Product Safety Assessment

ADCOTE™ High Performance Laminating Adhesives


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Names
- ADCOTE™ High Performance Laminating Adhesives
- ADCOTE 76-159
- ADCOTE 76-185
- ADCOTE 76T198
- ADCOTE 102A
- ADCOTE 102E
- ADCOTE 250HV US
- ADCOTE 502A
- ADCOTE 502S
- ADCOTE 503A
- ADCOTE 503E
- ADCOTE 506-40
- ADCOTE 550
- ADCOTE 811A EA
- ADCOTE 812
- ADCOTE 842

Product Overview
- ADCOTE™ High Performance Laminating Adhesives are solvent-based polyester resin adhesives. Most are components of a two-part adhesive system and require an isocyanate coreactant for complete cure. These products are colorless to amber or dark green liquids with a solvent odor. For further details, see Product Description.
- ADCOTE High Performance Laminating Adhesives can be customized for use in a variety of film lamination applications, including flexible food packaging. For further details, see Product Uses.
- Exposure can occur either in facilities that manufacture these products or in the various industrial or manufacturing facilities that use these products. These adhesives are not sold directly to consumers, but are used in products with which consumers may come into contact, such as food packaging. However, contact with the cured product is not considered to present a significant risk. For further details, see Exposure Potential.
- Most health effects are related to the solvents used in these products. Eye contact may cause moderate to severe irritation. Skin contact may cause slight to moderate irritation. Inhalation of vapor or mist may cause irritation of the nose, throat, and lungs as well as headache, nausea, dizziness, lack of coordination, narcosis, and coma. Aspiration into the lungs may cause inflammation.
Pulmonary edema, even death. Prolonged or repeated exposure to solvents may cause central nervous system effects, blood disorders, and damage to the kidney, liver, and heart as well as an allergic skin reaction and sensitization in some individuals. As these products are used with very hazardous coreactants, SDSs of both our products and relevant coreactants should be carefully consulted. For further details, see Health Information and request the relevant Safety Data Sheet from the Dow Customer Information Group.

- The resins in ADCOTE High Performance Laminating Adhesives are expected to degrade slowly in the environment. 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 solvents in the products are easily biodegradable, have a low tendency to accumulate in the food chain (bioconcentration potential is low), and are practically non-toxic to aquatic organisms on an acute basis. If released to the environment, the polyisocyanates will react rapidly with water to form insoluble polyureas which are expected to slowly degrade in the environment. Due to their high molecular weight, the polyureas are not expected to accumulate in the food chain, and are not expected to be toxic to aquatic organisms. For further details, see Environmental Information.

- ADCOTE High Performance Laminating Adhesives are stable under recommended storage and normal use conditions. Most contain solvents that require strict adherence to recommended storage and handling procedures. These products are extremely flammable. Closed containers may explode when heated or when contents are contaminated with water; keep away from sources of heat and ignition and from strong oxidizers. 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, manufactures ADCOTE High Performance Laminating Adhesives at facilities located in the United States.
- **Process** – ADCOTE High Performance Laminating Adhesives are produced using proprietary materials and processes.

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Product Description

ADCOTE High Performance Laminating Adhesives are solvent-based polyester resin adhesives. These products are two-component, curing-type adhesives that may require the use of a coreactant to achieve full strength. They typically contain a polyurethane resin component blended with methyl ethyl ketone or ethyl acetate solvents. These products are clear to hazy liquids, colorless to amber or dark green, with a solvent odor.

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Product Uses

ADCOTE High Performance Laminating Adhesives are versatile products that can be customized for use in a variety of high performance film lamination applications for flexible packaging and industrial use, including retortable applications, cable wraps, flexible food-packaging applications, film-to-film and film-to-foil laminations, and high demand aluminum foil laminations.

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Exposure Potential

ADCOTE High Performance Laminating Adhesives are used in industrial and consumer products. Based on the uses for this product, individuals could be exposed through:

- **Workplace exposure** – Exposure can occur either in facilities that manufacture these products or in the various industrial or manufacturing facilities that use these products. They are produced, transported, 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 prevent exposure. See Health Information.

- **Consumer exposure to products containing ADCOTE High Performance Laminating Adhesives** – Dow does not sell these products for direct consumer use, but they are used in consumer products such as cable wraps and flexible food packaging. However, contact with the cured product is not considered to present a significant risk. Products used for food-contact applications
should comply with applicable standards and regulations established by the U.S. Food and Drug Administration (FDA) and European Union (EU) Directives. See Health Information.

- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or groundwater. Spilled product should not be flushed into surface water or sanitary sewer systems. Spilled product should be collected with noncombustible absorbents (e.g., sand, earth, diatomaceous earth, vermiculite) and placed in containers for disposal according to applicable government regulations. If released, the resins in the products would tend to float in water and would be removed in biological wastewater-treatment plants by adsorption to biosolids. If released, the solvents in the products would exhibit a moderate tendency to evaporate from water to air with a minimal tendency to bind to soil and sediment. In air, the solvents would quickly photodegrade in the atmosphere. Since these solvents are readily biodegradable, they are expected to be removed from water and soil environments, including biological wastewater-treatment facilities. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Large industrial spills or releases are infrequent and generally contained. If a large spill does occur, the products should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Evacuate unnecessary personnel from spill area. Eliminate all sources of ignition, do not use sparking tools, and ensure adequate ventilation. Remain upwind and avoid breathing smoke. Do not flush into surface water or sanitary sewer. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – The solvents in these products are extremely flammable. Deny unnecessary entry into the area. Consider the use of unmanned hose holders. Water spray, carbon-dioxide, dry-chemical extinguishers, or foam should be used to fight the fire. Heating or fire conditions may liberate toxic gas and carbon oxides. Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective suit when fighting the fire. Vapors are heavier than air and can travel to a source of ignition and flash back. Heated material can form flammable or explosive vapors with air. Closed containers may rupture via pressure build-up when exposed to fire or extreme heat. Cool closed containers with water spray and store containers separately in closed containments. See Environmental, Health, and Physical Hazard Information.

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

**Health Information**

Health information for ADCOTE™ High Performance Laminating Adhesives 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 ADCOTE High Performance Laminating Adhesives appears below.

**Polyester resins**

**Eye contact** – Contact may cause moderate to severe irritation with pain and tearing and may result in conjunctivitis, or temporary corneal injury.

**Skin contact** – Contact may cause slight to moderate irritation with the possibility of reddening and blistering. Prolonged contact may result in defatting and drying of the skin leading to irritation and dermatitis.

**Inhalation** – Inhalation of solvent vapor or mist may cause irritation of the nose, throat, and lungs, as well as headache, nausea, narcosis, drowsiness, and lack of coordination. Additional effects may include central nervous system effects, unconsciousness, and coma.

**Ingestion** – These products may be harmful if swallowed, causing headache, nausea, narcosis, dizziness, drowsiness, unconsciousness, and coma. Aspiration into the lungs may cause pneumonitis (lung inflammation), even death.

**Repeated exposure** – Prolonged or repeated exposure to the solvents in these products may cause lung, liver, kidney, or heart damage, central nervous system effects, and blood disorders.

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

Environmental information for ADCOTE™ High Performance Laminating Adhesives 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 ADCOTE™ High Performance Laminating Adhesives appears below.

The resins in ADCOTE High Performance Laminating Adhesives are nonvolatile and insoluble polymers. They will tend to float in water and eventually bind to soil, suspended solids, or sediment. Although the resins are not biodegradable, they would be expected to degrade slowly in the environment, including degradation by physical action or exposure to sunlight. The resins would likely be removed in biological wastewater-treatment plants by adsorption to biosolids. The resins are not likely to accumulate in the food chain due to their high molecular weight, and they are not expected to be toxic to fish or other aquatic organisms.

The solvents in the products are volatile and soluble in water. If released to the environment, they will have a moderate tendency to evaporate from water to air, with a minimal tendency to bind to soil and sediment. The solvents are unlikely to persist in the environment. In the atmosphere, the solvents will degrade within hours by reaction with photochemically produced hydroxyl radicals. The solvents are readily biodegradable (86 to 100% degraded in 10 days per Organisation for Economic Co-operation and Development (OECD) 301A screening tests), which suggests they will be removed from water and soil environments, including biological wastewater-treatment facilities. The solvents in these products are not likely to accumulate in the food chain (bioconcentration potential is low) and are practically nontoxic (LC$_{50}$ >100 mg/L in the most sensitive species tested) to aquatic organisms on an acute basis.

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

Physical Hazard Information

ADCOTE™ High Performance Laminating Adhesives are stable under recommended storage conditions. They contain solvents that require strict adherence to recommended storage, handling, and fire-fighting procedures. These products are extremely flammable. Containers should be kept tightly closed in a well-ventilated area away from sources of heat and ignition. Sufficient air ventilation should be provided when handling. Vapors may be released when products are heated during processing operations. Residual vapors in empty containers may explode on ignition.

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

Regulatory Information

ADCOTE™ High Performance Laminating Adhesives contain solvents that are considered hazardous. Regulations exist that govern the manufacture, sale, transportation, use, and/or disposal of these products. 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.

Additional Information

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

For more business information about ADCOTE™ High Performance Laminating Adhesives, visit the Dow Packaging Products website at www.dow.com/products/market/packaging/.

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References

2. ADCOTE™ L76-185 Adhesive Material Safety Data Sheet, The Dow Chemical Company
3. ADCOTE™ 503A Laminating Adhesive (Technical Data Sheet), Packaging and Converting Materials, Rohm and Haas Company
4. ADCOTE™ L76-185/Coreactant F Laminating Adhesive (Technical Data Sheet), Packaging and Building Materials, Rohm and Haas Company
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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