

HUNTSMAN



Safe Handling of Ethyleneamines



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Ethyleneamines are a diverse group of chemicals used to produce a wide array of products that we use every day.

Their reactive properties can make ethyleneamines potentially hazardous if they are not handled properly.

While levels of corrosivity can vary considerably from one ethyleneamine to another, there are five general principles to follow that apply to all the ethyleneamines:

- A** Avoid all exposures. This includes skin, eye, vapor and ingestion exposures.
- W** Wear appropriate protective equipment.
- A** Acceptable storage and transfer conditions should be used.
- R** Remember the chemical reactivity of ethyleneamines.
- E** Emergencies require quick, appropriate action.

These five principles discussed in detail in the Huntsman Ethyleneamines Safe Handling Presentation add up to the most important point of all ... that's when you are aware of the properties and potential hazards of ethyleneamines, you can reduce the potential for an accident.

Please review each principle in more detail to minimize the hazards of working with ethyleneamines and maximize the safety habits in your workplace.

This brochure is not intended to cover all aspects of safe handling recommendations for ethyleneamines.

Consult the Material Safety Data Sheets and additional Product Stewardship literature for more information.

For additional information, contact your local Huntsman sales or technical service representative. Contact information is given on the back page of this brochure.

The Huntsman Family of Ethyleneamines Products

Ethylenediamines (EDA)
Diethylenetriamine (DETA)
Triethylenetetramine (TETA)
Tetraethylenepentamine (TEPA)
Ethyleneamine E-100 (E-100)
Aminoethylpiperazine (AEP)
Aminoethylethanolamine (AEEA)

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Principle 1: Avoid All Exposures

You must avoid exposure to any ethyleneamine, including skin and eye contact, vapor exposure and ingestion. Ethyleneamines may cause respiratory sensitization in susceptible individuals. The following outlines the steps to take if you are accidentally exposed to an ethyleneamine:

Skin Contact: Immediately wash the contact area for at least fifteen minutes. Remove all contaminated clothing and equipment, discard all contaminated leather items such as shoes, belts and watchbands and get medical attention promptly.

Eye Contact: Immediately irrigate the eye in an eye bath for at least thirty minutes. The eye must be held open to ensure proper irrigation. Remove contact lenses if worn. Immediately following this, get medical attention.

Vapor Exposure: If overexposure to the ethyleneamine vapors occurs, quickly get into fresh air and contact a physician.

Ingestion: If you inadvertently swallow any quantity of any ethyleneamine, don't induce vomiting. Instead, drink plenty of milk or water and get medical attention at once.

Principle 2: Wear Appropriate Protective Equipment

The minimum protection is clean, full body covering clothing, a hard hat and a pair of properly fitted chemical goggles. If there is a potential for greater exposure, you should wear a full-face shield, a chemical-resistant coat, chemical-resistant pants, rubber gloves and boots. In addition, always wear your equipment properly. For example, pant legs and coat sleeves should never be rolled up or tucked into boots. If overexposure to ethyleneamine vapors is possible, wear appropriate respiratory devices.

Principle 3: Acceptable Storage & Transfer Conditions Should Be Used

EDA, DETA, TETA, AEEA, and AEP should be stored in stainless steel tanks. TEPA and E-100 should be stored in stainless steel or carbon steel tanks.

Any ethyleneamine should never come in contact with copper or copper alloys, such as brass or Monel[®] alloy, since amines are highly corrosive to these metals.

Also, all transfer equipment should be grounded to prevent static discharge that can spark a fire. For rapid transfer and ease of handling, the recommended pumping temperature range is 12°C to 32°C (50°F to 90°F).

Principle 4: Remember The Chemical Reactivity of Ethyleneamines

Ethyleneamines can react violently with a wide variety of chemicals, such as:

- Organic and inorganic acids
- Aldehydes and ketones
- Acrylates
- Organic peroxides
- Halogenated organic compounds such as carbon tetrachloride, methylene chloride and chloroform
- Alkylene oxides such as propylene oxide or ethylene oxide
- Strong oxidants, such as nitrates and chlorates
- Acrylonitrile

While reactions may be slow initially, external heating or self-heating will likely cause a serious hazard. Therefore, all of the ethyleneamines must be handled with strict care and caution to see that they are not accidentally mixed with other chemicals.

Principle 5: Emergencies Require Quick, Appropriate Action

Whenever you are faced with an ethyleneamine emergency, you must respond immediately, following the correct emergency procedures.

If there is an ethyleneamine spill, use quick action to contain the spill and stop it from spreading. Dilute the spill with water and cover it with an absorbent, non-combustible material like sand.

DO NOT USE A CELLULOSIC ABSORBENT LIKE SAWDUST ON AN ETHYLENEAMINE SPILL.

This combination can cause a heat-generating reaction which could start a fire.

REFER TO MATERIAL SAFETY DATA SHEET (MSDS) FOR INFORMATION ON DISPOSAL.

In case of skin or eye contact, ingestion or excessive vapor exposure, there is no substitute for quick and appropriate action. The key is preventative measures. This is the most important safeguard against dangerous situations.

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