SAFETY DATA SHEET

Date Prepared 8/18/2015
Date Revised n/a

Rubber Binder

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: RUBBER BINDER
PRODUCT FAMILY: MIXTURE: ALIPHATIC POLYISOCYANATE (HDI)
PRODUCT USE(S): ADHESIVE FOR RUBBER CRUMB
RESTRICTIONS ON USE(S): NOT RECOMMENDED FOR DIY APPLICATIONS, PROFESSIONALS ONLY

MANUFACTURER
MIRABEL COATINGS, INC.
11803 N SAGUARO BLVD #14
FOUNTAIN HILLS, AZ 85268
(480) 837-5333

24 HR. EMERGENCY CONTACT NUMBERS
MIRABEL COATINGS: 480-837-5333

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION

Acute toxicity (inhalation):	Category 4
Skin sensitisation:	Category 1
Specific target organ toxicity - single exposure:	Category 3 (Respiratory system)

GHS LABEL ELEMENTS
HAZARD PICTOGRAMS:

SIGNAL WORD: WARNING
HAZARD STATEMENTS: H302: Harmful if inhaled.
H317: May cause an allergic skin reaction.
H335: May cause respiratory irritation.
PRECAUTIONARY STATEMENTS
Prevention:
Avoid breathing dust, mist, gas, vapors or spray.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves.

Response:
IF ON SKIN: Wash with plenty of soap and water. Mildly irritating to the skin.
IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a doctor or emergency medical facility (i.e. 911) if you feel unwell.
If skin irritation or rash occurs: Get medical attention.
Wash contaminated clothing before reuse.

Storage:
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Disposal:
Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components

Residual diisocyanate monomer content: <0.50%

Weight Percent	Components	CAS No.	Classification
> 90%	Aliphatic Polyisocyanate Based on HDI	Trade Secret	Acute toxicity Category 4 Inhalation. Skin sensitisation Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system.
< 1%	Hexamethylene-1,6-Diisocyanate	822-06-0	Acute toxicity Category 4 Oral. Acute toxicity Category 1 Inhalation. Skin corrosion Category 1. Serious eye damage Category 1. Respiratory sensitisation Category 1. Skin sensitisation Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system.

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

4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Remove contacts if possible and continue eye irrigation for at least 15 minutes. Get medical attention, if irritation occurs or persists.

SKIN: Flush skin with water while removing contaminated clothing. If irritation occurs, get medical attention. Do not reuse clothing or shoes until cleaned.

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

INHALATION: Remove to fresh air. Extreme asthmatic reactions may occur in sensitized persons can be life threatening. Asthmatic symptoms can be delayed up to several hours. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Seek immediate medical attention.

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). Persons with a preexisting, nonspecific bronchial hyperreactivity 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 sensitisation. Presons previously sensitized can experience allergic 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.

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

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 sympomatically as for contact dermatitis or thermal burn.

INGESTION: Trest symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of

INHALATION: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization

5. FIREFIGHTING 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 complian structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. Avoid contact with products. 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 (NOx), dense black smoke,

Hydrogen cyanide, Isocyanate, Isocyanic Acid, Unidentified organic compounds may be formed during combustion,

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.

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, Keep material out of storm sewers and ditches which lead to waterways, and prevent access of unauthorized personnel. Notify management. Call Mirabel Coatings, Inc. 480-837-5333 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 are using a neutralization solution (see list of solutions on 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 contaminatin 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 the 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 neutralizing 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

ADDITIONAL SPILL PROCEDURES/NEUTRALIZATION

Products or product mixtures that have been shown to be effective neutralization solutions for decontaminating surfaces, tools, or equipment thath ave 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

Calorimetric 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 applything 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

7. HANDLING AND STORAGE

Handling/Storage Precautions

Do not breathe vapors, mists or dusts. Use adequate ventilation to keep airborne isocyanate levels blow 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 exposure 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.

Keep away from heat, sparks, and flame. Surfaces that are hot may ignite even liquid product in the absence of sparks or flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors are gone.

KEEP OUT OF REACH OF CHILDREN! Empty containers retain product resiude (liquid and/or vapor) and can be dangerous. Do no pressurize or expose to ignition sources; containers may explode and cause injury or death.

STORAGE PERIOD:

6 Months within temperature range, after receipt of material by customer

Min Temperature:	10 °C (50 °F)
Max Temperature:	25 °C (77 °F)

STORAGE CONDITIONS:

Store separate from food products.

Employee education and training in the safe use and handling of this product are required under the OSHA Hazard Communication Standard 29 CFR 1910.1200.

SUBSTANCES TO AVOID:
Water, Amines, Strong Bases, Alcohols, Copper alloys

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Aliphatic Polyisocyanate Based on HDI (CAS# is a trade secret)

Manufacturer Exposure Limit
Time Weighted Average (TWA): 0.5 mg/m3

Manufacturer Exposure Limit
Short Term Exposure Limit (STEL): 1.0 mg/m3 (15-min)

Hexamethylene-1,6-Diisocyanate (822-06-0)

US, ACGIH Threshold Limit Values
Time Weighted Average (TWA): 0.005 ppm

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.

ENGINEERING CONTROLS:
Provide exhaust ventilation sufficient to keep the airborne concentrations of this product below its exposure limits. If ventilation is not feasible 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.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY

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 continous flow-type) is recommended. Before an air-purifying respirator can be used, air monitorying 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: A good industrial hygiene practice dictates that when isocyanated 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 or continuous flow-type) respirator is mandatory when ONE or MORE of the following conditions exists: - the airborne isocyanate concentrations are not known; or -the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or -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); or -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) respiratoy, 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: -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); and -the airborne polyisocyante (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) and -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, prefilters 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 applicatino to a hot substrate), it is possible to be exposed to airborne isocyanate vapors. Therefore, when the coatings system will be aplied in a non-spray manner, a supplied-air (either positive pressure or continous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists: -the airborne isocyanate concentratinos are not known; or -the airborne isocyanate monomer concentratinos exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or - the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5mg/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); or - 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 isocyanated-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 or the 15 minute STEL exposure limits) and - a NIOSH-certified End of Service Life Indicator or a change of schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, prefilters 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

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. Wear impervious Gloves, long sleeved shirt,

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

ADDITIONAL PROTECTIVE MEASURES

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

WORK HYGIENE PRACTICES
Use good personal hygiene when handling this product. Wash hands after use, before eating, drinking, smoking, or using the toilet.

COMMENTS
May be harmful or fatal if swallowed. May irritate body tissues. Use with adequate ventilation. Avoid breathing vapor. Do not get in eyes, on skin, on clothing. Wash thoroughly after handling

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
ODOR:	Pungent Odor / Negligible
APPEARANCE:	Clear /Colorless
pH:	No Data Available
BOILING POINT:	Begins at > 180°C (356°F)
FLASH POINT:	Begins at > 250°C (482°F)
MELTING POINT:	No Data Available
EVAPORATION RATE:	No Data Available
LOWER EXPLOSION LIMIT:	No Data Available
UPPER EXPLOSION LIMIT:	No Data Available
VAPOR PRESSURE:	Approximately 21hPa @ 20°C (68°F)
VAPOR DENSITY:	No Data Available
RELATIVE VAPOR DENSITY:	No Data Available
DENSITY:	1.09 g/cm³ @ 20°C (68°F)
SOLUBILITY IN WATER:	Insoluble - Reacts slowly with water to liberate CO2 gas
AUTO-IGNITION TEMPERATURE:	Approximately 415°C (779°F)
DECOMPOSITION TEMPERATURE:	No Data Available
VISCOSITY:	Approximately 3,400-5000 cps @ 25°C (77°F)
MOLECULAR WEIGHT:	No Data Available
POUR POINT:	Approximately -24°C (-11.2°F)
VOC:	None, Zero

10. STABILITY AND REACTIVITY

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, and oxidizers.

CONDITIONS TO AVOID
Avoid heat, sparks, flame and contact with strong oxidizing agents. Prevent vapor accumulation.

HAZARDOUS DECOMPOSITION PRODUCTS
By Fire and High Heat: Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (Nox), dense black

smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds.

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 hyperreactivity can respond to concentrations below limits or guidelines with smaller 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, stining, and swelling. May cause temporary corneal injury. Vapor or acrosol may cause irritation with symptoms of burning and tearing.

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

CHRONIC

As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (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 exposure 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 isocyantes 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 conjuctivitis.

DELAYED

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

TOXICITY DATA FOR RUBBER CRUMB BINDER

Data on the product is not available

Please find the data available for a similar product.

TOXICITY DATA FOR ALIPHATIC POLYISOCYANATE BASED ON HDI

TOXICITY NOTE

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

ACUTE ORAL TOXICITY

LD50: > 5000 mg/kg (rat)

ACUTE INHALATION TOXICITY

LC50: 0.39 mg/l, 4h (rat, female)

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. Therefor the test result cannot be directly applied for the purpose of assessing hazard. Based on the weight of evidence, a modified classication for acute inhalation toxicity is justified.

ACUTE DERMAL TOXICITY

LD50: >2000 mg/kg (rat, male/female) (OECD Test Guideline 402)

SKIN IRRITATION

Rabbit, OECD Test Guideline 404, slight irritant

EYE IRRITATION

Rabbit, OECD Test Guideline 405, slight irritant

SENSITIZATION

Dermal: sensitizer (guinea pig, Magnusson/Kligmann (Maximization Test))

Skin sensitization (local lymph node assay (LLNA)): positive (mouse, OECD Test Guideline 429)

Skin sensitization (local lymph node assay (LLNA)): psotive (mouse, OECD Test Guideline 406)

Toxicological studies of a comparable product.

REPEATED DOSE TOXICITY

3 wks, inhalation: NOAEL: 3.7-4.3 mg/m3, (Rat)

90 days, inhalation: NOAEL: 3.3-3.4 mg/m3, (Rat)

Irritation to lugns and nasal cavity

MUTAGENICITY

Genetic Toxicity in Vitro:

Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)

TOXICITY DATA FOR HEXAMETHYLENE-1,6-DIISOCYANATE

ACUTE ORAL TOXICITY

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

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

ACUTE INHALATION TOXICITY

LC50: 0.124 mg/l, 4h (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, Maximisation 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 Vitro:
Micronucleus test: negative (mouse, male/female, Inhalative)
negative

CARCINOGENICITY
Rat, male/female, Inhalative, 2 yrs, 6 hrs/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
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, 6hrs/day, for approximately 3 weeks, to concentrations as high as 0.3 ppm showed no neurobehavioral effects or damage to nerve tissues.

Carcinogenicity:

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

12. ECOLOGICAL INFORMATION

Data on this product is not available.
Please find the data for a similar product below.

ECOLOGICAL DATA FOR ALIPHATIC POLYISOCYANATE BASED ON HDI

BIODEGRADATION

1%, Exposure time: 28 d, i.e. not readily degradable
Ecotoxicological reports on a comparable product

ACUTE AND PROLONGED TOXICITY TO FISH

LC50: 8.9 mg/l (Danio rerio (zebra fish), 96h)
Ecotoxicological reports on a comparable product

ACUTE TOXICITY TO AQUATIC INVERTEBRATES

EC0: > 100 mg/l (Water flea (Daphnia magna), 48h)

TOXICITY TO AQUATIC PLANTS

EC50: > 1,000 mg/l, (Green algae (Desmodesmus subspicatus), 72h)

TOXICITY TO MICROORGANISMS

EC50: 1,600 mg/l, (activated sludge, 3h)
Ecotoxicological reports on a comparable product

ADDITIONAL ECOTOXICOLOGICAL REMARKS

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

ECOLOGICAL DATA FOR HEXAMETHYLEN-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

LC50: >= 82.8 mg/l (Danio rerio (zebra fish), 96h)

ACUTE TOXICITY TO AQUATIC INVERTEBRATES

EC50: >= 89.1 mg/l (Daphnia magna (Water flea), 48h)

TOXICITY TO AQUATIC PLANTS
ErC50: >77.4 mg/l (Desmodesmus subspicatus (Green algae), 72h)

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

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. Do not dump into sewers, ground, or any body of water.

EMPTY CONTAINER PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN! 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.

RCRA/EPA WASTE INFORMATION
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORT INFORMATION

LAND TRANSPORT (DOT)

PROPER SHIPPING NAME:	Other regulated substances, liquid, n.o.s. (contains Hexamethylene-1,6-Diisocyanate, Aliphatic Polyisocyanate)
HAZARD CLASS OR DIVISION:	9
UN/NA NUMBER:	NA 3082
PACKAGING GROUP:	III
HAZARD LABEL(S):	Class 9

RSPA/DOT REGULATED COMPONENTS:
Hexamethylene-1,6-Diisocyanate

REPORTABLE QUANTITY:	9074 kg (20005 lb)
SEA TRANSPORT (IMDG):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains Hexamethylene-1,6-Diisocyanate, Aliphatic Polyisocyanate)
HAZARD LABEL(S):	MISCELLANEOUS
AIR TRANSPORT (ICAO/IATA):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains Hexamethylene-1,6-Diisocyanate, Aliphatic Polyisocyanate)

HAZARD LABEL(S): MISCELLANEOUS

ADDITIONAL TRANSPORTATION INFORMATION

When in individual containers of less than the Product RQ, this material ships as non regulated.

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:

None

SARA SECTION 311/312 HAZARD CATEGORIES:

Acute Health 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 EXTREMELY HAZARDOUS SUBSTANCE (40 CFR 372.65) - SUPPLIER NOTIFICATION REQUIRED COMPONENTS:

None

US. EPA RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) COMPOSITE LIST OF HAZARDOUS WASTES AND APPENDIX VIII HAZARDOUS CONSTITUENTS (40 CFR 261):

Under the 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. If discarded in purchased form this product is ignitable, 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:

WEIGHT PERCENT	COMPONENTS	CAS-NO.
>90%	Aliphatic Polyisocyanate Based on HDI	Trade Secret
<1%	Hexamethylene-1,6-Diisocyanate	822-06-0

NEW JERSEY ENVIRONMENTAL HAZARDOUS SUBSTANCES LIST AND/OR NEW JERSEY RTK SPECIAL HAZARDOUS SUBSTANCES LISTS:

WEIGHT PERCENT	COMPONENTS	CAS-NO.
<=1%	Hexamethylene-1,6-Diisocyanate	822-06-0

CALIFORNIA PROP. 65:

To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

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: 08-22-2012).

16. OTHER INFORMATION

The method of hazard communication for Mirabel Coatings, Inc. is comprised of Product Labels and Safety Data Sheets (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 (commerical) applications. They are not suitable for use in Do-It-Yourself applications.

NFPA CODES:

CONTACT:	Product Safety Department
TELEPHONE:	480-837-5333
DATE PREPARED:	8/18/2015
DATE REVISED:	n/a
REVISION SUMMARY:	New Product

MANUFACTURER DISCLAIMER:

The information contained herein is based on the data available to us and is believed to be accurate. However, Mirabel Coatings, Inc. makes no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. The information in this SDS relates only to the specific material designated herein. Mirabel Coatings, Inc. assumes no legal responsibility for use of or reliance upon the information in this SDS, nor for injuries from the use of the product described herein.