Product Safety Assessment

**MORSTIK™ Solvent-Based Pressure Sensitive Adhesives**


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**Names**

- MORSTIK™ adhesives
- MORSTIK 607 adhesive
- MORSTIK 717 adhesive
- MORSTIK 610 adhesive
- MORSTIK 727 adhesive

**Product Overview**

- MORSTIK™ adhesives are clear, colorless, self-crosslinking polymer resin solutions, based on acrylic and vinyl acetate monomers.\(^1\,\,^2\) For further details, see **Product Description**.
- MORSTIK adhesives are coated onto films, foils, release liners, and tapes. As the solvent is removed, the resin crosslinks yet remains tacky for use as a pressure sensitive adhesive, offering a good balance of tack, peel adhesion, and shear resistance.\(^3\,\,^4\) For further details, see **Product Uses**.
- Dow does not sell MORSTIK adhesives for direct consumer use. Consumers may use products such as removable tapes and labels or other products manufactured with these adhesives.\(^5\,\,^6\) For further details, see **Exposure Potential**.
- Most health effects are related to the solvents used in these products. Eye contact with solvent vapor or mist during processing can cause moderate to severe irritation, conjunctivitis, pain, tearing, or corneal burns. Skin contact can cause slight to severe irritation or reddening. Prolonged or repeated skin contact can cause de-fatting and drying of the skin. Some products are potential skin sensitizers. Inhalation of vapor or mist can cause irritation of the nose, throat, and lungs, as well as headache, nausea, narcosis, central nervous system effects, coma, and liver and kidney damage. Ingestion can cause nausea, narcosis, headache, diarrhea, drowsiness, abdominal pain, unconsciousness, or even death. Prolonged overexposure to some solvents can result in effects on the kidney, liver, heart, lung, blood, central nervous system, and peripheral nerves (polyneuropathy).\(^7\,\,^8\) For further details, see **Health Information**.
- The polymer resins in MORSTIK adhesives are expected to be inert in the environment. The polymers are not likely to accumulate in the food chain and are expected to be practically non-toxic to fish and other aquatic organisms on an acute basis. The solvents used to formulate MORSTIK adhesives are readily biodegradable, have low potential to

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bioaccumulate and exhibit toxicities ranging from practically non-toxic to toxic for aquatic organisms on an acute basis.\textsuperscript{9,10} For further details, see Environmental Information.

- MORSTIK™ adhesives are extremely flammable prior to drying and cure. Spilled product can result in potential slip hazards.\textsuperscript{11,12} For further details, see Physical Hazard Information.

Manufacture of Product

- **Capacity** – MORSTIK™ adhesives are produced at various global locations by Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company, and its foreign affiliated companies.
- **Process** – MORSTIK adhesives are manufactured in batch operations using proprietary materials and technology.

Product Description\textsuperscript{13,14}

MORSTIK™ adhesives are clear, colorless, self-crosslinking resin solutions based on acrylic and vinyl acetate resins. They generally contain 40 to 45% polymer resin with the balance various mixed solvents, which may include ethyl acetate, isopropyl alcohol, toluene, hexane, and/or heptane.

Product Uses\textsuperscript{15,16}

MORSTIK™ adhesives are coated onto films, foils, release liners, and tapes made of polyester, polyvinyl chloride, and other materials. The solvent is removed during processing. The acrylic adhesives possess good cohesive strength and are tacky (sticky); suitable for use as pressure-sensitive adhesives for mounting, quick-stick, and other applications. MORSTIK adhesives are used in:

- Removable tapes and labels
- Decorative PVC film to metal adhesion
- Automotive mounting tapes and pin-striping
- Double-faced foam mounting tape

Exposure Potential\textsuperscript{17,18}

MORSTIK™ adhesives are 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 a facility that manufactures MORSTIK adhesives or in the various industrial or manufacturing facilities that use them. They 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 products containing MORSTIK adhesives** – Dow does not sell MORSTIK adhesives for direct consumer use. Consumers may use finished goods such as two-sided tape or removable labels manufactured with these adhesives. Carefully read product labels and follow instructions for use. See Health Information.

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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. For small spills, uncurd MORSTIK adhesives should be absorbed with materials such as sand, silica gel, or sawdust. The acrylic resin components of MORSTIK are expected to be inert in the environment. The polymer resin in these products would likely adhere to soil or sediment if released to soil or water. They would be removed via adsorption to biosolids during wastewater-treatment processes. The solvent components are readily biodegradable, and would be expected to be removed from water and soil environments, including biological wastewater treatment plants. 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 material should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Positive-pressure, self-contained breathing apparatus (SCBA) with an approved full-face mask is recommended for emergency work. Eliminate sources of ignition and avoid the use of spark-producing tools. Use only explosion-proof equipment; ground and bond all containers and handling equipment. See Environmental, Health, and Physical Hazard Information.

In case of fire – Deny any unnecessary entry into the area and consider the use of unmanned hose holders. Use water spray, carbon-dioxide or dry-chemical extinguishers, or foam to fight the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Immediately withdraw all personnel from the area in case of rising sounds from venting safety devices or discoloration of the container. Solvent vapors are heavier than air and can accumulate in low-lying places and flashback. Heated material can form flammable or explosive mixtures with air. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

Health Information

Health information for MORSTIK™ adhesives 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 materials 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 for MORSTIK adhesives appears below.

The following health information refers to the liquid acrylic resin and solvents encountered during manufacturing. The resulting, fully-cured acrylic polymer is a solid adhesive.

Eye contact – Contact with the solvents in these products can cause moderate to severe eye irritation, conjunctivitis, pain, tearing, or corneal burns.

Skin contact – Contact can cause slight to severe irritation or reddening. Prolonged or repeated skin contact can cause de-fatting and drying of the skin, which can lead to irritation and dermatitis. Some products are potential skin sensitizers. Some products contain solvents that are harmful if absorbed through intact skin.

Inhalation – Inhalation of solvent vapor or mist can cause irritation of the nose, throat, and lungs; headache, nausea, narcosis, central nervous system effects, coma, and liver and kidney damage.

Ingestion – Ingestion can cause nausea, narcosis, headache, diarrhea, drowsiness, abdominal pain, unconsciousness, or even death. Liver and kidney damage is also possible.

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Repeated exposure – Prolonged overexposure to some of the solvents can result in effects on the kidney, liver, heart, lung, blood, central nervous system, and peripheral nerves (polyneuropathy).

Other – For toluene (a solvent present in some MORSTIK™ adhesives), an increased level of birth defects, fetal mortality, and delayed fetal development has been reported in animal exposure studies.

For more information, see the relevant Safety Data Sheet.

Environmental Information 21, 22

The acrylic resin components of the MORSTIK™ adhesives are high molecular weight polymers that are non-volatile, form emulsions in water and are expected to be inert in the environment. If released to soil or water, the polymer resin in MORSTIK adhesives would likely adhere to soil or sediment. They would be removed by adsorption to biosolids during typical wastewater-treatment processes.

Although the acrylic resin components are essentially non-biodegradable, they will be expected to slowly degrade in the environment, including degradation by physical action or by exposure to sunlight.

MORSTIK adhesives are not likely to accumulate in the food chain due to their high molecular weight (bioconcentration potential is low). These acrylic polymer resins are expected to be practically nontoxic to fish or other aquatic organisms on an acute basis.

If released to soil or water, the solvents in these products would likely evaporate to the air. The solvents are unlikely to persist in the environment. They are readily biodegradable, which suggests their rapid and complete removal from water and soil environments, including biological waste water treatment facilities. The toxicity of the solvents used in these products range from practically non-toxic to toxic for aquatic organisms on an acute basis.

For more information, see the relevant Safety Data Sheet.

Physical Hazard Information 23, 24

MORSTIK™ adhesives are extremely flammable prior to drying and cure. Avoid sources of ignition and the use of spark-producing tools. Use only explosion-proof equipment; ground and bond all containers and handling equipment. Spilled product can result in potential slip hazards.

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 MORSTIK™ 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.

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Additional Information

- Safety Data Sheet (may be accessed on the individual product pages on Dow.com at www.dow.com/products/product_line_detail.page?product-line=1000084 or requested from the Dow Customer Information Group at www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/assistance/thoughts.htm)

For more business information about these products, visit the Dow web site for MORSTIK adhesives at www.dow.com/products/product_line_detail.page?product-line=1000084.

References


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