dry the skin. Some components in the dispersion mixtures are potential skin and respiratory sensitizers. Components of the liquid polyurethane dispersion may cause defatting and drying of the skin which can lead to dermatitis. Sensitization by skin contact may also occur. Inhalation of product vapors or mists during processing may irritate the nose, throat, and lungs. Headache and nausea are also possible. For further details, see **Health Information** and request the relevant Safety Data Sheet from the Dow Customer Information Group.
- The polyurethane resins in these products are expected to slowly degrade in the environment. Due to their high molecular weight, polyurethane resins are not expected to accumulate in the food chain and are not expected to be toxic to fish or other aquatic organisms on an acute basis. For further details, see **Environmental Information**.

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- **DOW™ Water-based Polyurethane Dispersions** are stable under recommended storage and use conditions. The liquid polyurethane is incompatible with strong acids and oxidizing agents and contact should be avoided.\[^10,11\] For further details, see **Physical Hazard Information**.

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**Manufacture of Product**

- **Locations** – Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company, and its global affiliates produce DOW™ Water-based Polyurethane Dispersions in North America and Latin America.
- **Process** – DOW Water-based Polyurethane Dispersions are formulated in batch operations using proprietary Rohm and Haas materials and technology.

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**Product Description**\[^12,13\]

DOW™ Water-based Polyurethane Dispersions are marketed under the trade names AQUA-LAM™ Dispersions and ROBOND™ Dispersions. Depending upon the end-use requirements, these products can be used alone or mixed with a coreactant just prior to application. The water is then removed by heat. The laminating dispersion system cures while in a series of rolls. The resulting product is a solid material with high bond strength, good clarity, and good thermal stability.

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**Product Uses**\[^14,15\]

DOW™ Water-based Polyurethane Dispersions are commercial products used in industrial laminating processes. These laminating materials are applied to a variety of substrates such as flexible films and cellulosic substrates.

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**Exposure Potential**\[^16,17\]

DOW™ Water-based Polyurethane Dispersions are used for flexible industrial laminating processes. Based on the uses for these products, individuals could be exposed through:

- **Workplace exposure** – Exposure can occur in facilities that manufacture these dispersions, during transport, or in the various laminating facilities that use these dispersions. They are produced, distributed, and stored in closed systems. Those working with these products in manufacturing operations could be exposed during maintenance, sampling, testing, cleaning, 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 prevent exposure. See **Health Information**.

- **Consumer exposure to products containing DOW Water-based Polyurethane Dispersions** – These products are not sold directly to consumers. Consumers may come in contact with materials that have been laminated using these dispersions; however, contact with the cured product is unlikely to present a risk to consumers. See **Health Information**.

- **Environmental releases** – Due to the use pattern for this product, releases to the environment are expected to be minimal. In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or groundwater. If released, the polyurethane resins will tend to float in water and will be removed in biological wastewater treatment facilities by adsorption to biosolids. See **Environmental, Health, and Physical Hazard Information**.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, dike the area to contain the spill. Evacuate personnel and ventilate the area. Only trained and properly protected personnel must be involved in clean-up operations. Use noncombustible material to absorb the spill (sand, earth, vermiculite). Collect in containers suitable for disposal. Use appropriate safety equipment. See **Environmental, Health, and Physical Hazard Information**.

- **In case of fire** – These water-based formulations are non-combustible; however, dried residues of these products are combustible. To extinguish combustible residues of these products, use water spray, dry-powder or carbon-dioxide extinguishers, or foam. A direct water stream may spread the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Keep fire water out of waterways and sewers to minimize the potential for environmental damage. Follow emergency procedures carefully. See **Environmental, Health, and Physical Hazard Information**.

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

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Health Information

The following health information refers to the liquid polyurethane dispersions encountered during manufacturing. The resulting fully cured product is a solid that is not expected to pose any risk.

**Eye contact** – Contact with liquid adhesive products or their mists may cause slight irritation.

**Skin contact** – Prolonged or repeated contact may irritate the skin. Components of the liquid polyurethane dispersion may cause defatting and drying of the skin which can lead to dermatitis. Sensitization by skin contact may also occur.

**Inhalation** – Inhalation of product vapors or mists during processing can cause irritation of the nose, throat, and lungs. Inhalation of vapors from components in the dispersion may cause respiratory sensitization or may result in headache or nausea.

**Ingestion** – The components of these products have very low toxicity if swallowed.

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

Environmental Information

The polyurethane resins in DOW™ Water-Based Polyurethane Dispersions are insoluble and will tend to float in water and eventually bind to soil, suspended particles, or sediment.

Although the polyurethane resins are non-biodegradable, they are likely to degrade slowly in the environment, including degradation by physical action or by exposure to sunlight. The resins would likely be removed in biological wastewater treatment facilities by adsorption to biosolids.

Because of their high molecular weight, the polyurethane resins would not be 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.

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

Physical Hazard Information

DOW™ Water-based Polyurethane Adhesives are stable under recommended storage and normal use conditions. The liquid polyurethane products are incompatible with strong acids and oxidizing agents; avoid contact with these materials.

For more information, request the relevant 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 DOW™ Water-based Polyurethane Adhesives. 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. (www.dow.com/assistance/thoughts.htm)

Additional Information

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

For more business information about DOW™ Water-based Polyurethane Dispersions, visit Contact Us.
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NOTICES

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