D.E.H.™ Cycloaliphatic Curing Agents

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
Trade names for D.E.H.™ cycloaliphatic epoxy curing agents (hardeners) include, but are not limited to:
- D.E.H. 4129 epoxy curing agent
- D.E.H. 4147 epoxy curing agent
- D.E.H. 4170 epoxy curing agent
- D.E.H. 4701 epoxy curing agent
- D.E.H. 4702 epoxy curing agent
- D.E.H. 4703 epoxy curing agent
- D.E.H. 4909 epoxy curing agent
- D.E.H. 489 epoxy curing agent
- D.E.H. 4911 epoxy curing agent
- D.E.H. 4712 epoxy curing agent

Product Overview
- D.E.H.™ cycloaliphatic epoxy curing agents are polyamine-based epoxy hardeners. The Dow Chemical Company and its global affiliates market these products under the trade names D.E.H. epoxy curing agents. These products are water-soluble liquids with an amine (ammonia-like) odor. For further details, see Product Description.
- These D.E.H. epoxy curing agents are used as hardeners in conjunction with epoxy resins. The resulting epoxies are used in paints and coatings, including solvent-free industrial floors and sealer coats, impact-resistant coatings for concrete and steel, and heavily filled coatings, mortars, screeds, and primers. For further details, see Product Uses.
- Exposure can occur either in facilities that manufacture or formulate D.E.H. epoxy curing agents or in the various industrial or manufacturing facilities that use these products. These products are not sold directly to consumers; however, consumers may come into contact with the cured products in paints or coatings. Contact with the dried and cured product is not expected to represent a risk. For further details, see Exposure Potential.
- Contact with epoxy curing agents, mist, or vapor may cause severe eye irritation with corneal injury, which may result in permanent vision impairment or blindness. Chemical burns may occur. Brief skin contact may cause burns with pain, severe local redness, and tissue damage. Prolonged or widespread skin contact may result in absorption of potentially harmful amounts. Excessive exposure to vapor may cause severe irritation to the nose, throat, and lungs. Inhalation may cause central nervous system depression including headache, dizziness, and drowsiness, progressing to loss of coordination and unconsciousness. These products have low toxicity if swallowed; however, swallowing may result in gastrointestinal irritation or ulceration and burns of the mouth and throat. For further details, see Health Information.
Product Safety Assessment: D.E.H.™ Cycloaliphatic Epoxy Curing Agents

- Liquid epoxy curing agents are soluble in water and, if released to the environment, would dissolve and disperse. They will biodegrade very slowly in the environment and have a low to moderate tendency to accumulate in the food chain. Components in these products range from slightly to moderately toxic to fish and other aquatic organisms on an acute basis. For further details, see Environmental Information.
- D.E.H.™ epoxy curing agents are stable under recommended storage and use conditions. Avoid contact with acids, halogenated hydrocarbons, and oxidizers, and with metals such as brass, bronze, copper, and copper alloys. For further details, see Physical Hazard Information.

Back to top

Manufacture of Product

- Locations – D.E.H.™ epoxy curing agents are manufactured in quantities sufficient to meet market needs. Dow is one of the top three major global suppliers of epoxy curing agents for coatings. The Dow Chemical Company and its global affiliates manufacture epoxy hardeners in Baltringen, Germany.
- Process – D.E.H. epoxy curing agents are produced and formulated using proprietary processes and materials.

Back to top

Product Description

D.E.H.™ epoxy curing agents are polyamine-based epoxy hardeners. The Dow Chemical Company and its global affiliates market these products under the trade name D.E.H. epoxy curing agents. These products are water-soluble liquids that vary in color from colorless to yellow or light brown. They have an amine (ammonia-like) odor.

Just before application, the epoxy curing agents are mixed with an epoxy resin. Upon mixing, a chemical reaction occurs, converting the liquid mixture into an epoxy polymer. The resulting epoxy polymer is applied by spray, squeegee, or roller and then smoothed into a very thin coating. The coating then solidifies (cures or hardens) within hours. Solid (cured) epoxy polymers are extremely strong, durable, and waterproof.

Back to top

Product Uses

D.E.H.™ epoxy curing agents are used as hardeners in conjunction with epoxy resins. The resulting epoxies are used in paints and coatings, including solvent-free industrial floors and sealer coats, impact-resistant coatings for concrete and steel, and heavily-filled coatings, mortars, screeds, and primers. They are compatible with DOW™ polyurethane and epoxy topcoat products.

Back to top

Exposure Potential

D.E.H.™ epoxy hardeners are used in paints and coatings in conjunction with epoxy resins. Based on the uses for these products, individuals could be exposed through:

- Workplace exposure – Exposure can occur either in facilities that manufacture or formulate D.E.H. epoxy curing agents or in the various industrial or manufacturing facilities that use these products. They are produced, transported, and stored in closed systems. Those working with D.E.H. epoxy curing agents 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. Applicators must wear proper protective equipment and follow all application instructions to reduce potential for exposure. See Health Information.
- Consumer exposure to D.E.H. epoxy curing agents – D.E.H. epoxy curing agents are not sold directly to consumers; however, consumers may come into contact with the cured products in paints or coatings. Contact with the dried and cured product would not be expected to represent a risk. 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. For small spills, D.E.H. epoxy curing agents should be absorbed with materials such as sand. If released to water or soil, these products would likely stay in the release area (not evaporate) and biodegrade slowly. These products contain components that have moderate bioaccumulation potential and range from slightly to moderately toxic to aquatic organisms on an acute basis. See Environmental, Health, and Physical Hazard Information.
**Product Safety Assessment: D.E.H.™ Cycloaliphatic Epoxy Curing Agents**

- **Large release** – 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. An approved positive-pressure, self-contained breathing apparatus (SCBA) with a full-face mask is recommended for emergency work. See [Environmental, Health, and Physical Hazard Information](#).

- **In case of fire** – Deny any unnecessary entry into the area and consider using unmanned hose holders. Use water spray or fog, carbon-dioxide or dry-chemical extinguishers, or foam to fight the fire. Alcohol-resistant foams are preferred. Use of 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 Safety Data Sheet from the [Dow Customer Information Group](#).

---

**Health Information**

Health information for D.E.H.™ epoxy curing agents is provided on the relevant Safety Data Sheet. Health risks associated with individual products may vary based on formulation. These products may contain minor components or additives with additional health risks. The Safety Data Sheet is the preferred source for specific health information. Cured epoxy coatings are essentially inert polymers and are not expected to present health hazards. General health information for uncured epoxy hardener appears below.

- **Eye contact** – Contact may cause severe eye irritation with corneal injury, which may result in permanent vision impairment or blindness. Chemical burns may occur. Mist may cause eye irritation. Elevated temperatures may generate vapor levels sufficient to cause eye irritation, including discomfort and redness.

- **Skin contact** – Brief contact may cause skin burns with symptoms including pain, severe local redness, and tissue damage. Prolonged or widespread skin contact may result in absorption of potentially harmful amounts. Some components in these products have caused allergic skin reactions in humans.

- **Inhalation** – Excessive exposure to vapor may cause severe irritation to the nose, throat, and lungs. Inhalation may cause central nervous system depression with symptoms including headache, dizziness, and drowsiness, progressing to loss of coordination and unconsciousness. Prolonged excessive exposure may cause serious adverse effects, even death.

- **Ingestion** – These products have low toxicity if swallowed; however, swallowing may result in gastrointestinal irritation or ulceration and burns of the mouth and throat.

- **Repeated exposure** – In humans, repeated exposure to certain components in some of these formulations has affected the gastrointestinal tract and kidney. In laboratory animals, repeated exposure to certain components in some of these formulations has affected the central nervous system, muscles, thymus, urinary tract, respiratory tract, gastrointestinal tract, kidney, and lung.

For more information, request the Safety Data Sheet from the [Dow Customer Information Group](#).

---

**Environmental Information**

D.E.H.™ epoxy curing agents are blends of several chemicals. The product Safety Data Sheet is the preferred source for specific environmental information. Cured epoxy coatings are expected to be inert in the environment.

Liquid epoxy curing agents are soluble in water and, if released to the environment would dissolve and disperse. These products are not volatile and would not be expected to evaporate from water or moist soil. They will biodegrade very slowly. Components of this mixture have a low to moderate tendency to accumulate in the food chain (bioconcentration potential). Components in these products range from slightly to moderately toxic (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested) for 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
D.E.H.™ epoxy curing agents are stable under recommended storage and normal use conditions. Elevated temperatures can cause these products to decompose. Avoid contact with acids, halogenated hydrocarbons, and oxidizers, and with metals such as brass, bronze, copper, and copper alloys.

Uncontrolled contact with epoxides or isocyanates should be avoided as D.E.H. epoxy curing agents will react with them.

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 D.E.H.™ epoxy curing agents. 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 the relevant Safety Data Sheets and Technical Data Sheets from the Dow Customer Information Group (www.dow.com/assistance/dowcig.htm)
- Contact Us (www.epoxy.dow.com/)

For business information about D.E.H.™ epoxy curing agents, contact the Dow Customer Information Group or visit the Dow Epoxy website at www.epoxy.dow.com/.
References


*™Trademark of the Dow Chemical Company (“Dow”) or an affiliated company of Dow*

Created: March 30, 2013
The Dow Chemical Company
Page 5 of 6
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.

The information herein is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Dow be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information herein or the product to which that information refers.

Nothing contained herein is to be construed as a recommendation to use any product, process, equipment or formulation in conflict with any patent, and Dow makes no representation or warranty, express or implied, that the use thereof will not infringe any patent.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Dow makes no commitment to update or correct any information that appears on the Internet or on its World-Wide Web server. The information contained in this document is supplemental to the Internet Disclaimer, www.dow.com/homepage/term.asp.

Back to top