

# Franklin International

## Material Safety Data Sheet

Product name : Titebond Polyurethane Glue

### 1. Product and company identification

**Address** : Franklin International  
2020 Bruck Street  
Columbus OH 43207

**Contact person** : Franklin Technical Services

**Telephone** : (800) 877-4583

**Emergency phone:** : Franklin Security  
(614) 445-1300

**Product code** : 2300

**Date of revision** : 10/1/2008.

**Print date** : 10/15/2008.

**Chemtrec (24 Hour)** : (800) 424 - 9300

**Chemtrec International** : (703) 527 - 3887

**Chemical family** : Adhesive.

**Product use** : Adhesive

**Product type** : urethane

### 2. Hazards identification

**Physical state** : Liquid.

**Odor** : Faint odor. [Slight]

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Emergency overview** : WARNING!  
CAUSES SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.  
Irritating to skin. Moderately irritating to eyes. May cause sensitization by inhalation and skin contact. Do not breathe vapor or mist. Do not get on skin or clothing. Avoid contact with eyes. May cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

**Routes of entry** : Dermal contact. Eye contact. Inhalation. Ingestion.

**Potential acute health effects**

**Inhalation** : May cause sensitization by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

**Ingestion** : No known significant effects or critical hazards.

**Skin** : Irritating to skin. May cause sensitization by skin contact.

**Eyes** : Moderately irritating to eyes.

**Potential chronic health effects**

**Chronic effects** : May cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

## 2. Hazards identification

- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Target organs** : May cause damage to the following organs: lungs, upper respiratory tract, immune system, skin, eyes.  
Contains material which may cause damage to the following organs: eye, lens or cornea, nose/sinuses, throat.

### Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:  
wheezing and breathing difficulties  
asthma
- Ingestion** : No specific data.
- Skin** : Adverse symptoms may include the following:  
irritation  
redness
- Eyes** : Adverse symptoms may include the following:  
irritation  
watering  
redness
- Medical conditions aggravated by over-exposure** : Pre-existing respiratory and skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

## 3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
4,4'-methylenediphenyl diisocyanate	101-68-8	25 - 50

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

## 4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

## 5 . Fire-fighting measures

**Flammability of the product** : In a fire or if heated, a pressure increase will occur and the container may burst.

### Extinguishing media

**Suitable** : Use an extinguishing agent suitable for the surrounding fire.

**Not suitable** : None known.

**Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## 6 . Accidental release measures

**Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert material.

**Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## 7 . Handling and storage

**Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## 8 . Exposure controls/personal protection

Ingredient	Exposure limits
4,4'-methylenediphenyl diisocyanate	<p><b>ACGIH TLV (United States, 1/2007).</b> TWA: 0.005 ppm 8 hour(s).</p> <p><b>OSHA PEL 1989 (United States, 3/1989).</b> CEIL: 0.02 ppm CEIL: 0.2 mg/m<sup>3</sup></p> <p><b>NIOSH REL (United States, 12/2001).</b> TWA: 0.05 mg/m<sup>3</sup> 10 hour(s). TWA: 0.005 ppm 10 hour(s). CEIL: 0.2 mg/m<sup>3</sup> 10 minute(s). CEIL: 0.02 ppm 10 minute(s).</p> <p><b>OSHA PEL (United States, 11/2006).</b> CEIL: 0.02 ppm CEIL: 0.2 mg/m<sup>3</sup></p>

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

**Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

### Personal protection

**Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

**Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

## 9 . Physical and chemical properties

<b>Physical state</b>	: Liquid.
<b>Flash point</b>	: Closed cup: >93.3°C (>199.9°F) [Setaflash.]
<b>Color</b>	: Brown.
<b>Odor</b>	: Faint odor. [Slight]
<b>Relative density</b>	: 1.14
<b>VOC (less water, less exempt solvents)</b>	: 0 g/l
<b>Solubility</b>	: Insoluble in the following materials: cold water and hot water.

## 10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.
- Conditions to avoid** : No specific data.
- Materials to avoid** : No specific data.
- Incompatibility** : Highly reactive or incompatible with the following materials: moisture.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## 11 . Toxicological information

### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
4,4'-methylenediphenyl diisocyanate	LD50 Oral	Rat	9200 mg/kg	-

### Chronic toxicity

No known significant effects or critical hazards.

### Irritation/Corrosion

No known significant effects or critical hazards.

### Sensitizer

No known significant effects or critical hazards.

### Carcinogenicity

#### Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
4,4'-methylenediphenyl diisocyanate	-	3	-	-	-	-

### Mutagenicity

No known significant effects or critical hazards.

### Teratogenicity

No known significant effects or critical hazards.

### Reproductive toxicity

No known significant effects or critical hazards.

## 12 . Ecological information

**Environmental effects** : No known significant effects or critical hazards.

### Aquatic ecotoxicity

No known significant effects or critical hazards.

### Biodegradability

No known significant effects or critical hazards.

**Other adverse effects** : No known significant effects or critical hazards.

## 13 . Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## 13 . Disposal considerations

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

## 14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		-
TDG Classification	Not regulated.	-	-	-		-
Mexico Classification	Not regulated.	-	-	-		-
ADR/RID Class	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG\* : Packing group

## 15 . Regulatory information

### United States

#### HCS Classification

: Irritating material  
Sensitizing material  
Target organ effects

#### U.S. Federal regulations

: TSCA 8(a) PAIR: methylenediphenyl diisocyanate; 4,4'-methylenediphenyl diisocyanate  
**United States inventory (TSCA 8b):** All components are listed or exempted.  
TSCA 8(d) H and S data reporting: methylenediphenyl diisocyanate: 1990; Isocyanic acid, polymethylenepolyphenylene ester: 1990; 4,4'-methylenediphenyl diisocyanate: 1990

**SARA 302/304/311/312 extremely hazardous substances:** No products were found.

**SARA 302/304 emergency planning and notification:** No products were found.

**SARA 302/304/311/312 hazardous chemicals:** 4,4'-methylenediphenyl diisocyanate

**SARA 311/312 MSDS distribution - chemical inventory - hazard identification:** 4,4'-methylenediphenyl diisocyanate: Immediate (acute) health hazard, Delayed (chronic) health hazard

#### DEA List I Chemicals (Precursor Chemicals)

: Not listed

#### DEA List II Chemicals (Essential Chemicals)

: Not listed

### SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	4,4'-methylenediphenyl diisocyanate	101-68-8	25 - 50
	Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	10 - 25
Supplier notification	4,4'-methylenediphenyl diisocyanate	101-68-8	25 - 50
	Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	10 - 25

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

## 15 . Regulatory information

- State regulations**
- : **Massachusetts Spill:** None of the components are listed.
  - : **Massachusetts Substances:** The following components are listed: METHYLENE BISPHENYL ISOCYANATE (MDI)
  - : **New Jersey Hazardous Substances:** The following components are listed: METHYLENE BISPHENYL ISOCYANATE
  - : **New Jersey Spill:** None of the components are listed.
  - : **New Jersey Toxic Catastrophe Prevention Act:** None of the components are listed.
  - : **Pennsylvania RTK Hazardous Substances:** The following components are listed: BENZENE, 1,1'-METHYLENEBIS[4-ISOCYANATO-
- International regulations**
- International lists**
- : **Australia inventory (AICS):** All components are listed or exempted.
  - : **China inventory (IECSC):** All components are listed or exempted.
  - : **Japan inventory (ENCS):** All components are listed or exempted.
  - : **Japan inventory (ISHL):** Not determined.
  - : **Korea inventory (KECI):** All components are listed or exempted.
  - : **New Zealand Inventory of Chemicals (NZIoC):** All components are listed or exempted.
  - : **Philippines inventory (PICCS):** All components are listed or exempted.
- Chemical Weapons Convention List Schedule I Chemicals**
- : Not listed
- Chemical Weapons Convention List Schedule II Chemicals**
- : Not listed
- Chemical Weapons Convention List Schedule III Chemicals**
- : Not listed

## 16 . Other information

**Label requirements** : CAUSES SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

**Hazardous Material Information System (U.S.A.)** :

Health	*	2
Flammability		1
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

- Date of printing** : 10/15/2008.
- Date of issue** : 10/1/2008.
- Date of previous issue** : No previous validation.
- Version** : 1

Indicates information that has changed from previously issued version.

**Notice to reader**

## **16 . Other information**

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of 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.