# SAFETY DATA SHEET

PB Bond

## Section 1. Identification

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| Product Identifier: | PB Bond, One Part Bonding Adhesive |
| Chemical family: | Aeromatic isocyanates |
| Synonyms | Diphenylmethane Disocynate |
| Product type: | Liquid |
| Recommended Use: | Join Precision Board Plus sheets to make them longer, wider, or thicker. |

**Manufacturer's Name & Address**
Coastal Enterprises Company
P.O. Box 4875
Orange, CA 92863-4875
Non- Emergency phone
(800) 845-0745

**Emergency Telephone Number (24/7)**

Chemtrec: (800) 424-9300

## Section 2. Hazards Identification

**Emergency Overview**

Contains dispenylmethane disocyanate (CAS No. 101-68-8) Inhalation MDI mists or vapors may cause respiratory irritation, breathlessness, chest discomfort, and reduced pulmonary function. Overexposure well above the PEL may result in bronchitis, bronchial spasms, and pulmonary edema. Long-term exposure to isocyanates has been reported to cause lung damage, including reduced lung function, which may be permanent. Acute or chronic overexposure to isocyanates may cause sensitization in some individuals resulting in allergic respiratory reactions including wheezing, shortness of breath and difficulty breathing.

**Potential Health Effects**

**Primary routes of exposure**
Routes of entry for solids and liquids include eye and skin contact, ingestion, and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

**Acute Toxicity: Information on MDI**
Of moderate toxicity after short-term inhalation. Virtually non-toxic after a single ingestion. Virtually non-toxic after a single skin contact. Inhalation of vapors may cause irritation of mucous membranes of the nose, throat, trachea, chest discomfort, difficult breathing, and reduced pulmonary function. Inhalation exposure well above the PEL may result additionally to eye irritation, headache, chemical bronchitis, asthma-like findings, or pulmonary edema. Isocyanates have also been report to cause hypersensitivity pneumonitis, which is characterized by flu-like

symptoms, the onset of which may delayed. Gastrointestinal symptoms include nausea, vomiting, and abdominal pain.

**Irritation:**
Irritating to eyes, respiratory system and skin.

**Assessment Other Acute Effects:**
Causes temporary irritation of the respiratory tract.

**Sensitization:**
The substance may cause sensitization of the respiratory tract. Sensitization after skin contact possible. Studies in animals suggest that dermal exposure may lead to pulmonary sensitization. As a result of repeated overexposure of a single dose, certain individuals will develop isocyanate sensitization (chemical asthma), which will cause them to react to a later exposure at levels below PEL/TLV. Symptoms which include chest tightness , wheezing, cough, shortness of breath, or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, and other irritants. This increase lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure of isocyanates has also been reported to cause lung damage, including a decrease in lung function, which may be permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material. or even as a result of vapor only exposure.

**Chronic Toxicity:**
**Carcinogenicity:** A carcinogenic potential cannot be excluded after long exposure to severely irritating concentrations. The effects are not relevant to humans at occupational levels of exposure.

**Repeated Dose Toxicity:** The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

**Reproductive Toxicity:** Repeated inhalation does not cause damage to reproductive organs.

**Teratogenicity:** No malformations in animal studies found, however high doses was toxic in the development of parental animals.

**Genotoxicity:** The substance was mutagenic in various bacterial test systems, however, these results could not be confirmed in tests with mammals.

**Aquatic Toxicity:** The product may hydrolyse. The test result maybe partially due degradation products. The product has not been tested. The statement has been derived from products of a similar structure or composition.

**Information of Isocyanates**
As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization. (chemical asthma) which will cause them to react to a later exposure of isocyanate at levels well below the PEL/TLV. These symptoms, which include chest tightness, wheezing, coughing, shortness of breath, or asthmatic attack could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses,

there are reports that once sensitized, an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. The increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanates has been reported to cause lung damage, including a decrease in lung function, which may be permanent. Sensitization may be either temporary or permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material, or even as a result of vapor-only exposure.

**Medical Conditions Aggravated by Overexposure**
The isocyanate component is a respiratory sensitizer. It may cause an allergic reaction leading to asthma like spasms of the bronchial tubes and difficulty in breathing. Person with history with respiratory disease or hypersensitivity should not be expose to the product. An animal study indicated that MDI may induce respiratory hypersensitivity following dermal exposure. Medical supervision of all employees who handle or come into contact with isocyanates is recommended. Pre-employment and periodic medical examinations with respiratory function tests (FEV,FVC as a minimum) are suggested. Persons with asthmatic conditions, chronic bronchitis, other chronic respiratory diseases, recurrent eczema or pulmonary sensitization should be excluded from working with isocyanates, further exposure is not recommended. Contact may aggravate pulmonary disorders.

## Section 3. Composition / Information on Ingredients

| CAS Number | Content (W/W) | Chemical Name |
|---|---|---|
| | <75.0 % | Isocyanate Polymer |
| 9016-87-9 | <10.0 % | P-MDI |
| 101-68-8 | <16.0 % | Diphenylmethane-4,4' disocyanate disocyanate (MDI) |
| 26447-40-5 | <1.0 % | MDI |

## Section 4. First-Aid Measures

**Description of Necessary First Aid Measures**

General advice: Remove contaminated clothing

Eye Contact: Immediately flush eyes with water for 15 minutes, lift upper and lower eyelids. Remove contact lenses. Get medical attention if irritation persists.

Inhalation: Move to an area that has plenty of fresh air. Rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin Contact: Flush contaminated skin with soap water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

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| Ingestion: | Wash out mouth with water. Seek fresh air and rest in a comfortable position for breathing. If material has been swallowed, drink small quantities of water. Do not induce vomiting. Get medical attention if symptoms occur. |

**Note to Physician**:

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| Hazards: | Symptoms can appear later |
| Antidote: | Specific antidotes or neutralizers to isocyanate do not exist |
| Treatment: | Treatment should be supportive and based on the judgement of the physician in response to the reaction of the patient. |

## Section 5. Fire-Fighting Measures

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| Flash point: | 200 $^{o}$c. open cup |
| Auto-ignition: | >470 $^{0}$c |
| Self-ignition temperature: | not self-igniting |
| Suitable extinguishing media: | water, dry extinguishing media, carbon dioxide, foam |
| Hazards during fire-fighting: | nitrous gases, fumes/smoke, isocyanate, vapor |
| Protective equipment for fire-fighting: | Firefighters should be equipped with self-contained breathing apparatus and turn-out gear. |

## Section 6. Accidental Release Measures

**Personal Precautions:**
Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

**Environmental Precautions:**
Do not discharge into drains/surface or waters/ground water.

**Cleanup:**
Dike spillage

For small amounts: Absorb isocyanate with suitable absorbent material (use 40 CFR, sections 260, 204, and 265 for further information). Shovel into open container. Do not make container pressure tight. Move container to a well-ventilated area (outside) Spill area can be decontaminated with the following recommended decontamination solution. Mixture of 90% water, 8% concentrated ammonia, 2% detergent. Add at a 10 to 1 ratio. Allow it to stand for at least 48 hours to allow escape of evolved carbon dioxide. For large amounts: If temporary control of isocyanate vapor is required, a blanket of protein foam or other suitable foam (available from most fire departments) may be placed over the spill. Transfer as much liquid as possible via pump or vacuum device into closed but not sealed containers for disposal. For residues: The following measures should be taken for final cleanup: Wash down spill area with decontamination solution. Allow solution to stand for at least 10 minutes.

## Section 7. Handling and Storage

**Handling**

**General Advice:**
Mix thoroughly before use. If bulging of drum occurs, transfer to well ventilated area, puncture to relieve pressure, open vent and let stand for 48 hours before resealing.

**Protection against fire and explosion:**
No explosion proofing necessary

**Storage:**

**General Advice:**
Formation of $CO_2$ and build up of pressure possible. Keep container tightly closed and in a well-ventilated place. Outage of containers should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture.

**Storage incompatibility:**
General: Segregate from bases.

**Storage Stability:**
Storage temperature 60-80 $^0$F. Protect against moisture

## Section 8. Exposure Controls / Personal Protection

**Components with Workplace Control Parameters**

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|---|---|---|
| Diphenylmethane-4,4'-diisocya Nate (MDI) | OSHA | CLY 0.02ppm 0.2 mg/m3 |
| | ACGIH | TWA Valve 0.005 ppm |

**Advice on System Design:**
Provide local exhaust ventilation to maintain recommended P.E.L

**Personal Protective Equipment**

**Respiratory Protection**
For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life and Health (IDLH), use NOISH-certified full face piece pressure demand self-contained breathing apparatus (SUBA) or a full face piece pressure demand supplied--air respirator (SAR) with escape provisions. When atmospheric levels may exceed the occupational exposure limit (PEL or TLV) NOISH-certified or air purifying respirators equipped with an organic vapor sorbent and particulate filter can be used as long as appropriate precautions and change out schedules are in place.

**Hand Protection**
Chemical resistant protective gloves. Suitable materials, chloroprene rubber (Neoprene), nitrile rubber (Buna N), chlorinated polyethylene, polyvinylchloride (Pylox), butyl rubber, fluoroelastomer (Viton)

**Eye Protection**
Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

**Body Protection**
Suitable materials, saran contact material

**General Safety and Hygiene Measures**
Wear protective clothing as necessary to prevent contact. Eye wash fountains and safety showers must be easily accessible. Observe the appropriate PEL valve. Wash soiled clothing immediately. Contaminated equipment or clothing should be cleaned after each use or disposed of.

## Section 9. Physical and Chemical Properties

Appearance

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| Physical state | Liquid | Vapor pressure | 0.00001 mmHg |
| Color | Amber | Vapor density | N/A |
| Odor | faintly aromatic | Density | 9.4 lb |
| Odor threshold | N/A | Solubility in water | React with water |
| pH | N/A | Partition coefficient | N/A |
| Melting point/Freezing | <-20 $^0$C | Auto-Ignition temp. | N/A |
| Boiling/condensation point | >200$^0$C | Decomposition temp | N/A |
| Flash point | N/A | Viscosity | 5,600 mPa.s |
| Evaporation rate | N/A | | |
| Flammability (solid, gas) | N/A | | |
| Lower and upper explosive (flammable) limits | N/A | | |

## Section 10. Stability and Reactivity

**Conditions to Avoid:**
Avoid moisture

**Substances to Avoid:**
Water, alcohols, strong bases, substances/products that react with isocyanates.

**Hazardous Reactions:**
This product is chemically stable:
Reacts with water, with formation of carbon dioxide. Risk of bursting. Reacts with alcohols. Reacts with acids. Reacts with alkalis. Reacts with amines. Risk of exothermic reaction. Risk of violent reaction. Risk of polymerization. Contact with rubbers and plastics can cause brittleness of the substance/product with subsequent loss in strength.

**Decomposition Products:**
Hazardous decomposition products: carbon monoxide, hydrogen cyanide, nitrogen oxides, aeromatic isocyanates, gases/vapors.

**Corrosion to Metals:**

No corrosive effect on metal.

### Thermal Decomposition:
>260 0C. No data available

### Oxidizing Properties: N/A

## Section 11. Toxicological Information

**Acute Toxicity**

**Oral:**
Information on: Diphenylmethane-4,4' diisocyanate (MDI)
Type of value: LD50
Species: rat (male/female)
Value: >2.000 mg/kg (Directive 84/449/EEC, B.1)

**Inhalation:**
Information on: Diphenylmethane-4,4' diisocyanate (MDI)
Type of value: LD10
Species: rat (male/female)
Value: >2.24 mg/f (Directive 84/449/EEC, B.1)
Exposure time: 1 hr. An aerosol was tested

**Dermal:**
Information on: Diphenylmethane-4,4' diisocyanate (MDI)
Type of value: LD50
Species: rabbit (male/female)
Value: >9.400 mg/kg

**Irritation / Corrosion: Skin / Eye**
Information on: Diphenylmethane-4,4' diisocyanate (MDI)
Species: rabbit (male/female)
Result: Irritating
Method: Draize test

**Sensitization:**
Information on: Diphenylmethane-4,4' diisocyanate (MDI)
Species: guinea pig/mouse/
Result: sensitizing
Method: Buehler test

**Repeated Dose Toxicity:**
Information on: Diphenylmethane-4,4' diisocyanate (MDI)
Species: rat (male/female)
NOAEL: 0.2 mg/m3
LOAEL: 1 mg/m3
This substance may cause damage to olfactory epithelium after repeated inhalation. Not relevant to humans at occupational levels of exposure.

**Genetic Toxicity:**
Information on: Diphenylmethane-4,4' diisocyanate (MDI)
OECD Guideline 471 Ames-test.
No clastogenic effect reported.

**Carcinogenicity:**
Experimental data
OECD Guideline 471 rat inhalation 0, 2, 1, mg/mm3
Result: Lung tumors A carcinogenic potential cannot be excluded. Not relevant to humans.

**Development:**
OECD Guideline 414 rat inhalation 0, 1, 4, 12 mg/mm3

NOAEL Mat: 4mg/m3
NOAEL Teratog: 4mg/m3
Result: This substance did not cause malformations in animal studies. Not relevant to humans.

**Aspiration Hazard:**
No hazard expected

## Section 12. Ecological Information

Information on: Diphenylmethane-4,4' diisocyanate (MDI)
Acute and prolonged toxicity to fish
OECD Guideline 203 static
zebra fish/LC0 (96 h): > 1,000mg/l

Information on: Diphenylmethane-4,4' diisocyanate (MDI)
Acute toxicity to aquatic invertebrates:
OECD Guideline 202 part 1 static
Daphnia magna/EC50 (24 h): > 1,000mg/l

**Degradability / Persistence**
**Biological / Degradation**
Test Method: OECD Guideline 302 (aerobic),activated sludge
Results: Poorly biodegradable. Unstable in water.

## Section 13. Disposal Considerations

**Waste Disposal of Substance:**
Incinerate or dispose of in a licensed facility.
Do not discharge substance/product into the sewer system.

**Container Disposal**
Drums:
Steel drums must be emptied and can be sent to a licensed drum re-conditioner for reuse, a scrap metal dealer, or an approved landfill. Refer to 40 CFR 261.7 (residues of hazardous waste in empty containers). Check with re-conditioner to determine if decontamination is required. Decontaminate containers prior to disposal. Recommend crushing, puncturing, or other means to prevent unauthorized use of used containers.

## Section 14. Transport Information

Reference Bill of Lading

## Section 15. Regulatory Information

Safety, health and environmental regulations specific for this product:

United States Regulations

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|---|---|
| TSCA 8(b) Inventory | Released / Listed |
| OSHA Hazard Category | Chronic target organ effects reported, ACGIH TLV established |

| CERCLA RQ | CAS Number | Chemical Name |
|---|---|---|
| 5000 lbs. | 101-68-8 | Diphenylmethane-4,4' diisocyanate (MDI) |

**State Regulations**

| RTK CAS Number | Chemical Name | State RTK |
|---|---|---|
| 9016-87-9 | P-MDI | NJ |
| 101-68-8 | Diphenylmethane-4,4' diisocyanate | MA, NJ, PA |

## Section 16. Other Information

Hazardous Material Information System (USA):

Health: 2 Flammability: 1 Physical Hazard: 1

HMIS uses a numbering scale ranging from 0 to 4 to indicate the degree of hazard. A value of zero means that the substance possesses essentially no hazard, a rating of 4 indicates a high hazard.

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