

MATERIAL SAFETY DATA SHEET

Loctite(R) Hysol(R) U-09FL Urethane Adhesive Resin
29370

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Loctite(R) Hysol(R) U-09FL Urethane Adhesive Resin
Item No.: 29370
Product Type: Polyurethane Adhesive Component

2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredients	CAS No.	%
Polyurethane prepolymer	Proprietary	60-100
Dicyclohexylmethane- 4,4'-diisocyanate*	5124-30-1	15-40

* This component is listed as a SARA Section 313 Toxic Chemical.

The following numbers have been used to register components of this product as trade secrets for the State of New Jersey:

NJ TSRN 06-070-1067-5047P

Ingredients which have exposure limits

Exposure Limits (TWA) Ingredients	ACGIH (TLV)	OSHA (PEL)	OTHER
Dicyclohexylmethane- 4,4'-diisocyanate	0.005 ppm	0.005 ppm	0.01 ceiling
Exposure Limits (STEL) Ingredients	ACGIH (TLV)	OSHA (PEL)	

3. HAZARDS IDENTIFICATION

Toxicity: Acute inhalation: Inhalation of dicyclohexylmethane-4,4'-diisocyanate at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (Nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually

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3. HAZARDS IDENTIFICATION

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reversible. Chemical or hypersensitive pneumonitis with flu-like symptoms (e.g., fever, chills) has also been reported.

Chronic inhalation: As a result of previous repeated overexposures or a single large dose certain individuals develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthma attack, could be immediate or delayed (up to several hours after exposure). Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Overexposure to isocyanates has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

Acute skin contact: Dicyclohexylmethane-4,4'-diisocyanate is a primary skin irritant. It reacts with protein and moisture and can cause irritation. Symptoms of skin irritation include: redness, swelling, rash, scaling and blistering. Dicyclohexylmethane-4,4'-diisocyanate is also a potent sensitizer. Experience indicates that direct contact is the route of exposure most likely to cause sensitization. Once sensitized, an individual may react even to airborne levels below the TLV with the following symptoms: itching and tingling on the earlobes and neck, rash, hives, swelling of the arms and legs or other symptoms common to allergic dermatitis. These symptoms may be immediate or delayed.

Chronic skin contact: Prolonged contact can cause reddening, swelling, rash, scaling, blistering and in some cases, skin sensitization. Individuals who have skin sensitization can develop these symptoms from contact with liquid or vapor. Animal tests have indicated that respiratory sensitization can result from skin contact with dicyclohexylmethane-4,4'-diisocyanate.

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4. FIRST AID MEASURES

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Eye Contact: clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists after area is washed. Flush with copious amount of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time. Refer individual to a physician or ophthalmologist for immediate follow-up.

5. FIRE FIGHTING MEASURES

Flash Point: More than 200°F Method: ASTM D3278-89
Recommended
Extinguishing Agents: Carbon dioxide, foam, dry chemical.
Special Firefighting
Procedures: Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.

Hazardous Products formed
by Fire or Thermal Decomposition: Carbon monoxide, oxides of nitrogen, traces of hydrogen cyanide, MDI vapors or aerosols.

Unusual Fire or
Explosion Hazards: Closed containers may explode when exposed to extreme heat or burst when contaminated with water.

Explosive Limits:
(% by volume in air)Lower Not available
(% by volume in air)Upper Not available

6. ACCIDENTAL RELEASE MEASURES

Steps to be taken in case
of spill or leak: Evacuate nonessential personnel. Remove all sources of ignition and ventilate the area. Dike or impound spilled material and control further spillage if necessary. Cover the spill with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with neutralizing solution: mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%), or water (90%), concentrated ammonia (3-8%), and detergent (2%). Add about ten parts of neutralizer per part of isocyanate, with mixing. Allow to stand uncovered

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6. ACCIDENTAL RELEASE MEASURES

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for 48 hours to let carbon dioxide escape.
Clean-up: Decontaminate floor with decontamination solution letting stand for at least 15 minutes.

7. HANDLING AND STORAGE

Safe Storage: Store between 77°F and 122°F. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. At maximum storage temperatures noted, material may slowly polymerize without hazard. ideal storage range is 86°F-104°F. Avoid contact with eyes and skin.

Special Sensitivity: If container is exposed to temperatures above 122°F, such as a fire situation, it can be pressurized and possibly rupture violently. Dicyclohexylmethane-4,4'-diisocyanate reacts slowly with water to form carbon dioxide gas. Production of this gas can cause sealed containers to expand and possible rupture explosively.

(Contact Loctite Customer Service 1-800-243-4874 for shelf life information)
Handling: Avoid contact with skin and eyes. Do not breathe vapor or mists.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Eyes: Safety glasses, splash goggles or face shield.
Contact lenses should not be worn.

Skin: Any area of skin that could potentially come in contact with this material, must be covered by a permeation resistant barrier (i.e. rubber gloves, neoprene apron, chemical suit, etc.) When there is a potential for splash, a full chemical suit is required. When the application results in vapor or mist, a full permeation resistant suit including head covering, and face shield, gloves, and overshoes is required.

Ventilation: Local exhaust should be used to maintain levels below the TLV when material is processed, heated or spray applied. Standard reference sources regarding industrial ventilation (i.e., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation

Monitoring: Isocyanate exposure levels must be monitored. Monitoring of airborne isocyanates in the breathing zone of individuals should become part of the overall employee exposure characterization program.

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8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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Monitoring techniques have been developed by NIOSH and OSHA. Upon request the manufacturer can make available methods which are modifications of these NIOSH and OSHA methods.

Medical Surveillance: Medical supervision of all employees who handle or come in contact with isocyanates is recommended. These should include preemployment and periodic medical examinations with pulmonary function tests (FEV, FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, or other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to an isocyanate, no further exposure can be permitted.

Respiratory

In some situations, a respirator may be necessary in addition to ventilation. The use of a positive pressure air-supplied respirator is mandatory when: airborne concentration of isocyanate are known to exceed 0.005 ppm; operations are performed in a confined space or area with limited ventilation; material is heated or sprayed. An air-purifying respirator is not generally recommended based on the poor warning properties of the isocyanate.

See Section 2 for Exposure Limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear liquid
Odor: Odorless
Boiling Point: Not determined
pH: Does not apply
Solubility in Water: Reacts slowly with water to generate carbon dioxide.
Specific Gravity: Not determined
Volatile Organic Compound (EPA Method 24): Not available
Vapor Pressure: Not available
Vapor Density: Not available
Evaporation Rate (Ether = 1): Not available

10. STABILITY AND REACTIVITY

Stability: Stable
Hazardous Polymerization: May occur. Contact with moisture, other materials which can react with isocyanates, or temperatures above 400°F, may cause polymerization.
Incompatibility: Water, amines, strong bases, alcohols. Will cause

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10. STABILITY AND REACTIVITY

(continued)

Conditions to Avoid: some corrosion to copper alloys and aluminum.
Contamination with water.
Hazardous Decomposition
Products (non-thermal): None

11. TOXICOLOGICAL INFORMATION

Acute Toxicity (values for isocyanate)
Oral LD50: 1065 mg/kg (rat)
Dermal LD50: 10,000 mg/kg (rabbit)
Inhalation LC50: 434 mg/m³ - 4 hr (rat);
295 mg/m³ - 4 hr (male rat);
307 mg/m³ - 4 hr (female rat)
Eye: mild, reversible irritation (rabbit)
Skin: irritating and potent sensitizer (guinea pig); irritating (rabbit)
Sensitization: Two inhalation studies with guinea pigs indicated possible respiratory sensitization. One study also with guinea pigs indicated that dicyclohexylmethane-4,4'-diisocyanate is not a respiratory sensitizer. An additional study where dicyclohexylmethane-4,4'-diisocyanate was applied intradermally and followed by an inhalation challenge resulted in a weak sensitization response in guinea pigs.
MUTAGENICITY (for isocyanate)
Ames test negative for mutagenicity with and without metabolic activation.

12. ECOLOGICAL INFORMATION

Aquatic toxicity - Brachydanio 96 hrs
LC0 = 0.69 mg/L; LC50 = 1.20 mg/L;
LC100 = 2.76 mg/L. (values for isocyanate)

13. DISPOSAL CONSIDERATIONS

Recommended methods of disposal: Incinerate following EPA and local regulations.
EPA Hazardous Waste Number NH - Not a RCRA Hazardous Material for Disposal

14. TRANSPORTATION INFORMATION

DOT (49 CFR 172)
Domestic Ground Transport
Proper Shipping Name: Consumer Commodity (not more than five liters)
Other regulated substances, liquid, n.o.s.

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14. TRANSPORTATION INFORMATION

(continued)

(Hydrogenated methylene diisocyanate) (More than five liters)
Hazard Class or Division: ORM-D (Not more than five liters);
Class 9, Packing Group III (More than five liters)
Identification Number: None (Not more than five liters);
NA 3082 (More than five liters)
Marine Pollutant: None
IATA
Proper Shipping Name: Aviation regulated liquid, n.o.s. (Hydrogenated methylene diisocyanate)
Class or Division: Class 9
UN or ID Number: UN 3334

15. REGULATORY INFORMATION

CA Proposition 65: No California Proposition 65 chemicals are known to be present.

16. OTHER INFORMATION

Estimated NFPA(R) Code:
Health Hazard: 3
Fire Hazard: 1
Reactivity Hazard: 1
Specific Hazard: Does not apply

Estimated HMIS(R) Code:
Health Hazard: 3*
Flammability Hazard: 1
Reactivity Hazards: 1
Personal Protection: See Section 8.

NFPA is a registered trademark of the National Fire Protection Assn.
HMIS is a registered trademark of the National Paint and Coatings Assn.

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