

Product Name: Dura-Kote Polyurethane SB (Part B)

Revision Date 01/01/2016

SAFETY DATA SHEET

SECTION 1 Product and Company Identification

Product

Product Name: [Dura-Kote Polyurethane SB \(Part B\)](#)

Product Description: 52% solids, acrylic aliphatic polyurethane

Intended Use: Sealer for cementitious or epoxy flooring / catalyst

Company

Manufacturer: SureCrete Design Products, Inc.

15246 Citrus Country Drive

Dade City, FL 33523

USA

Contact: 352-567-7973 (telephone general)

800-262-8200 Chemtrec

+1 703-741-5500 Chemtrec International

info@surecretedesign.com (e-mail)

352-521-0973 (facsimile)

SECTION 2 Hazards Identification

Classification of substance or mixture:

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids: Category 3

Acute toxicity (Inhalation): Category 4

Serious eye damage: Category 1

Skin sensitization: Category 1

Carcinogenicity: Category 2

Specific target organ toxicity - single exposure: Category 3 (Respiratory system, Central nervous system)

GHS Label Elements

Hazard symbol:



Signal word: Danger

Label Hazard Statements

H226: Flammable liquid and vapor.

H317: May cause an allergic skin reaction.

H318: Causes serious eye damage

H332: Harmful if inhaled.

H335: May cause respiratory irritation.

H336: May cause drowsiness or dizziness.

H351: Suspected of causing cancer.

Label Precautionary statements



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- P201: Obtain special instructions before use.
 P202: Do not handle until all safety precautions have been read and understood.
 P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking.
 P240: Ground / bond container and receiving equipment.
 P233: Keep container tightly closed.
 P241: Use explosion-proof electrical, ventilating, and lighting equipment.
 P242: Use only non-sparking tools.
 P243: Take precautionary measures against static discharge.
 P260: Do not breathe dust, mist, gas, vapors or spray.
 P271: Use only outdoors or in a well-ventilated area.
 P272: Contaminated work clothing must not be allowed out of the workplace.
 P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:

- P303 + P361 + P553: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P312: Call a doctor or emergency medical facility (i.e. 911) if you feel unwell.
 P305 + P351 + P338 + P315: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor or emergency medical facility (i.e. 911).
 P332 + P313: If skin irritation or rash occurs: Get medical attention.
 P0363: Wash contaminated clothing before reuse.
 P370 + P378: In case of fire: Use dry chemical, CO₂, foam, or water spray (for large fires) to extinguish.

Storage:

- P405: Store locked up.
 P403 + 235: Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal:

- P501: Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

SECTION 3 Composition / Information on Ingredients

This material is regulated as a mixture

Ingredient	CAS #	EC#	% (by weight)
Hazardous			
Homopolymer of Hexamethylene Diisocyanate	28182-81-2	NE	<100%
n-Butyl Acetate	123-86-4	NE	<31%
Xylene	1330-20-7	NE	<16%
Ethyl Benzene	100-41-4	NE	<7%
Hexamethylene-1,6-Diisocyanate	822-06-0	NE	<=1%

The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

SECTION 4 First Aid Measures

Most Important Symptom(s)/Effect(s)

Acute: Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty).



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Persons with a preexisting, nonspecific bronchial hyper reactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

Causes serious eye damage with symptoms of eye burns, corneal injury, and possible blindness. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

May cause defatting of the skin with symptoms of dryness and cracking. Inhalation of the solvents may cause central nervous system depression with symptoms of nausea, lightheadedness, drowsiness, dizziness and loss of co-ordination.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Then remove contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention if irritation develops.

Skin Contact: Immediately remove contaminated clothing and shoes. Wash off with soap and water. Use lukewarm water if possible. Wash contaminated clothing before reuse. For severe exposures, immediately get under safety shower and begin rinsing. Get medical attention if irritation develops and persists.

Inhalation: Move to an area free from further exposure. Extreme asthmatic reactions that may occur in sensitized persons can be life threatening. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours.

Ingestion: Do NOT induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

Notes to Physician

Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision.

Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn.

Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound.

Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.



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SECTION 5 Fire Fighting Measures

Suitable Extinguishing Media: Dry chemical, Carbon dioxide (CO₂), Foam, water spray for large fires.

Unsuitable Extinguishing Media: High volume water jet.

Fire Fighting Procedure

Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate can be extremely dangerous.

Hazardous Decomposition Products

By Fire and High Heat: Carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke, Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds

Unusual Fire/Explosion Hazards

Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO₂ formed). Use cold-water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous. Flammable Liquid. Vapors may spread long distances and ignite. Vapors or mist may be a fire and explosion hazard when exposed to high temperature or ignition. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flashback. Vapors or fumes may form explosive mixture with air.

SECTION 6 Accidental Release Measures

Spill and Leak Procedures: Implement site emergency response plan. Evacuate non-emergency personnel. The magnitude of the evacuation depends upon the quantity released, site conditions, and the ambient temperature. Isolate the area and prevent access of unauthorized personnel. Notify management. Call CHEMTREC at 1-800-424-9300 for assistance and advice.

Wear necessary personal protective equipment (PPE) as specified in the SDS or the site emergency response plan. Ventilate and remove ignition sources. Control the source of the leak. Contain the released material by damming, diking, retaining, or diverting into an appropriate containment area. Absorb or pump off as much of the spilled material as possible. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri[®], etc...). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion, and do not tighten the lid on the container. Repeat application of absorbent material until all liquid has been removed from the surface.

Decontaminate the spill surface area using a neutralization solution (see list of solutions on the SDS); scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous surfaces. Wait at least 15 minutes after first application of the neutralization solution. Cover the area with absorbent material and shovel this into an approved metal container. Check for residual surface contamination using Swype[®] test kits, available from Colorimetric Laboratories, Inc. (CLI) at 847-803-3737. If the Swype[®] test pad demonstrates that isocyanate remains on the surface (red color on pad), repeat applications of neutralization solution, with scrubbing, followed by absorbent until the surface is decontaminated (no color change on Swype[®] pad). Apply lid loosely to metal waste container (do not tighten the lid because carbon dioxide gas and heat can be generated from the neutralization process). With the lid still loosely in place, move the container to an isolated, well-ventilated area to allow release of carbon dioxide. After 72 hours, seal the container, and properly dispose of the waste material and any contaminated equipment (i.e., broom or brush) in accordance with existing federal, state and local regulations.



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Additional Spill Procedures/Neutralization: Products or product mixtures that have been shown to be effective neutralization solutions for decontaminating surfaces, tools, or equipment that have been in contact with an isocyanate includes: Products available through industrial suppliers:

Spartan Chemical Company: 1-800-537-8990:

- Spartan® ShineLine Emulsifier Plus
- Spartan® SC-200 Heavy Duty Cleaner

Colorimetric Laboratories, Inc. (CLI): 1-847-803-3737

- Isocyanate Decontamination Solution

Mix equal amounts of the following:

- Mineral spirits (80%), VM&P Naphtha (15%), and household detergent (5%), and
- A 50-50 mixture of monoethanolamine and water

In a separate container, blend the two solutions in a 1:1 ratio by volume. Immediately prior to applying this blended neutralization solution onto the contaminated surface area, mix or agitate the container to help ensure uniform mixing of the ingredients.

If the above products are not available, the following products can be obtained through retail outlets:

- ZEP® Commercial Heavy-Duty Floor Stripper
- Greased Lightning® Super Strength Cleaner and Degreaser
- EASY OFF® Grill and Oven Cleaner or EASY OFF® Fume Free Oven Cleaner
- A mixture of 50% Simple Green® Pro HD Heavy-Duty Cleaner and 50% household ammonia
- A mixture of 90% Fantastic® Heavy Duty All Purpose Cleaner and 10% household ammonia.

Note: Always wear proper PPE when cleaning up an isocyanate spill and using a neutralization solution. It may take two or more applications of the neutralization solution to decontaminate the surface. Check for residual surface contamination using a surface wipe method such as the CLI Swype® pad.

SECTION 7 Handling and Storage

Handling/Storage Precautions: Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Ground and bond containers and equipment before transferring to avoid static sparks.

Storage Period: 6 Months @ 25 °C (77 °F): after receipt of material by customer.

Storage Temperature

Minimum: -34 °C (-29 °F)

Maximum: 50 °C (122 °F)

Storage Conditions: Store separate from food products.

Substances to Avoid: Water, Amines, Strong bases, Alcohols, Copper alloys.

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SECTION 8 Exposure Control / Personal Protection

Exposure Limit Values

Component	Value / Source				
	Value	Source	Value	Source	Value
Homopolymer of Hexamethylene Diisocyanate 28182-81-2	PEL	710 mg/m ³	150 ppm	OSHA Z1	
Homopolymer of Hexamethylene Diisocyanate 28182-81-2	TWA	No data available	150 ppm	ACGIH	
Homopolymer of Hexamethylene Diisocyanate 28182-81-2	STEL	No data available	200 ppm	ACGIH	
Xylene 1330-20-7	PEL	435 mg/m ³	100 ppm	OSHA Z1	
Xylene 1330-20-7	STEL	No data available	150 ppm	ACGIH	
Ethylbenzene 100-41-4	PEL	435 mg/m ³	100 ppm	OSHA Z1	
Ethylbenzene 100-41-4	TWA	No data available	200 ppm	ACGIH	
n-butyl acetate 123-86-4	TLV-C	No data available	300 ppm	OSHA Z1	
n-butyl acetate 123-86-4	STEL	650mg/m ³	200 ppm	ACGIH	
Hexamethylene-1,6-Diisocyanate 822-06-0	TWA	No data available	0.005 ppm	ACGIH	

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

Industrial Hygiene/Ventilation Measures

Good industrial hygiene practice dictates that worker protection should be achieved through engineering controls, such as ventilation, whenever feasible. When such controls are not feasible to achieve full protection, the use of respirators and other personal protective equipment is mandated. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent emissions into the workplace. If oven off-gases are not vented properly (i.e. they are released into the work area), it is possible to be exposed to airborne monomeric HDI.

Respiratory Protection

A respirator that is recommended or approved for use in isocyanate-containing environments (air-purifying or fresh air-supplied) may be necessary for spray applications or other situations such as high temperature use which may produce inhalation exposures. A supplied-air respirator (either positive pressure or continuous flow-type) is recommended. Before an air-purifying respirator can be used, air monitoring must be performed to measure airborne concentrations of HDI monomer and HDI polyisocyanate. Specific conditions under which air-purifying respirators can be used are outlined in the following sections. Observe OSHA regulations for respirator use (29 CFR 1910.134).

SPRAY APPLICATION:

Good industrial hygiene practice dictates that when isocyanate-based coatings are spray applied, some form of respiratory protection should be worn. During the spray application of coatings containing this product the use of a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists:

- the airborne isocyanate concentrations are not known.
- the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit).
- the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits).
- operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146).

A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing spray paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met:



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- the airborne isocyanate monomer concentrations are known to be below 0.05 ppm averaged over eight (8) hours (10 times 8 hour TWA exposure limit).
- the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits).
- a NIOSH-certified End of Service Life Indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, pre-filters should be changed whenever breathing resistance increases due to particulate buildup.

NON-SPRAY OPERATIONS:

During non-spray operations such as mixing, batch-making, brush or roller application, etc., at elevated temperatures (for example, heating of material or application to a hot substrate), it is possible to be exposed to airborne isocyanate vapors. Therefore, when the coatings system will be applied in a non-spray manner, a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists:

- the airborne isocyanate concentrations are not known.
- the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit).
- the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits).
- operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146).

A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met:

- the airborne concentrations of the isocyanate monomer are below 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit).
- the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m³ averaged over eight (8) hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits).
- a NIOSH-certified End of Service Life Indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, pre-filters should be changed whenever breathing resistance increases due to particulate buildup.

Hand Protection: Gloves should be worn. Nitrile rubber gloves, Butyl rubber gloves, Neoprene gloves.

Eye Protection: When directly handling liquid product, eye protection is required. Examples of eye protection include a chemical safety goggle, or chemical safety goggle in combination with a full face shield when there is a greater risk of splash.

Skin Protection: Avoid all skin contact. Depending on the conditions of use, cover as much of the exposed skin area as possible with appropriate clothing to prevent skin contact. Gloves, long sleeved shirts and pants.



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Medical Surveillance: All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted. Refer to the Bayer pamphlet (Medical Surveillance Program for Isocyanate Workers) for additional guidance.

Additional Protective Measures: Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of this product. Follow all label instructions.

SECTION 9 Physical and Chemical Properties

State of Matter:	liquid
Color:	clear, pale yellow
Odor:	Solvent like
Odor Threshold:	No Data Available
pH:	No Data Available
Freezing Point:	No Data Available
Boiling Point:	125 - 127 °C (257 - 260.6 °F) Estimated based on component(s)
Flash Point:	33 °C (91.4 °F) (Setaflash (ASTM D-3243, D-3278, D-3828))
Evaporation Rate:	No Data Available
Lower Explosion Limit:	0.8% for the solvent
Upper Explosion Limit:	7.6% for the solvent
Vapor Pressure:	HDI Polyisocyanate: 9.3 X 10 ⁻⁶ @ 68 F (20 C) mmHg 10 mmHg @ 20 °C (68 °F) For a solvent. 7 - 9 mmHg @ 20 °C (68 °F) For a solvent.
Vapor Density:	No Data Available
Density:	ca. 1.06 g/cm ³ @ 20 °C (68 °F)
Relative Vapor Density:	No Data Available
Specific Gravity:	1.06 @ 20 °C (68 °F)
Solubility in Water:	Insoluble - Reacts slowly with water to liberate CO ₂ gas
Partition Coefficient:	No Data Available
noctanol/water:	
Auto-ignition Temperature:	Approximately 400 °C (752 °F)
Decomposition Temperature:	No Data Available
Dynamic Viscosity:	No Data Available
Kinematic Viscosity:	No Data Available
Bulk Density:	1,060.46 kg/m ³
Molecular Weight:	500 Approximate Value, For the polyisocyanate
Self-Ignition:	Not applicable

SECTION 10 Stability and Reactivity



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Hazardous Reactions: Contact with moisture, other materials that react with isocyanates, or temperatures above 350° F (177° C), may cause polymerization.

Stability: Stable under normal conditions of use and storage.

Materials to Avoid: Water, Amines, Strong bases, Alcohols, Copper alloys.

Conditions to Avoid: Heat, flames and sparks. Protect from freezing.

Hazardous Decomposition Products

By Fire and High Heat: Carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke, Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds.

SECTION 11 Toxicological Information

Likely Routes of Exposure: Skin Contact, Inhalation, Eye Contact.

Health Effects and Symptoms

Acute: Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyper reactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

May cause eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract. Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

May cause defatting of the skin with symptoms of dryness and cracking.

Inhalation of the solvents may cause central nervous system depression with symptoms of nausea, lightheadedness, drowsiness, dizziness and loss of co-ordination.

Chronic: As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the exposure limits or guidelines. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon ex-



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posure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent. Chronic overexposure to isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

Prolonged contact with skin can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with isocyanates can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Prolonged vapor contact with the eyes may cause conjunctivitis.

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling solvents may be harmful or fatal.

Suspected of causing cancer.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Data on the product is not available. Please find the data available for the components.

Acute Oral Toxicity

Acute toxicity estimate: > 5000 mg/kg (Calculation method)

Toxicity Data for Homopolymer of Hexamethylene Diisocyanate

Toxicity Note: Data is based on a similar product, including residual monomer.

Acute Oral Toxicity

LD50: > 5000 mg/kg (rat, female) (OECD Test Guideline 423)

Acute Inhalation Toxicity

LC50: 0.554 mg/l, 4 h (rat)

The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Skin Irritation: rabbit, slight irritant.

Eye Irritation: rabbit, slight irritant.

Sensitization

Skin sensitization according to Magnusson/Kligmann (maximizing test): positive (guinea pig, OECD Test Guideline 406)

Repeated Dose Toxicity

Subchronic inhalation toxicity, rat: Test concentration - 0,4; 3,4 and 21,0 mg aerosol/m³ exposure time - 13 weeks (6 hours a day, 5 days a week) 3,4 mg/m³ was tolerated without damage (NOEL), 21,0 mg/m³ caused increase of lung weight. No evidence of histopathological changes in the upper and central respiratory passages.



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Unspecific changes in the lower respiratory tract; these are attributed to the product's primary irritation potential. Evidence of damage to organs other than the organs of respiration was not found.

Mutagenicity

Genetic Toxicity in Vitro: Salmonella/microsome test (Ames test): No indication of mutagenic effects.

Genetic Toxicity in Vivo: Micronucleus test: negative (mouse) negative

Toxicity Data for n-Butyl Acetate

Acute Oral Toxicity

LD50: 12789 mg/kg (rat, male) (OECD Test Guideline 423)

LD50: 10760 mg/kg (rat, female) (OECD Test Guideline 423)

Acute Inhalation Toxicity

LC50: > 21 mg/l, 4 h (rat) (OECD Test Guideline 403)

Acute Dermal Toxicity

LD50: 14112 mg/kg (rabbit, male/female) (OECD Test Guideline 402) assuming density = 0.882 g/cm³

Skin Irritation: Human experience, Non-irritating.

Eye Irritation: Human, irritating.

Sensitization

Dermal: non-sensitizer (Guinea pig, Maximization Test)

Dermal: non-sensitizer (Human, Magnusson/Kligmann (Maximization Test))

Repeated Dose Toxicity

13 Weeks, inhalation: NOAEL: 500 ppm, (Rat)

Chronic exposure damages the brain and the central nervous system.

13 weeks, inhalation (vapor): NOAEL: 500, (rat, male/female, 6 hours a day, 5 days a week)

Mutagenicity

Genetic Toxicity in Vitro: Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)

Cytogenetic assay: negative (other mammalian cell line, Metabolic Activation: without)

Chromosome aberration test: negative (Chinese hamster lung cells, Metabolic Activation: without)

Genetic Toxicity in Vivo: In vivo micronucleus test: negative (mouse, male/female, Oral) Studies of a comparable product. Negative.

Toxicity to Reproduction/Fertility

Two-generation study, Inhalative, daily, (rat, male/female) NOAEL (parental): 750 ppm, NOAEL (F1): 750 ppm, NOAEL (F2): 750 ppm

Developmental Toxicity/Teratogenicity

Rat, Female, inhalation, gestation days 1-16, 7 hrs/day, NOAEL (teratogenicity): 1,500 ppm, No

Teratogenic effects observed at doses tested. Rabbit, female, inhalation, gestation days 1-19, 7 hrs/day, NOAEL (teratogenicity): 1500 ppm, No Teratogenic effects observed at doses tested. Rat, Female, inhalation, 7 hrs/day,

NOAEL (teratogenicity): 1,500 ppm, NOAEL (maternal): 1500 ppm

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Other Relevant Toxicity Information: May cause drowsiness or dizziness.

Toxicity Data for Xylene

Acute Oral Toxicity

LD50: 4300 mg/kg (rat)

Acute Inhalation Toxicity

LC50: 29.091 mg/l, 4 h (rat, male) (EU Method B.2)

Acute Dermal Toxicity

LD50: > 4400 mg/kg (rabbit, male) assuming density = 0.88 g/cm³

Skin Irritation: Rabbit, Exposure Time: 24 h, irritating.

Eye Irritation: Human, Corrosive.

Sensitization: negative (Human, Patch Test)

Repeated Dose Toxicity

90 Ds, *inhalation:* NOAEL: 810 ppm, (Rat). There were no adverse effects seen at highest dose tested.

90 Ds, *oral:* LOAEL: 150 mg/kg, (Rat). There were no adverse effects seen at highest dose tested. Chronic exposure damages the brain and the central nervous system.

90 Ds, *oral:* NOAEL: 150 mg/kg, LOAEL: 150 mg/kg, (Rat, male/female, daily)

13 weeks, *Inhalation:* NOAEL: > 3.515 mg/l, (Rat, male, 6 hrs/day 5 days/week)

Mutagenicity

Genetic Toxicity in Vitro: Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without) Chromosome aberration test: negative (Chinese hamster ovary (CHO) cells, Metabolic Activation: with/without) Sister Chromatid Exchange: negative (Chinese hamster ovary (CHO) cells, Metabolic Activation: with/without)

Genetic Toxicity in Vivo: Dominant Lethal Assay: negative (mouse, male/female, Other method) negative.

Carcinogenicity

Rat, Male/Female, oral, 103 Weeks, negative mouse, Male/Female, oral, 2 Years, negative

Toxicity to Reproduction/Fertility

Two-generation study, Inhalative, daily, (rat, male/female) NOAEL (parental): 500, NOAEL (F1): > 500, NOAEL (F2): > 500 No toxicity to reproduction

Developmental Toxicity/Teratogenicity

Rat, female, inhalation, gestation days 9-14, 24 hrs/day, NOAEL (teratogenicity): > 230 ppm, NOAEL (maternal): > 230 ppm No Teratogenic effects observed at doses tested. Rat, female, inhalation, gestation days 6-20, 6 hours/day, NOAEL (teratogenicity): > 8.684 mg/l, NOAEL (maternal): 2.171 mg/l, No Teratogenic effects observed at doses tested.

Other Relevant Toxicity Information: May cause drowsiness or dizziness if inhaled. May cause irritation of respiratory tract.

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Carcinogenicity: No carcinogenic substances as defined by IARC, NTP and/or OSHA.

Toxicity Data for Ethyl Benzene

Acute Oral Toxicity

LD50: 3500 mg/kg (rat)

Acute Inhalation Toxicity

LC50: 17.2 mg/l, 4 h (rat)

Acute Dermal Toxicity

LD50: 15433 mg/kg (rabbit, male)

Skin Irritation: Draize, Mild skin irritation.

Eye Irritation: Rabbit, Draize, Severely irritating.

Sensitization: Dermal: non-sensitizer (Human, Patch Test)

Repeated Dose Toxicity

28 Days, inhalation: NOAEL: 3.4 mg/l, (rabbit)

90 Days, inhalation: NOAEL: 0.47 mg/l, (Rat, Male/Female, daily)

104 weeks, inhalation: NOAEL: 75 ppm, (mouse)

Mutagenicity

Genetic Toxicity in Vitro: Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without) Positive and negative results were seen in various in vitro studies. Mammalian cell - gene mutation assay: negative (Mouse lymphoma cells (L5178Y/TK), Metabolic Activation: with/without) Positive and negative results were seen in various in vitro studies.

Genetic Toxicity in Vivo:

Drosophila SLRL test: (Drosophila melanogaster) negative. Micronucleus Assay: (mouse, Male/Female, inhalation) negative

Carcinogenicity

Ethylene benzene was tested by inhalation exposure in mice and rats. In mice, there was an increased incidence of lung adenomas in males and liver adenomas in females. In male rats, there was an increased incidence of renal tubule adenomas and carcinomas. Two studies of workers potentially exposed to ethylbenzene in a production plant and a styrene polymerization plant showed no excess cancer incidence and no excess cancer mortality during a 15-year follow-up.

Toxicity to Reproduction/Fertility

Other method, inhalation, (Monkey, male) Reproductive effects have been observed in animal studies. One generation study, inhalation, (Rat, female) NOAEL (parental): 1000 ppm, NOAEL (F2): 100 ppm

Developmental Toxicity/Teratogenicity

Rat, female, inhalation, gestation, daily, NOAEL (teratogenicity): 100 ppm, NOAEL (maternal): 100 ppm Teratogenic effects seen only with maternal toxicity.

Fetotoxicity seen only with maternal toxicity. Rabbit, female, inhalation, gestation, daily, NOAEL (teratogenicity): < 1000 mg/m³, NOAEL (maternal): < 1000 mg/m³ Teratogenic effects seen only with maternal toxicity.



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Fetotoxicity seen only with maternal toxicity. Rat, inhalation, daily, NOAEL (teratogenicity): 2000, NOAEL (maternal): 500

Other Relevant Toxicity Information: May cause irritation of respiratory tract. May be fatal if swallowed and enters airways.

Toxicity Data for Hexamethylene-1,6-Diisocyanate

Acute Oral Toxicity

LD50: 746 mg/kg (rat, male) (OECD Test Guideline 401)

LD50: 959 mg/kg (rat, male) (OECD Test Guideline 401)

Acute Inhalation Toxicity

LC50: 0.124 mg/l, 4 h (rat, male/female) (OECD Test Guideline 403)

Acute Dermal Toxicity

LD50: > 7000 mg/kg (rat, male/female) (OECD Test Guideline 402)

Skin Irritation: Rabbit, OECD Test Guideline 404, Corrosive.

Eye Irritation: Rabbit, OECD Test Guideline 405, Corrosive.

Sensitization

Dermal: sensitizer (guinea pig, Maximization Test (GPMT)) Other isocyanates have been shown to produce dermal and respiratory sensitization in several species (guinea pigs, mice, rabbits, dogs). In addition, there is some evidence to suggest that cross-sensitization between different types of diisocyanates may occur.

Dermal: sensitizer (Human, Case Report)

Respiratory sensitization: sensitizer (guinea pig)

Repeated Dose Toxicity

2 years, inhalation: NOAEL: < 0.005 ppm, LOAEL: 0.005 ppm, (rat, Male/Female, 6 hrs/day 5 days/week) Irritation to lungs and nasal cavity.

Mutagenicity

Genetic Toxicity in Vitro: Salmonella/microsome test (Ames test): negative (Salmonella typhimurium, Metabolic Activation: with/without). Point mutation in mammalian cells (HPRT test): negative (Metabolic Activation: with/without)

Genetic Toxicity in Vivo: Micronucleus test: negative (mouse, male/female, Inhalative) negative

Carcinogenicity

Rat, male/female, Inhalative, 2 yrs, 6 hours/day, 5 days/week, did not show carcinogenic effects in animal experiments.

Toxicity to Reproduction/Fertility

Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test, Inhalative, 6 hours/day 7 days/week, (rat, male/female) NOAEL (F2): 0.3 ppm Fertility and developmental toxicity tests did not reveal any effect on reproduction.

Developmental Toxicity/Teratogenicity



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Rat, female, inhalation, gestation days 0 - 19, daily, NOAEL (teratogenicity): >0.3 ppm, NOAEL (maternal): < 0.3 ppm No Teratogenic effects observed at doses tested. No fetotoxicity observed at doses tested.

Neurological Effects

Rats exposed by inhalation, 6 hours/day, for approximately 3 weeks, to concentrations as high as 0.3 ppm showed no neurobehavioral effects or damage to nerve tissues.

Carcinogenicity

Ethyl Benzene: IARC, Overall evaluation: 2B Possibly carcinogenic to humans.

SECTION 12 Ecological Information

Data on the product is not available. Please find the data available for the components.

Ecological Data for Homopolymer of Hexamethylene Diisocyanate

Biodegradation

1 %, Exposure time: 28 d, i.e. not readily degradable.

Acute and Prolonged Toxicity to Fish

LC50: > 100 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: > 100 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants

ErC50: > 100 mg/l, (scenedesmus subspicatus, 72 h)

Toxicity to Microorganisms

EC50: > 100 mg/l, (activated sludge, 3 h)

Additional Ecotoxicological Remarks

Data is based on a similar product, including residual monomer.

Ecological Data for n-Butyl Acetate

Biodegradation: aerobic, 98 %, Exposure time: 28 Days

Biochemical Oxygen Demand (BOD): 1,020 mg/g

Chemical Oxygen Demand (COD): 320 mg/g

Theoretical Biological Oxygen Demand (ThBOD): 2,207 mg/g

Bioaccumulation: ca. 4 - 14 BCF

Acute and Prolonged Toxicity to Fish

LC50: 18 mg/l (Fathead minnow (Pimephales promelas), 96 h)

LC50: 185 mg/l (Silverside Minnow (Menidia peninsulae), 96 h)

Acute Toxicity to Aquatic Invertebrates



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EC50: 72.8 mg/l (Water flea (Daphnia magna), 48 h)

EC50: 32 mg/l (brine shrimp (Artemia salina), 48 h)

Toxicity to Aquatic Plants

EC50: 670 mg/l, End Point: growth (Cryptomonad (Chilomonas paramecium), 48 h)

674.7 mg/l, End Point: growth (Green algae (Scenedesmus subspicatus), 72 h)

Toxicity to Microorganisms

EC50: 959 mg/l, (Pseudomonas putida, 18 h)

Ecological Data for Xylene

Biodegradation: > 60 %, Exposure time: 28 d, i.e. readily biodegradable.

Biochemical Oxygen Demand (BOD): 5 Days, 80%

Chemical Oxygen Demand (COD): 83 mg/g

Acute and Prolonged Toxicity to Fish

LC50: 13.5 - 17.3 mg/l (Rainbow (Donaldson) Trout (Oncorhynchus mykiss), 96 h)

Acute Toxicity to Aquatic Invertebrates

600 mg/L (Gammarus sp., 48 h)

Toxicity to Aquatic Plants

EC50: 10 mg/l, End Point: growth (other: algae, 72 h)

Toxicity to Microorganisms

EC50: 96 mg/l, (Bacteria, 24 h) Studies of a comparable product.

Ecological Data for Ethyl Benzene

Biodegradation: Aerobic, 50 %, Exposure time: 28 Days

Biochemical Oxygen Demand (BOD)

5 Days, 2.8 %

35 Days, 1,780 mg/g

Theoretical Biological Oxygen Demand (ThBOD): 3.17 mg/g

Bioaccumulation:

Cyprinus carpio (Carp), 15 BCF

Acute and Prolonged Toxicity to Fish

LC50: 4.2 mg/l (Rainbow (Donaldson) Trout (Oncorhynchus mykiss), 96 h)

LC50: 12.1 mg/l (Fathead minnow (Pimephales promelas), 96 h)

LC50: 4.3 mg/l (Hybrid striped bass (Morone saxatilis x chrysops), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: 1.8 - 2.9 mg/l (Water flea (Daphnia magna), 48 h)



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Toxicity to Aquatic Plants

EC50: 4.6 mg/l, (Green algae (Selenastrum capricornutum), 72 h)

Toxicity to Microorganisms

EC50: 130 mg/l, (Activated sludge microorganisms, 48 h)

EC50: 9.68 ppm, (Photobacterium phosphoreum, 30 min)

Ecological Data for Hexamethylene-1,6-Diisocyanate

Biodegradation

aerobic, 42 %, Exposure time: 28 d, i.e. not readily degradable

Bioaccumulation

value calculated, 57.6 BCF

An accumulation in aquatic organisms is not to be expected.

value calculated, 3.2 BCF

An accumulation in aquatic organisms is not to be expected. Studies of hydrolysis products.

Acute and Prolonged Toxicity to Fish

LC0: \geq 82.8 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC0: \geq 89.1 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants

ErC50: $>$ 77.4 mg/l, (Desmodesmus subspicatus (Green algae), 72 h)

Toxicity to Microorganisms

EC50: 842 mg/l, (activated sludge, 3 h)

SECTION 13 Disposal Considerations

Waste Disposal Method: Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.

Empty Container Precautions: Empty containers retain product residue; observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning. If container is to be disposed, ensure all product residues are removed prior to disposal.

Section 14 Transport Information

DOT

UN number: UN1866

UN proper shipping name: Resin solution (contains Xylene, N-Butyl Acetate)

Class: 3

Hazard Label: Flammable Liquid

Packing group: III

Special precautions for user: Not available.



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RSPA/DOT Regulated Components:

n-Butyl Acetate
Xylene
Ethyl Benzene
Hexamethylene-1,6-Diisocyanate

Reportable Quantity: 484 kg (1067 lb)

IATA

UN number: UN1866

UN proper shipping name: Resin solution (contains Xylene, N-Butyl Acetate)

Class: 3

Hazard Label: Flammable Liquid

Packing group: III

Special precautions for user: Not available.

IMDG

UN number: UN1866

UN proper shipping name: Resin solution (contains Xylene, N-Butyl Acetate)

Class: 3

Hazard Label: Flammable Liquid

Packing group: III

Special precautions for user: Not available.

Additional Transportation Information

MEXICAN LAND TRANSPORT: For viscous substances packaged in containers with a capacity less than 450 liters, exception established in paragraph 5.5.5 of the Mexican Official Norm NOM-028-SCT2/2010 applies.

SECTION 15 Regulatory Information

United States Federal Regulations

US. Toxic Substances Control Act: Listed on the TSCA Inventory.

US. EPA CERCLA Hazardous Substances (40 CFR 302) Components: n-Butyl Acetate, Xylene, Ethyl Benzene.

SARA Section 311/312 Hazard Categories:

Acute Health Hazard

Fire Hazard

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) Components: None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required Components: Xylene, Ethyl Benzene.

US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):



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Under RCRA, it is the responsibility of the person who generates a solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste. In its purchased form, this product meets the criteria of ignitability under 40 CFR 261.21(a), and, when discarded in that form, should be managed as a hazardous waste.

State Right-To-Know Information

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
<100%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2
<16%	Xylene	1330-20-7
<7%	Ethyl Benzene	100-41-4
<31%	n-Butyl Acetate	123-86-4
<=1%	Hexamethylene-1,6-Diisocyanate	822-06-0

New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
<100%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2
<16%	Xylene	1330-20-7
<7%	Ethyl Benzene	100-41-4
<=1%	Hexamethylene-1,6-Diisocyanate	822-06-0

California Prop. 65:

Warning! This product contains chemical(s) known to the State of California to be Carcinogenic.

<7% Ethyl Benzene 100-41-4

Based on information provided by our suppliers, this product is considered "DRC Conflict Free" as defined by the SEC Conflict Minerals Final Rule (Release No. 34-67716; File No. S7-40-10; Date: 2012-08-22).

SECTION 16 Other Information

Recommended restriction: for use by trained professionals, having read the complete SDS. The handling of products containing reactive HDI polyisocyanate/prepolymer and/or monomeric HDI requires appropriate protective measures referred to in this SDS. These products are therefore recommended only for use in industrial or trade (commercial) applications. They are not suitable for use in Do-It-Yourself applications.

To the best of our knowledge the information contained here is accurate. However, neither the above named manufacturer nor any of its distributors assumes any liability whatsoever for the accuracy or the completeness of the information contained herein. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.