Product Safety Assessment

**DOW™ Heavy Polyamine X Ethyleneamine**


**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**
- DOW™ Heavy Polyamine X ethyleneamine
- Heavy Polyamine X
- Heavy Polyamine XE
- HPA-X ethyleneamine
- HPA-X
- HPAX-E

**Product Overview**
- DOW™ Heavy Polyamine X ethyleneamine mixture is a brown liquid with an ammonia-like odor. For further details, see Product Description.
- DOW Heavy Polyamine X ethyleneamine is used as an oil and fuel additive, corrosion inhibitor, petroleum production chemical, asphalt additive, epoxy-curing agent and wood treatment. For further details, see Product Uses.
- Exposure to DOW Heavy Polyamine X ethyleneamine is possible in industrial applications. This product is not sold for consumer or commercial use. Those working with these ethyleneamines in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Workers can minimize the potential for exposure by carefully following workplace procedures and wearing the proper protective equipment. For further details, see Exposure Potential.
- DOW Heavy Polyamine X ethyleneamine may cause severe eye irritation or corneal injury. Brief contact may cause skin burns. Prolonged or repeated skin contact may cause irritation with local redness or burns. Skin contact may cause an allergic skin reaction. Vapor from heated material may cause respiratory irritation. This product has low toxicity if swallowed. However, swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract. For further details, see Health Information.
- DOW Heavy Polyamine X ethyleneamine is slowly biodegradable, unlikely to accumulate in the food chain, and are highly toxic to aquatic organisms on an acute basis. For further details, see Environmental Information.
- DOW Heavy Polyamine X ethyleneamine is stable under recommended storage and use conditions, but may decompose when exposed to elevated temperatures. Generation of gas during decomposition can cause pressure build-up in closed systems. Decomposition

®Trademark of The Dow Chemical Company (“Dow”) or an affiliated company of Dow
products may include ammonia, ethylenediamine, and/or volatile amines. Avoid contact with oxidizing materials and acids, acrylates, alcohols, aldehydes, ketones, and metals such as brass, bronze, or copper alloys. Do not use organic absorbents such as ground corn cobs, moist organic absorbents, peat moss, or sawdust.\(^1\) For further details, see Physical Hazard Information.

Manufacture of Product\(^3\)
- **Capacity** – Dow produces ethyleneamines in the following manufacturing locations: Freeport, Texas; Hahnville, Louisiana (St. Charles Operations); Terneuzen, The Netherlands.
- **Process** – DOW™ Heavy Polyamine X ethyleneamine is produced by reacting ethylene dichloride with an excess of ammonia under high pressure and moderate temperature. The resultant solution is neutralized with caustic soda to form a variety of ethyleneamine products, which are separated and purified by distillation.

Product Description\(^1,2\)
DOW™ Heavy Polyamine X ethyleneamine is a brown liquid with an ammonia-like odor. The product is a mixture of four main components:
- Polyethylene polyamines (CAS #68131-73-7 or CAS #29320-38-5)
- Pentaethylenehexamine mixture (CAS #4067-16-7)
- Tetraethylenepentamine mixture (CAS #68131-73-7, or CAS #112-57-2 for the linear congener)
- Triethylenetetramine mixture (CAS #68131-73-7, or CAS# 112-24-3 for the linear congener).

Product Uses\(^2\)
DOW™ Heavy Polyamine X ethyleneamine is used in oil and fuel additives, corrosion inhibitors, petroleum production chemicals, asphalt additives, epoxy curing agents, and wood-treating products.

Exposure Potential\(^1\)
DOW™ Heavy Polyamine X ethyleneamine is used in the production of industrial products. Based on the uses for this material, the public could be exposed through:
- **Workplace exposure** – Exposure can occur either in a manufacturing facility or in the various industrial or manufacturing facilities that use this material. Those working with DOW Heavy Polyamine X ethyleneamine 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 unnecessary exposure. See Health Information.
- **Consumer exposure to products containing DOW Heavy Polyamine X ethyleneamine** – Dow produces this material for industrial use only; consumer exposure is highly unlikely.
- **Environmental releases** – The components in DOW Heavy Polyamine X ethyleneamine are highly soluble in water and have low volatility. Once introduced to water, these chemicals will remain in water. They are slowly biodegradable in the environment. In the event of a spill, the
focus is on containing the spill to prevent contamination of soil and surface or ground water. Absorb small spills with clay, dirt, sand, or Milsorb. Do not use organic absorbent materials such as cellulose or sawdust. Collect recovered material in properly labeled, grounded, and bonded containers and dispose of according to applicable government requirements. See Environmental and Physical Hazard Information.

- **Large release** – Ethyleneamines remain in closed systems during manufacture and use and therefore industrial spills or releases are infrequent and generally contained. Only properly trained and equipped personnel should attempt to isolate or contain the spill. Spilled material should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Knock down and dilute vapors with water fog or spray. Ventilate the area and wash down the area with water. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Keep people away. Isolate the fire and deny unnecessary entry to the area. Use water fog or fine spray, dry-chemical or carbon-dioxide fire extinguisher, or foam to fight the fire. Alcohol-resistant foams are preferred. Violent steam generation may occur upon application of direct water stream. Products from combustion may include nitrogen oxides, carbon monoxide, and carbon dioxide. Firefighters should wear full chemical-resistant firefighting clothing with self-contained, positive-pressure breathing apparatus (SCBA) with an approved full-face mask for emergency work. Contain fire water run-off if possible as it may cause environmental damage. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

### Health Information

**Eye contact** – May cause severe irritation or corneal injury. Chemical burns may occur. Effects may be slow to heal.

**Skin contact** – Brief and repeated contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage. Prolonged contact is unlikely to result in absorption of harmful amounts. Skin contact may cause an allergic reaction.

**Inhalation** – At room temperature, exposure to vapor is minimal due to low volatility. Vapor from heated material may cause respiratory irritation or an allergic response in a small proportion of people.

**Ingestion** – Material has low toxicity if swallowed. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract. Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

**Other** – Adverse fetal effects were observed in laboratory animals when fed exaggerated doses of some components of this product. Exposures having no effect on the mother should have no effect on the fetus.

For more information, see the relevant Safety Data Sheet.
Environmental Information
The components of DOW™ Heavy Polyamine X ethyleneamine have low volatility and are highly soluble in water. When introduced to water, these chemicals will remain in water. Under environmental conditions, these chemicals will have a tendency to bind to soils and sediments.

The components of DOW Heavy Polyamine X ethyleneamine mixtures are unlikely to persist in the environment. The components are expected to slowly biodegrade in the environment.

The components of DOW Heavy Polyamine X ethyleneamine mixtures have low potential to accumulate in the food chain (bioconcentration potential is low), and they are highly toxic to fish and other aquatic organisms on an acute basis.

For more information, see the relevant Safety Data Sheet.

Physical Hazard Information
DOW™ Heavy Polyamine X ethyleneamine is stable under recommended storage and use conditions. However, it can decompose when exposed to elevated temperatures. Generation of gas during decomposition can cause pressure build-up in closed systems. Decomposition products may include ammonia, ethylenediamine, and/or volatile amines.

Avoid contact with oxidizing materials and acids, acrylates, alcohols, aldehydes, ketones, and metals such as brass, bronze, and copper alloys. Do not use organic absorbent materials such as ground corn cobs, moist organic absorbents, peat moss, or sawdust.

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 DOW™ Heavy Polyamine X ethyleneamine and its components. 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.

Additional Information
- Safety Data Sheets (http://www.dow.com/webapps/msds/msdssearch.aspx)
- Contact Us (www.dow.com/amines/contact/index.htm)
- Dow Amines website for information about DOW™ Heavy Polyamine X ethyleneamine (http://www.dow.com/amines/prod/ethyl-hpax.htm)

® Trademark of The Dow Chemical Company (“Dow”) or an affiliated company of Dow
• Ethyleneamines: Storage and Handling, The Dow Chemical Company, Form No. 108-01350-1101 AMS, November 2001


• IPCS INCHEM website for CAS No. 142-82-5, Reviewed November 1997 (http://www.inchem.org/documents/icsc/icsc/eics0657.htm)


Reference

1 Heavy Polyamine X Material Safety Data Sheet. The Dow Chemical Company
2 Heavy Polyamine X Technical Data Sheet. The Dow Chemical Company, Form No. 108-01355-1044 AMS
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, [http://www.dow.com/en-us/terms-of-use/](http://www.dow.com/en-us/terms-of-use/).

Back to top