Product Safety Assessment

MOR-AD™ Polypropylene Dispersants in Solvent


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Names
• MOR-AD™ Polypropylene Dispersants in Solvent
• MOR-AD M-800 Resin
• MOR-AD M-801 Resin
• MOR-AD M-805 Laminating Adhesive

Product Overview
• MOR-AD™ Polypropylene Dispersants in solvent are white to amber opaque liquids with a solvent odor.\(^1\) For further details, see Product Description.
• MOR-AD Polypropylene Dispersants in solvent are used as adhesives and sealants for various substrates in industrial applications.\(^2\) For further details, see Product Uses.
• Exposure can occur either in facilities that manufacture MOR-AD Polypropylene Dispersants or in the various industrial or manufacturing facilities that use these products. MOR-AD Polypropylene Dispersants are not sold directly to consumers. For further details, see Exposure Potential.
• Eye contact with the solvents in these products can cause severe irritation, conjunctivitis, pain, temporary corneal injury, tearing, corneal opacity, and permanent eye injury. Skin contact with the solvents in these products can cause moderate irritation, blistering, swelling, reddening, burns, and defatting and drying of the skin which can lead to irritation and dermatitis. The solvents in these products are harmful if absorbed through intact skin and may be fatal in large amounts. These products may be harmful or fatal if swallowed. Ingestion of the solvents in these products may cause gastrointestinal irritation, lack of coordination, weakness, abdominal pain, headache, dizziness, vomiting, nausea, diarrhea, drowsiness, central nervous system depression, unconsciousness, and coma. Aspiration into the lungs may cause pulmonary edema, pneumonitis (lung inflammation), or death. Inhalation of solvent vapor or mist may cause irritation of the nose, throat, and lungs, headache, nausea, drowsiness, dizziness, vomiting, lack of coordination, tremors, fatigue, and shortness of breath. Inhalation of high concentrations of solvent vapor or mist may cause pulmonary edema (fluid in lung tissue and air spaces), unconsciousness, coma, or death. Prolonged or repeated exposure to the solvents in these products may affect the lungs and cause kidney or liver damage or adverse reproductive effects, fatty degeneration of the liver, heart muscle damage, irritation of the stomach, mental deterioration, fetal abnormalities, reversible liver and kidney impairment, central nervous system effects, pituitary effects, thyroid effects, testicular effects, blood changes,

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increased risk of respiratory cancer, particularly nose, throat, and lung cancer. Formaldehyde has been identified by the National Toxicology Program (NTP) as an anticipated cancer-causing agent and by the International Agency for Research on Cancer (IARC) as a known human cancer-causing agent.\textsuperscript{1} For further details, see Health Information and request the relevant Safety Data Sheet from the Dow Customer Information Group.

- The resin components in MOR-AD Polypropylene Dispersants in solvent are not biodegradable, but would be expected to degrade slowly in the environment, including degradation by physical action or exposure to sunlight. Due to their high molecular weight, the resins are not expected to accumulate in the food chain, and they are not expected to be toxic to fish or other aquatic organisms. The solvent components in these products range from inherently to readily biodegradable. They are unlikely to accumulate in the food chain (bioconcentration potential is low), and they range from practically nontoxic to highly toxic to aquatic organisms on an acute basis.\textsuperscript{1,3} For further details, see Environmental Information.

- MOR-AD\textsuperscript{™} Polypropylene Dispersants in solvent are stable under recommended storage and normal use conditions. Because of the associated solvents, these products are highly flammable and should be kept away from ignition sources. Avoid contact with heat, strong oxidizers, acids, peroxides, bases, amines, and ammonia.\textsuperscript{1} For further details, see Physical Hazard Information.

Manufacture of Product
- **Locations** – MOR-AD\textsuperscript{™} Polypropylene Dispersants in solvent are manufactured in various global locations by Rohm and Haas Company, a wholly owned subsidiary of The Dow Chemical Company, and its global affiliates.

- **Process** – MOR-AD Polypropylene Dispersants in solvent are produced using proprietary processes and materials.

Product Description\textsuperscript{1,3}
MOR-AD\textsuperscript{™} Polypropylene Dispersants in solvent are white to amber opaque liquids with a solvent odor. These dispersants contain epoxy resins, copolymers, or polypropylene dissolved in solvents. They range from 15 to 25% solids. The solvents include hydrotreated light petroleum distillates. Depending upon the specific formulation, the product may also contain free formaldehyde at trace levels.

Product Uses\textsuperscript{2}
MOR-AD\textsuperscript{™} Polypropylene Dispersants in solvent are used as adhesives and coatings in various industrial applications. These products provide excellent adhesion and bonding properties for metal substrates to polypropylene (PP) films.

Exposure Potential\textsuperscript{1}
MOR-AD\textsuperscript{™} Polypropylene Dispersants in solvent are used in the production of industrial and consumer products. Based on the uses for these products, individuals could be exposed through:

- **Workplace exposure** – Exposure can occur either in facilities that manufacture MOR-AD Polypropylene Dispersants in solvent or in the various industrial or manufacturing facilities that use these products. These products are produced, distributed, and stored in closed systems. Those working with these products in manufacturing operations could be exposed during maintenance, sampling, testing, application, 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 MOR-AD Polypropylene Dispersants in solvent** – Dow does not sell MOR-AD Polypropylene Dispersants in solvent for direct consumer use, but these products are used in various food-contact and medical applications, so consumers can come into contact with packaging materials containing them. Products suitable for use in food and medical contact applications comply with applicable standards set by the U.S. Food and Drug Administration (FDA) and European Union (EU) Directives. Exposure to cured and/or dried product is not considered to present a risk to consumers.

- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or groundwater. Eliminate all sources of ignition immediately. Small spills should be absorbed with materials such as sand. If released to water or soil, the resins in these products would be expected to be inert. If released, the resin components in these products would tend to float in water and would be removed in biological wastewater-treatment facilities by adsorption to biosolids. The solvent components would exhibit low to high tendencies to volatilize from water. In air, the solvents will degrade within days.
from exposure to photochemically produced hydroxyl radicals. Since the solvents range from inherently to readily biodegradable, they are 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 product should be captured, collected, and reprocessed or disposed of according to applicable governmental regulations. Soak up material with inert absorbent material such as sand, silica gel, acid binder, universal binder, or sawdust. Sweep or vacuum up spilled dry material. Keep spills and runoff out of municipal sewers and open bodies of water. Evacuate personnel to safe areas. Eliminate all ignition sources and ventilate the area; do not use sparking tools. The floor may be slippery; use care to avoid falling. Avoid breathing vapor. Appropriate protective equipment must be worn when handling a spill. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Deny any unnecessary entry into the area and fight advanced fires from a protected location. These products present an explosion hazard. Use water spray, carbon-dioxide or dry-chemical extinguishers, or foam to fight the fire. Remain upwind and avoid breathing smoke. Keep vapors out of sewers. Vapors can travel to a source of ignition and flash back. Heated material may form flammable or explosive mixtures with air. Closed containers may rupture from pressure build-up when exposed to fire or extreme heat. Cool closed containers exposed to fire with water spray. During a fire, irritating and highly toxic gases and/or fumes may be generated during combustion or decomposition. Firefighters should wear self-contained breathing apparatus. 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**

Health information for MOR-AD™ Polypropylene Dispersants in solvent is summarized on the relevant Safety Data Sheets. These materials may also contain minor components or additives that have additional health risks. It is important to note that health risks associated with individual products may vary based on their formulation or intended use. The Safety Data Sheet is the preferred source for specific health information. An overview of health information for MOR-AD™ Polypropylene Dispersants in solvent appears below.

**Eye contact** – Contact may cause severe eye irritation, conjunctivitis, pain, temporary corneal injury, tearing, corneal, opacity, and permanent eye injury.

**Skin contact** – Contact may cause moderate skin irritation, blistering, swelling, reddening, burns, and defatting and drying of the skin that can lead to irritation and dermatitis. The solvents in these products are harmful if absorbed through intact skin and may be fatal in large amounts.

**Inhalation** – Inhalation of solvent vapor or mist may cause irritation of the nose, throat, and lungs, headache, nausea, drowsiness, dizziness, vomiting, lack of coordination, tremors, fatigue, and difficulty in breathing. Inhalation of high concentrations of solvent vapor or mist may cause pulmonary edema (fluid in lung tissue and air spaces), unconsciousness, coma, or death.

**Ingestion** – This product may be harmful or fatal if swallowed. Ingestion of the solvents in these products may cause gastrointestinal irritation, lack of coordination, weakness, abdominal pain, headache, dizziness, vomiting, nausea, diarrhea, drowsiness, central nervous system depression, unconsciousness, and coma. Aspiration into the lungs may cause pulmonary edema, pneumonitis (lung inflammation), or death.

**Chronic exposure** – Prolonged or repeated overexposure to the solvents in some formulations may cause health effects. For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

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Environmental Information

Environmental information for MOR-AD™ polypropylene dispersants in solvent is summarized on the relevant Safety Data Sheets. These materials may also contain solvents or additives that have additional environmental impact. It is important to note that environmental impact associated with individual products may vary based on their formulation or intended use. The Safety Data Sheet is the preferred source for specific environmental information. An overview of environmental information for MOR-AD™ polypropylene dispersants in solvent appears below.

The resin components in MOR-AD™ polypropylene dispersants in solvent would be expected to be inert in the environment. They are insoluble in water and nonvolatile. If released to the environment, the resins would tend to float in water and eventually bind to soil, suspended particles, or sediment. Although the resins in these products are not biodegradable, they are likely to degrade slowly in the environment, including degradation by physical action or exposure to sunlight. The resins would likely be removed from water and soil environments, including biological wastewater treatment plants by adsorption to biosolids. Because of their high molecular weight, the resins would not be expected to accumulate in the food chain (low bioconcentration potential), and they are not expected to be toxic to fish or other aquatic organisms.

The solvents in these products exhibit a range of volatility and water solubility. When introduced, the solvents will have low to high tendencies to evaporate from water with low to high tendencies to bind to soil and sediment. The solvents are not likely to persist in the environment. In the atmosphere, the solvents will degrade within days by reaction with photochemically-produced hydroxyl radicals. The solvents range from inherently to readily biodegradable, which suggests that they will be removed from water and soil environments, including biological wastewater treatment plants. The solvents are not likely to accumulate in the food chain (low bioconcentration potential) and range from practically nontoxic (LC$_{50}$/EC$_{50}$ >100 mg/L) to highly toxic (LC$_{50}$/EC$_{50}$ between 0.1 to 1.0 mg/L) to fish and other aquatic organisms on an acute basis.

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

Physical Hazard Information

MOR-AD™ Polypropylene Dispersants in solvent are stable under recommended storage and use conditions. These products are extremely flammable and contain solvents that require strict adherence to recommended storage, handling, and firefighting procedures. Keep containers tightly closed in a well-ventilated area away from sources of heat and ignition. Containers may be hazardous when empty. Provide sufficient air ventilation when handling.

Vapors are heavier than air and may travel to a source of ignition and flash back. Heated material may form flammable or explosive mixtures with air. Closed containers may rupture from pressure build-up when exposed to fire or extreme heat. Avoid contact with strong oxidizers, acids, peroxides, bases, amines, and ammonia.

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 MOR-AD™ Polypropylene Dispersants in solvent. 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

- Request Safety Data Sheets and Technical Data Sheets from the Dow Customer Information Group ([www.dow.com/assistance/dowcig.htm](http://www.dow.com/assistance/dowcig.htm))
- Contact Us ([www.dow.com/assistance/dowcig.htm](http://www.dow.com/assistance/dowcig.htm))

For more business information about MOR-AD™ Propylene Dispersants in solvent, contact the Dow Customer Information Group ([www.dow.com/assistance/dowcig.htm](http://www.dow.com/assistance/dowcig.htm)).

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References

1. MOR-AD™ M-801 Resin Material Safety Data Sheet, The Dow Chemical Company
2. MOR-AD™ M-805 Laminating Adhesive [Technical Data Sheet], Rohm and Haas Company

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NOTICES

As part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment is intended to give general information about the chemical (or categories of chemicals) addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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