

Engineered Polymers, LLC.

2842 Progress Road Madison, WI 53716

www.engineeredpolymers.net

An Amber Chemical Group Company
www.amberchemical.com

REACTAMINE[®] A-32 Isocyanate

Product Name: *React-Amine* ® A-32

1. Hazardous Summary:

(as defined by OSHA Hazard Comm. Std., 29 CFR1910.1200)

***Physical hazards: None (see section 5)
***Health hazards: Based on MDI-irritant (eye, skin, respiratory passages, skin sensitizer), inhalation(TLV), harmful(respiratory sensitizer, lung injury)

Read the entire MSDS for a more thorough evaluation of the hazards.

2. Ingredients:

	%	OSHA PEL
4,4'-Diphenylmethane-diisocyanate (MDI, CAS 101-68-8)	50	0.02ppm, ceiling

Modified MDI	50	Not Listed
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Ingredients not precisely identified are proprietary or nonhazardous.

Values are not product specifications.

3. Physical Data:

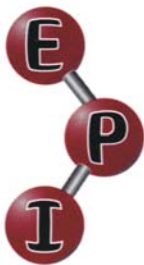
Appearance and Odor:	Pale Yellow liquid with faint odor
Boiling point:	Decomposes at 646°F, 341.1°C
Vapor Pressure mmHg at 20°C)	<0.0001
Vapor Density (air=1):	No Data
Solubility in water:	Reacts
pH :	No Data
Specific gravity:	1.2
% Volatile by volume:	No data

4. Fire and Explosion Hazard Data:

Flash Point	432°F(COC)
Auto ignition temperature:	No Data
Flammable limits(STP):	No data

Extinguishing media:	Dry Chemical, foam, carbon dioxide, halogenated agents. If water is used use very large quantities. The reaction between water and hot isocyanate may be vigorous.
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Special fire fighting protective equipment:	Self-contained breathing Apparatus with full face piece and protective clothing.
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Unusual Fire and Explosion hazards: Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure build-up may rupture them.

5. Reactivity Data:

Stability: Stable under normal conditions

Incompatibility: This Product will react with any material containing active hydrogens, such as water, alcohol, ammonia, amines, alkalis, and acids. The reaction with water is very slow under 50 Deg.C, but is accelerated at higher temperatures and in the presence of alkalis, tertiary amines, and metal compounds. Some reactions can be violent.

Hazardous Decomposition Products: Combustion products: Carbon dioxide, Carbon Monoxide. Nitrogen oxides, ammonia. Trace amounts of hydrogen cyanide.

Hazardous Polymerization: May occur. High temperatures in the presence of alkalis, tertiary amines, and metal compounds will accelerate polymerization. Possible evolution of Carbon Dioxide gas may rupture closed containers.

6. Health Hazard Assessment:

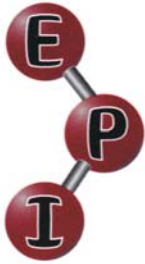
General: No toxicity information is available on this specific preparation; this health assessment is based on information that is available on the properties of its components.

Ingestion: the acute oral LD50 in rat is probably above 10,000 mg/kg. Relative to other materials, a single dose of this product is practically nontoxic by ingestion. Irritation of the mouth, pharynx, esophagus and stomach can develop following ingestion.

Eye Contact: This material will probably irritate human eyes following contact.

Skin Contact: No irritation is likely to develop following short contact periods with human skin. Skin sensitization and/or irritation may develop after repeated and/or prolonged contact with human skin.

Preliminary data from a research study indicates the MDI in corn oil injected intradermally in guinea pigs can elicit a respiratory sensitization reaction. The potential for MDI to induce respiratory sensitization in humans and animals by inhalation is well known; however, this new data indicates that this effect may be induced by skin contact.



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Skin Absorption: Systemically toxic concentrations of this product will probably not be absorbed through human skin.

Inhalation: Vapors and aerosols can irritate eyes, nose, and respiratory passages. Severe overexposure may lead to pulmonary edema. MDI can induce respiratory sensitization with asthma-like symptoms similar to those induced by TDI (toluene diisocyanate). Symptoms include chronic cough, tightness of chest with difficulty in breathing. These symptoms may be immediate or delayed up to several hours after exposure. There are reports that chronic exposures may result in permanent decreases in lung function.

Other Effects of Overexposure: Recently, a study was completed where groups of rats were exposed for 6 hour/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol. Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different from controls. However, at the top level only (96 mg/m³), there was a significant incidence of a benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). There were no lung tumors at 1 mg/m³ and no effects at 0.2 mg/m³. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

First Aid Procedures:

Skin: Wash material off of the skin with plenty of soap and water. If redness, itching, or a burning sensation develops, get medical attention.

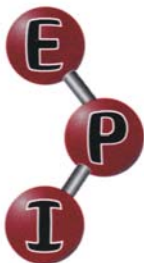
Eyes: Immediately flush with plenty of water for a least 15 minutes. If redness, itching, or a burning sensation develops, have eyes examined and treated by medical personnel.

Ingestion: Give 1 to 2 glasses of water to drink. If gastrointestinal symptoms develop, consult medical personnel. (NEVER GIVE ANYTHING BY MOUTH TO A UNCONSCIOUS PERSON.)

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. Consult medical personnel.

7. Spill or Leak procedures:

Steps to be taken in case material is released or spilled: Wear skin, eye and respiratory protection during cleanup. Soak up materials with absorbent and shovel into a chemical waste container. Cover container, but do not seal, and remove from work area. Prepare a decontamination solution of 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the familiar with the hazards of the chemical used. Treat the spill area with the decontamination solution, using about 10 parts



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of solution for each part of the spill, and allow it to react for at least 10 minutes. Carbon dioxide will be evolved, leaving insoluble polyureas. For major spills, call CHEMTRAC (Chemical Transportation Emergency Center) At (800) 424-9300./

Disposal Method: Slowly stir the isocyanate waste into the decontamination solution described above using 10 parts of the solution for each part of the isocyanate. Let stand for 48 hours, allowing the evolved carbon dioxide to vent away. Neutralize the waste. Neither the solid nor the liquid portion is a hazardous waste under RCRA, 40CFR 261.

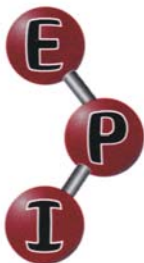
Container disposal: Drums must be thoroughly drained to process or storage vessels before to an appropriate area for subsequent decontamination. Drums must be decontaminated in properly ventilated areas by personnel protected from the inhalation of isocyanate vapors. Spray or pour 5-15 liters of decontaminating solution into the drum, making sure the walls are well rinsed. Leave the drum soaking unsealed for 48 hours. Pour out the decontaminating solution and triple rinse the empty container. Puncture or otherwise destroy the rinsed container before disposal. Note that the disposal of spent decontamination solutions may be subject to federal, state or local regulations, ordinances, or conditions of discharge permits. Local regulations should also be consulted before final disposition of decontaminated drums.

8. Special Protection information:

TLV or suggested control value: No ACGIH TLV or OSHA PEL is assigned to this mixture. Control of exposure to below the PEL for the ingredients (See Section 2) may not be sufficient. Minimize exposure in accordance with good hygiene practice. The ACGIH TLV for MDI is 0.0005 ppm 8-hour TWA. The OSHA PEL for MDI is 0.02 ppm, ceiling. NIOSH recommends 0.005 ppm TWA and 0.02 ppm STEL. These control limits do not apply to previously sensitized individuals or to individuals with existing respiratory diseases, such as chronic bronchitis, emphysema, or asthma. Sensitized individuals should be removed from any further exposure.

Ventilation: If needed, use local exhaust ventilation to keep airborne concentrations below the TLV. Follow guidelines in the ACGIH publication "Industrial Ventilation." Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

Respiratory Protection: Because of the low vapor pressure, ventilation is usually sufficient to keep vapors below the TLV at room temperatures. Exceptions are when the materials are sprayed or heated. If airborne concentrations exceed or are expected to exceed the TLV, use MSHA/NIOSH approved positive pressure supplied air respirator with a full facepiece, or an air-supplied hood. For emergencies, use a positive pressure self-



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contained breathing apparatus. Air purifying (cartridge type) respirators are not approved for protection against isocyanates.

Protective Clothing: Gloves determined to be impervious under the conditions of use. Depending on conditions of use, additional protection may be required such as apron, arm covers, or full body suit. Wash contaminated clothing before rewearing. Testing of some commercially available protective clothing indicates that clothing constructed of butyl rubber, nitrile rubber, Saranex coated Tyvek and some neoprene garments have excellent resistance to permeation by MDI. Clothing constructed of polyethylene, latex rubber, PVC or poly laminated Tyvek showed little resistance to permeation by MDI. Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective Clothing" published by ACGIH.

Eye Protection: Chemical tight goggles; full facepiece in addition if splashing is possible.

Other protective equipment: Eyewash station and safety shower in work area.

9. Special Precautions or Other Comments:

Prevent skin and eye contact. Observe TLV limitations. Avoid breathing vapors or aerosols. Workers should shower and change to fresh clothing after each shift. A sensitized individual should not be exposed to the product which caused the sensitization. Store tightly sealed containers to protect from atmospheric moisture. Store in cool area. Individuals with existing respiratory disease such as chronic bronchitis, emphysema or asthma should not be exposed to isocyanates. These individuals should be identified through baseline and annual evaluation and removed from further exposure. Medical examination should include medical history, vital capacity, and forced expiratory volume at one second.

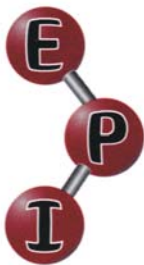
10. Regulatory Information:

TSCA (Toxic Substances Control Act) regulations, 40 CFR 710: All ingredients are on the TSCA Chemical Substance Inventory.

CERCLA and SARA Regulations (40 CFR 355, 370 and 372): Section 313 Supplier Notification. This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372: 50% MDI, Listed as Methylenebis (phenylisocyanate), MBI (CAS 101-68-8).

The information herein is given in good faith but no warranty, expressed or implied, is made.

Prepared/Reviewed: 4/01/02




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