

SAFETY DATA SHEET



SECTION 1 PRODUCT & COMPANY IDENTIFICATION

BEYNON Sports Surfaces, Inc.

16 Alt Road
Hunt Valley, MD 21030
Phone: (410) 771-9473

TRANSPORTATION EMERGENCY

CALL CHEMTREC (24 hr): 800-424-9300
DISTRICT OF COLUMBIA: 202-483-7616

PRODUCT NAME: **BEYPUR 300 BINDER**
CHEMICAL FAMILY: Aromatic Isocyanate Prepolymer
CHEMICAL NAME: Diphenylmethane Diisocyanate (MDI) Prepolymer
SYNONYMS: Modified Diphenylmethane Diisocyanate Blend
RECOMMENDED USE: For Commercial use only.
RESTRICTIONS ON USE: Avoid water, alcohol, strong bases, substances and products that react with isocyanates.

SECTION 2 HAZARD(S) IDENTIFICATION

	<u>GHS Classification</u>	<u>Hazard Statements</u>
Acute toxicity (Inhalation):	Category 3	Toxic if inhaled.
Respiratory sensitization:	Category 1	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Specific target organ toxicity - repeated exposure:	Category 1	Causes damage to Respiratory Tract through prolonged or repeated exposure if inhaled.
Specific target organ toxicity - single exposure:	Category 1	(Respiratory system) May cause respiratory irritation.
Skin irritation:	Category 3	Causes skin irritation.
Skin sensitization:	Category 2	May cause an allergic skin reaction.
Carcinogenicity:	Category 2	Suspected of causing cancer.
Eye irritation:	Category 2A	Causes serious eye irritation

PRECAUTIONS:

Wear protective gloves/protective clothing/eye protection/face protection.
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Do not breathe dust/fumes/gas/mist/vapors/sprays. In case of inadequate ventilation or exposures over the limit, wear respiratory protection. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell. If you are experiencing respiratory symptoms: Call a doctor. IF EXPOSED: call a doctor. IF ON SKIN: Wash with plenty of water and soap. Cleaning very soon after exposure is important, and a polyglycol-based skin cleanser or corn oil may be more effective than soap and water. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention. Contaminated work clothing should not be allowed out of the workplace. Wash with plenty of water and soap thoroughly after handling. Do not eat, drink, or smoke during work. Store locked up. Dispose of contents and container in accordance with all local and federal regulations.

DANGER!



for spray applications and exposures above limits

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

POTENTIAL HEALTH EFFECTS:

Eye Contact: May cause severe eye irritation. May cause moderate corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.

Skin Contact: Prolonged contact may cause severe skin irritation with local redness and discomfort. May stain skin.

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Skin Sensitization: Contains isocyanates. Skin contact may cause an allergic skin reaction. Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization.

Inhalation: Excessive exposure to isocyanates may cause severe irritation of the upper respiratory tract and lungs, fluid in the lungs, permanent decrease of lung function, neurologic disorders, cholinesterase depression and gastrointestinal distress. Effects may be delayed. Decreased lung function has been associated with overexposure to isocyanates.

Respiratory Sensitization: Contains Isocyanates. May cause allergic respiratory response. Re-exposure to extremely low isocyanate concentrations may cause allergic respiratory reactions in individuals already sensitized. Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation or ulceration.

Effects of Repeated Exposure: Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

Cancer Information: An oral study in which high doses of TDI were reported to cause cancer in animals has been found to contain numerous deficiencies which compromise the validity of the study. TDI did not cause cancer in laboratory animals exposed by inhalation, the most likely route of exposure. Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m³) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

Birth Defects/Developmental Effects: Contains component(s) which did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS

<u>INGREDIENT</u>	<u>CAS NUMBER</u>	<u>EXPOSURE LIMITS</u> OSHA Threshold Limit Value:	<u>CONCENTRATION (%)</u>
Methylenediphenyl Diisocyanate (MDI) Mixed Isomers (including 4,4' Diphenylmethane Diisocyanate-MDI)	26447-40-5 (101-68-8)	0.02 ppm, 0.2 mg/m ³ TWA	< 10 %
Toluene diisocyanate mixture including: Toluene- 2,4 Diisocyanate, Toluene-2,6-diisocyanate	26471-62-5	0.005 ppm, 0.04 mg/m ³ TWA	≤ 0.1 %

OTHER INGREDIENTS

Copolymer - Toluene Diisocyanate, Methylenediphenyl Diisocyanate, Propyleneglycol,	39288-44-3	Not applicable	< 90 %
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SECTION 4 FIRST AID MEASURES

General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment. First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection).

Eye Contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Skin Contact: Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. An MDI skin decontamination study demonstrated that cleaning very soon after exposure is important, and that a polyglycol-based skin cleanser or corn oil may be more effective than soap and water. This may also apply to other isocyanates. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Suitable emergency safety shower facility should be available in work area.

Inhalation: Move to an area free from further exposure. 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. Extreme asthmatic reactions can be life threatening.

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

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of immediate medical attention and special treatment needed

Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants and antitussives may be of help. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. If you are sensitized to diisocyanates, consult your physician regarding working with other respiratory irritants or sensitizers. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

SECTION 5 FIRE FIGHTING MEASURES

FLASH POINT: $\geq 392^{\circ}\text{F}$ (200°C), not self-igniting

EXTINGUISHING EQUIPMENT and MEDIA:

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Extinguishing Media to Avoid: Do not use direct water stream. May spread fire.

SPECIAL FIRE FIGHTING PROCEDURES:

Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water is not recommended, but may be applied in large quantities as a fine spray when other extinguishing agents are not available. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Use water spray to cool fire-exposed containers and fire-affected zone until fire is out. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this SDS.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during firefighting operations. If contact is likely, change to full chemical resistant firefighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Special hazards arising from the substance or mixture

Hazardous Combustion Products:

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Isocyanates. Hydrogen cyanide. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards:

Material reacts slowly with water, releasing carbon dioxide which can cause pressure buildup and rupture of closed containers. Elevated temperatures accelerate this reaction. Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

SECTION 6 ACCIDENTAL RELEASE MEASURES

MAJOR SPILL CONTACT: Beynon Sports Surfaces at (410) 771-9473

TRANSPORTATION SPILL: CHEMTREC at (800) 424-9300.

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. Refer to Section 7, Handling, for additional precautionary measures. See Section 10 for more specific information. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

SPILL OR LEAK PROCEDURES:

Evacuate non-emergency personnel. Isolate the area and prevent access. Remove ignition sources. Notify management. Put on protective equipment. Control source of the leak. Ventilate. Contain the spill to prevent spread into drains, sewers, water supplies, or soil. Call ChemTrec at 800-424-9300 or 703-527-3887 for assistance and advice. Major Spill or Leak (Standing liquid): Released material may be pumped into closed, but not sealed, metal container for disposal. Process can generate heat. Minor Spill or Leak (Wet surface): Cover spill area with suitable absorbent material (Kitty Litter, Oil-Dri®, etc). Saturate absorbent material with neutralization solution and mix. Wait 15 minutes. Collect material in open-head metal containers. Repeat applications of decontamination solution, with scrubbing, followed by absorbent until the surface is decontaminated. Check for residual surface contamination. Apply lid loosely and allow containers to vent for 72 hours to let carbon dioxide (CO₂) escape.

CLEAN UP:

Wash down spill area with decontamination solution. Allow solution to stand for at least 10 minutes.

Neutralization solutions:

- (1) Colorimetric Laboratories Inc. (CLI) decontamination solution.
- (2) A mixture of 75% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10) and 5% npropanol.
- (3) A mixture of 80% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10).
- (4) A mixture of 90% water, 3-8% ammonium hydroxide or concentrated ammonia, and 2% liquid detergent.

SECTION 7 HANDLING & STORAGE

STORAGE TEMPERATURE: 59 °F (15 °C) - 104 °F (40 °C)

SHELF LIFE: 1 year

SPECIAL SENSITIVITY: No explosion proofing necessary

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.

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.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS: See section 2

ENGINEERING CONTROLS: **Ventilation Measures:**

Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. The odor and irritancy of this material are inadequate to warn of excessive exposure.

RESPIRATORY PROTECTION:

Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. When atmospheric levels may exceed the exposure guideline, use an approved air-purifying respirator equipped with an organic vapor sorbent and a particle filter. For situations where the atmospheric levels may exceed the level for which an air-purifying respirator is effective, use a positive-pressure air-supplying respirator (air line or self-contained breathing apparatus). For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

EYE PROTECTION:

When directly handling liquid product, eye protection is required. Examples of eye protection include chemical safety goggles or chemical safety goggles 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., Animal tests and other research indicate that skin contact with isocyanates can play a role in causing sensitization and respiratory reaction. Gloves should be worn, Nitrile rubber showed excellent resistance. Butyl rubber, neoprene and PVC are also effective.

ADDITIONAL PROTECTION:

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.

Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.):	Yellow liquid	Initial boiling point and boiling range:	572 °F (300 °C) @ 760 mmHg	Decomposes
Upper/lower flammability or explosive limits:	Not applicable	Flash point:	> 392 °F (200°C)	
Odor:	musty	Evaporation rate:	No test data available	
Odor threshold:	Not established	Flammability (solid, gas):	Not applicable	
Vapor density:	Not established	Vapor pressure:	Not established	

pH:	Not Applicable	Partition coefficient: n-octanol/water:	Reacts with water
Relative density (specific gravity):	1.09 – 1.12 g/cm ³ @ 25 °C (77 °F)	Auto-ignition temperature:	Not applicable
Freezing point:	No test data available	Decomposition temperature:	Not established
Solubility(ies):	Insoluble - Reacts slowly with water to liberate CO ₂ gas	Viscosity:	2500 – 4500 mPa.s. (25°C)

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY:

Contact with moisture, other materials that react with isocyanates, or temperatures above 350 °F (177 °C), may cause polymerization. Materials to avoid: Water, Amines, Strong bases, Alcohols, Metal compounds, strong oxidizers. Avoid moisture. Material reacts slowly with water, releasing carbon dioxide which can cause pressure buildup and rupture of closed containers. Elevated temperatures accelerate this reaction.

Avoid unintended contact with polyols.

CHEMICAL STABILITY:

This product is chemically stable under recommended storage conditions.

OTHER:

Hazardous decomposition products :

Decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition.

SECTION 11 TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:

Skin Contact
Inhalation
Eye Contact

Health Effects and Symptoms

Acute: Diisocyanate vapors or mist at concentrations above the TLV or PEL 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 hyper-reactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL 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.

Causes skin irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove. Contact with MDI can cause discoloration.

Causes 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.

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 TLV or PEL. 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 MDI 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.

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

Toxicity Data: based on components:

Toxicity data based on polymeric MDI (a mixture of monomers and higher molecular weight oligomers).

Acute Oral Toxicity

LD50: > 2000 mg/kg (rat, male/female)

Acute Inhalation Toxicity

LC50: 0.49 mg/l, 490, 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 (Category 4.)

Acute Dermal Toxicity

LD50: > 9400 mg/kg (rabbit, male/female) (OECD Test Guideline 402)

Skin Irritation

rabbit, Slightly irritating

Repeated Dose Toxicity

90 Days, inhalation: NOAEL: 1 mg/m³, (rat, Male/Female, 6 hrs/day 5 days/week)

Irritation to lungs and nasal cavity.

2 years, inhalation: NOAEL: 0.2, (rat, Male/Female, 6 hrs/day 5 days/week)

Irritation to lungs and nasal cavity.

Mutagenicity

Genetic Toxicity in Vitro:

Bacterial - gene mutation assay: negative (Salmonella typhimurium, Metabolic Activation: with/without)

Carcinogenicity

rat, Male/Female, inhalation, 2 Years, 6 hrs/day 5 days/week,

Polymeric MDI has been classified as IARC Group 3 ("Not classifiable as to its carcinogenicity to humans") (1999) indicating there is inadequate evidence available to describe the carcinogenic potential. Epidemiological studies found no association between isocyanates and cancer. In chronic exposure studies in rodents, pMDI produced tumors only at the highest exposure level of 6 mg/m³. This exposure level is significantly above the TLV for MDI (0.051 mg/m³). Based on the weight of the evidence, a determination of not classified for carcinogenicity is justified.

Developmental Toxicity/Teratogenicity

rat, female, inhalation, gestation days 6-15, 6 hrs/day, NOAEL (teratogenicity): 12 mg/m³, NOAEL (maternal): 4 mg/m³

No Teratogenic effects observed at doses tested., Fetotoxicity seen only with maternal toxicity.

Toxicity Data for 2,4'-Diphenylmethane Diisocyanate (MDI)

See data above for polymeric MDI.

Toxicity Data for 4,4'-Diphenylmethane Diisocyanate (MDI)

Acute Oral Toxicity

LD50: > 7616 mg/kg (rat) (OECD Test Guideline 401)

Acute Inhalation Toxicity

LC50: 0.368 mg/l, 4 h (rat, male) (OECD Test Guideline 403)

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. (Category 4)

Acute Dermal Toxicity

LD50: > 9400 mg/kg (rabbit, male/female) (OECD Test Guideline 402)

Studies of a comparable product.

Skin Irritation

rabbit, Draize Test, Slightly irritating

Human, irritating

Eye Irritation

rabbit, Draize, Moderately irritating

Human, irritating

Sensitization

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

Respiratory sensitization: positive (guinea pig)

Repeated Dose Toxicity

90 Days, inhalation: NOAEL: 0.3 mg/m³, (rat, Male/Female, 18 hrs/day, 5 days/week)

Irritation to lungs and nasal cavity.

(Human)

Irritation to lungs and nasal cavity.

Mutagenicity

Genetic Toxicity in Vitro:

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

Positive and negative results were reported. The use of certain solvents which rapidly hydrolyze diisocyanates is suspected of producing the positive mutagenicity results.

Genetic Toxicity in Vivo:

Micronucleus Assay: (mouse)

negative

Micronucleus test: negative (rat, male, Inhalative (exposure period: 3x1h/day over 3 weeks))

negative

Carcinogenicity

rat, Female, inhalation, 2 Years, 17 hrs/day, 5 days/week, negative

Other Relevant Toxicity Information

May cause irritation of respiratory tract.

Carcinogenicity:

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

An oral study in which high doses of TDI were reported to cause cancer in animals has been found to contain numerous deficiencies which compromise the validity of the study. TDI did not cause cancer in laboratory animals exposed by inhalation, the most likely route of exposure. Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m³) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

	List	Classification
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Carcinogenicity Classifications: Component		
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Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate	NTP	Anticipated carcinogen.
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IARC		Possibly carcinogenic to humans.; 2B
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Developmental Toxicity

Contains component(s) which did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother.

Reproductive Toxicity

In animal studies, TDI has been shown not to interfere with reproduction.

Genetic Toxicology

Genetic toxicity data on MDI are inconclusive. MDI was weakly positive in some in vitro studies; other in vitro studies were negative.

Animal mutagenicity studies were predominantly negative. Results of a Drosophila study were reported to be weakly positive; however, these positive findings are believed to be due to degradation of TDI in the solvent delivery vehicle. Animal genetic toxicity studies on TDI were negative. In vitro studies were inconclusive; in vitro studies were negative in some cases and positive in others.

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Data for Component: Toluene Diisocyanate, Methylenediphenyl Diisocyanate, Propyleneglycol, Copolymer

No relevant data found.

Data for Component: Methylenediphenyl diisocyanate (MDI)

The measured ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species. Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

Based on information for a similar material: LC50, Danio rerio (zebra fish), static test, 96 h: > 1,000 mg/l

Aquatic Invertebrate Acute Toxicity

Based on information for a similar material: EC50, Daphnia magna (Water flea), static test, 24 h: > 1,000 mg/l

Aquatic Plant Toxicity

Based on information for a similar material: NOEC, Desmodesmus subspicatus (green algae), static test, Growth rate inhibition, 72 h: 1,640 mg/l

Toxicity to Micro-organisms

Based on information for a similar material: EC50, activated sludge test (OECD 209), Respiration inhibition, 3 h: > 100 mg/l

Toxicity to Soil Dwelling Organisms

EC50, Eisenia fetida (earthworms), 14 d: > 1,000 mg/kg

Data for Component: 4,4' -Methylenediphenyl diisocyanate

The measured ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species. Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

Based on information for a similar material: LC50, Danio rerio (zebra fish), static test, 96 h: > 1,000 mg/l

Aquatic Invertebrate Acute Toxicity

Based on information for a similar material: EC50, Daphnia magna (Water flea), static test, 24 h: > 1,000 mg/l

Aquatic Plant Toxicity

Based on information for a similar material: NOEC, Desmodesmus subspicatus (green algae), static test, Growth rate inhibition, 72 h: 1,640 mg/l

Toxicity to Micro-organisms

Based on information for a similar material: EC50, activated sludge test (OECD 209), Respiration inhibition, 3 h: > 100 mg/l

Toxicity to Soil Dwelling Organisms

EC50, Eisenia fetida (earthworms), 14 d: > 1,000 mg/kg

Data for Component: Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: 133 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static test, 48 h: 12.5 mg/l

EC50, saltwater mysid Mysidopsis bahia, static test, 48 h: 18.3 mg/l

Aquatic Plant Toxicity

EC50, Skeletonema costatum, static test, 96 h: 3,230 mg/l

EC50, Chlorella vulgaris (Fresh water algae), static test, 96 h: 4,300 mg/l

Aquatic Invertebrates Chronic Toxicity Value

Daphnia magna (Water flea), static test, 21 d, number of offspring, NOEC: 1.1 mg/l, LOEC: 2.2 mg/l

Persistence and Degradability**Data for Component: Toluene Diisocyanate, Methylenediphenyl Diisocyanate, Propyleneglycol, Copolymer**

No relevant data found.

Data for Component: Methylenediphenyl diisocyanate (MDI)

In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.

OECD Biodegradation Tests: Based on information for a similar material: **Biodegradation**

0 %

Exposure Time

28 d

Method

OECD 302C Test

10 Day Window

Not applicable

SECTION 13 DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

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

TRANSPORTATION EMERGENCIES:

Contact should be made with **Beynon Sports at (410) 771-9473** or if for some reason there is no response, contact **CHEMTREC (800-424-9300)** when this product is unintentionally released from its container during its course of distribution, regardless of the amount released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having knowledge of the release.

LAND Transport USDOT: **Non-Regulated**

OCEAN Transport IMO / IMDG CODE: **Non-Regulated**

AIR Transport IATA: **Non-Regulated**

REPORTABLE QUANTITY (RQ): **MDI - 5000 lb (2270 kg)**
TDI – 100 lb. (45.4 kg)

Additional DOT Transportation Information: (reference 49 CFR 172.101 Appendix A)

*When in individual containers of more than the Product RQ, this material ships as **Regulated** as follows:*

UN NUMBER: UN3082

UN PROPER SHIPPING NAME: Environmentally Hazardous Substance, Liquid, N.O.S. (MDI, Toluene Diisocyanate)

HAZARD CLASS(ES) / LABEL: Class 9

PACKAGING GROUP: III

SECTION 15 REGULATORY INFORMATION

OSHA Hazcom Standard Rating: Hazardous

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

US. EPA CERCLA Hazardous Substances Components
(40 CFR 302): 4,4'-Diphenylmethane Diisocyanate (MDI)
Reportable quantity: 5000 lbs

SARA Section 311/312 Hazard Categories: Acute Health Hazard
Chronic Health Hazard
Reactive Hazard

SARA Title III Section 302 Extremely
Hazardous Substance none

SARA Title III Section 313 Toxic Chemicals Components
(40 CFR 372.65) – Supplier Notification 4,4'-Diphenylmethane Diisocyanate (MDI) CAS# 101-68-8
Required: Toluene diisocyanate mixture including: Toluene-2,4 Diisocyanate, Toluene-2,6-diisocyanate CAS# 26471-62-5

State Right-To-Know Information: 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>INGREDIENT</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION (%)</u>
4,4'-Diphenylmethane Diisocyanate MDI *	101-68-8	< 20 %
Toluene diisocyanate mixture including: Toluene-2,4 Diisocyanate, Toluene-2,6-diisocyanate	26471-62-5	< 0.2 %

California Prop. 65:

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Toluene diisocyanate mixture including: Toluene-2,4 Diisocyanate, Toluene-2,6-diisocyanate	26471-62-5	< 0.2 %
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SECTION 16 OTHER INFORMATION

Contact: Product Safety, BEYNON Sports Surfaces, Inc.
 Telephone: 410-771-9473
 Origination Date: 3/29/05
 Revision Date: 8/11/15
 Revision No.: 6

Information on this form is offered in good faith as typical values and not as a product specification. No warranty, either express or implied is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.