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Material Safety Data Sheet

OlyBond500 Adhesive Fastener, Part 1 (Part A)

MSDS No. 305551

Date of Preparation: 07/20/07

Revision: 002

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: OlyBond500 Adhesive Fastener, Part 1 (Part A)
Chemical Formula: Polymethylene polyphenyl isocyanate
CAS Number: 9016-87-9
Other Designations: Versico OlyBond 500BA (Part A)
General Use: Insulation adhesive
Manufacturer: Versico, 1285 Ritner Highway, Carlisle, PA 17013, Phone: 800-992-7663
24-Hour Emergency Phone Number: CHEMTREC (USA) 800-424-9300

Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt or % vol
Polymethylene polyphenyl isocyanate	9016-87-9	50
4,4' Diphenylmethane Diisocyanate	101-68-8	50

Trace Impurities:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
Polymethylene polyphenyl isocyanate	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
4,4' Diphenylmethane Diisocyanate	0.02 ppm	0.02 ppm	0.005 ppm	none estab.	0.005 ppm 0.05 mg/m ³	0.020 ppm 0.2 mg/m ³	75 mg/m ³

Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

HMIS
H 3
F 1
R 1
PPE†
 †Sec. 8

Potential Health Effects

Primary Entry Routes: Inhalation, skin contact, eye contact, ingestion

Target Organs: Nose, throat, lungs

Acute Effects

Inhalation: At room temperature, MDI vapors are minimal due to low vapor pressure. However, heating, spraying, foaming, or otherwise mechanically dispersing (drumming, venting or pumping) operations may generate vapor or aerosol concentrations sufficient to cause irritation or other adverse effects. Excessive exposure may cause irritation of the eyes, upper respiratory tract and lungs. Severe overexposure may lead to pulmonary edema. May cause respiratory sensitization with asthma-like symptoms in susceptible individuals. MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized. Symptoms may include coughing, dryness of throat, headache, nausea, difficulty breathing and a feeling of tightness in the chest. Effects may be delayed. Impaired lung function (decreased ventilator capacity) has been associated with overexposure to isocyanates. *Persons with known respiratory or allergy problems must not be exposed to this product.*

Eye: As a liquid or dust, may cause irritation, inflammation, and/or damage to sensitive eye tissue. Symptoms include watering or discomfort of the eyes. Corneal injury is unlikely.

Skin: No irritation is likely to develop following short contact periods with skin. Prolonged or repeated exposure can cause skin irritation, reddening, dermatitis, and in some individuals, sensitization. Skin contact may result in allergic skin reactions or respiratory sensitization, but is not expected to result in absorption of amounts sufficient to cause other adverse effects. May stain skin.

Ingestion: Single dose oral toxicity is considered to be extremely low. Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract.

Carcinogenicity: MDI and Polymeric MDI are not listed by the NTP, IARC or regulated by OSHA as carcinogens. Lung tumors have been observed in laboratory animals exposed to aerosol droplets 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.

Medical Conditions Aggravated by Long-Term Exposure:

Chronic Effects: As a result of previous repeated over-exposures or a single large dose, certain individuals develop isocyanate sensitization (chemical asthma) or tissue injury in the upper respiratory tract. Animal tests indicate skin contact alone may also lead to allergic respiratory reaction. These effects may be permanent. Any person developing asthmatic reaction or other sensitization should be removed from further exposure.

Section 4 - First Aid Measures

Inhalation: Move victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility immediately.

Eye Contact: Flush eyes with water for at least 15 minutes. Materials containing MDI may react with the moisture of the eye forming a thick material, which may be difficult to wash from the eyes. Seek medical attention.

Skin Contact: Wash off with flowing warm water or shower with soap. Remove and wash contaminated clothing and discard contaminated shoes. If redness, itching or a burning sensation develops or persists after the area has been washed, consult a physician.

Ingestion: If swallowed, drink 1 or 2 glasses of water or milk. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Seek medical attention.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians:

Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision.

Skin: This compound is a known skin sensitizer. Treat symptomatically for contact dermatitis or thermal burns. If burned, treat as a thermal burn.

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

Inhalation: Isocyanates are known pulmonary sensitizers. Treatment is essentially symptomatic. An individual having a skin or pulmonary sensitization reaction to this material should be removed from exposure to any isocyanate compound.

There is no antidote to counteract the effects of MDI. Care should be supportive and treatment should be based on the judgment of the physician in response to the action of the patient

Section 5 - Fire-Fighting Measures

Flash Point: 428°F (220°C)

Flash Point Method: COC

Burning Rate: NDA

Autoignition Temperature: NDA

LEL: NDA Toxic fumes are released in fire situations.

UEL: NDA Toxic fumes are released in fire situations.

Flammability Classification: NFPA Combustible Class III B

Extinguishing Media: Use dry chemical, foam, carbon dioxide, or halogenated agents. If water is used, use very large quantities. The reaction between water and hot isocyanate may be vigorous. If possible, contain fire run-off water.

Unusual Fire or Explosion Hazards: At temperatures greater than 400°F, polymeric MDI can polymerize and decompose which will cause pressure build-up in closed containers. Explosive rupture is possible. Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure buildup may rupture the containers. Downwind personnel must be evacuated.

Hazardous Combustion Products: Isocyanate vapor and mist, carbon dioxide, carbon monoxide, nitrogen oxides and traces of hydrogen cyanide.

Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Wear full protective clothing.



Section 6 - Accidental Release Measures

Spill /Leak Procedures: Evacuate spill area. With adequate ventilation and appropriate personal protective equipment, cover the area with an inert absorbent material such as clay or vermiculite and transfer to metal waste containers. Saturate with water or decontamination solution below, but do not seal the container with the isocyanate mixture. Larger quantities of liquid may be

Revision: 002

OlyBond500 Adhesive Fastener, Part 1 (Part A)

MSDS No. 305551

transferred directly to drums for disposal. Decontaminate or discard all clean-up equipment. Treat large and small spills in a similar manner.

NOTE: ISOCYANATES WILL REACT WITH WATER AND GENERATE CARBON DIOXIDE. THIS COULD RESULT IN THE RUPTURE OF ANY CLOSED CONTAINERS.

Disposal: Any disposal practice must be in compliance with all federal, state and local laws and regulations. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Waste characterization and disposal compliance are the responsibility solely of the party generating the waste or deciding to discard or dispose of the material. Product as sold is not a RCRA hazardous waste when disposed.

Do not allow material to enter sewers, bodies of water, or contact the ground. Refer to RCRA 40 CFR 261, and/or any other appropriate federal, state or local requirements for proper classification information.

Containment: For large spills, dike far ahead of liquid spill for later disposal.

Cleanup: The area should then be flushed with a decontamination solution. The decontamination solution is a 5-10% mixture of sodium carbonate and 0.5% liquid detergent in water solution or a 3-8% concentrated ammonium hydroxide and 0.5% liquid detergent in water. Use 10 parts decontamination solution to 1 part spilled material. If the ammonium hydroxide solution is used, ammonia will evolve as a vapor. Use caution to avoid exposure to high concentrations of ammonia. Allow to stand for 48 hours letting evolved carbon dioxide escape.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Use personal protective equipment when transferring material to or from drums, totes or other containers. Safety glasses and gloves are the minimum protection. Additional precautions must be used when splash hazards are present. The reaction of polyols and isocyanates generates heat. Contact of the reacting materials with skin or eyes can cause severe burns and may be difficult to remove from the affected areas. Immediately wash affected areas with plenty of water and seek medical attention. In addition, such contact increases the risk of exposure to isocyanate vapors. Do not smoke or use naked lights, open flames, space heaters, or other ignition sources near pouring, frothing or spraying operations.

Storage Requirements: When stored between 15°C and 30°C (60°F and 85°F) in sealed containers, typical shelf life is six months or more from the date of manufacture. Consult technical data sheet for shelf life requirements affecting performance quality. Should freezing occur, the material must be thawed thoroughly and mixed until uniform. Opened containers must be handled to prevent moisture pickup.

Special Emphasis for Spray Applications: Inspect the application area for potential exposure other persons or for over-spray to drift onto buildings, vehicles or other property. When spraying building exteriors, persons entering or exiting the building as well as those inside could be exposed to polyisocyanates due to wind conditions, open windows or air intakes. Do not begin application work until these potential problems have been corrected.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls:

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source. MDI has a very low vapor pressure at room temperature. General/local ventilation typically control exposure levels very adequately. Uses requiring heating and/or spraying may require more aggressive engineering controls or personal protective equipment. Monitoring is required to determine engineering controls.

Administrative Controls:

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate personal protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear self-contained breathing apparatus. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

A supplied air, full face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold values. A positive pressure self contained breathing apparatus can be used in emergencies or other unusual situations. All equipment must be NISOH/MSHA approved and maintained.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear clothing, boots and gloves impervious to MDI under conditions of use. Materials may include butyl rubber, nitrile rubber, neoprene and Saranex coated Tyvek. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with, contact lenses. Chemical splash goggles or safety glasses or full face mask must be used consistent with splash hazard present. If vapor exposure causes eye discomfort, use a full face piece respirator or supplied air hood.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

MSDS No. 305551

OlyBond500 Adhesive Fastener, Part 1 (Part A)

Revision: 002

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance and Odor: Dark brown, viscous, pungent

Vapor Pressure: <0.00001 mm Hg at 68 °F (20°C)

Specific Gravity (H₂O=1, at 4 °C): 1.23 at 25°C

pH: Reacts with water

Water Solubility: Not soluble, reacts

Boiling Point: 406°F, 207°C (5mmHg)

Viscosity: 225cps

VOC (gpl): Negligible

Section 10 - Stability and Reactivity

Stability: Material is stable when stored in sealed containers under normal conditions.

Polymerization: May occur with incompatible reactants, especially strong bases, water or temperature over 320°F (160°C).

Possible evolution of carbon dioxide gas from overheating or exposure to contaminants may rupture closed containers.

Chemical Incompatibilities: Reacts with water, acids, bases, alcohols, and metal compounds. The reaction with water is very slow under 120°F (50°C), but is accelerated at higher temperatures and in the presence of alkalis, tertiary amines and metal compounds. Some reactions can be vigorous or even violent. Incompatible or can react with acids, bases, or oxidizers

Conditions to Avoid: Polyisocyanates are highly reactive chemicals and should be handled and stored in a way to avoid exposure to many common substances, including water and moisture. Avoid extended exposure over 110°F (45°C).

Hazardous Decomposition Products: Isocyanate vapor and mist, carbon dioxide, carbon monoxide, nitrogen oxides and traces of hydrogen cyanide.

Section 11- Toxicological Information

Toxicity Data: No Information Available

Eye Effects: The aerosol, vapor or liquid will irritate human eyes following contact.

Acute Inhalation Effects:

Rat, inhalation, TC_{L6}: 490 mg/m³ per 4 hours (respirable aerosol)

Skin Effects: Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization. Animal studies have shown that respiratory sensitization can be induced by skin contact with known respiratory sensitizers including diisocyanates. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

Acute Oral Effects:

Rat, oral, LD50: >5000 mg/kg

Chronic Effects: A study where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol. Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different from controls. Only at the top level (6 mg/m³), there was a significant incidence of a benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). There were no lung tumors at 1 mg/m³. The increased incidence of lung tumors is associated with prolonged respiratory irritation and concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

Carcinogenicity: The ingredients of this product are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.

Mutagenicity: There is no substantial evidence of mutagenic potential.

Teratogenicity: No data available

Section 12 - Ecological Information

Ecotoxicity: Not established

Environmental Fate: Not established

Environmental Degradation: Not established

Soil Absorption/Mobility: Not established

Comment [EP1]: Page: 3

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable federal, state, and local regulations. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Waste characterization and disposal compliance are the sole responsibility of the party generating the waste or deciding to discard or dispose of the material. Product as sold is not a RCRA hazardous waste when disposed.

Do not allow material to enter sewers, bodies of water, or contact the ground. Refer to RCRA 40 CFR 261 and/or any other appropriate federal, state or local requirements for proper classification information.

Container Cleaning and Disposal: Treat or dispose of waste material in accordance with all local, state/provincial and national requirements.

Section 14 - Transport Information**DOT Transportation Data (49 CFR 172.101):**

Shipping Name: Not Regulated	Packaging Authorizations	Quantity Limitations
Shipping Symbols: N/A	a) Exceptions: N/A	a) Passenger, Aircraft, or Railcar: N/A
Hazard Class: N/A	b) Non-bulk Packaging: N/A	b) Cargo Aircraft Only: N/A
ID No.:	c) Bulk Packaging: N/A	
Packing Group: N/A		Vessel Stowage Requirements
Label: N/A		a) Vessel Stowage: N/A
Special Provisions (172.102):		b) Other: N/A

Section 15 - Regulatory Information**EPA Regulations:**

RCRA Hazardous Waste Number: Not listed (40 CFR 261.33)

RCRA Hazardous Waste Classification (40 CFR 261.11): MDI is not listed as a hazardous waste. However, under RCRA, it is the responsibility of the user of products to determine, at any time of disposal, whether a product meets any of the criteria for hazardous waste.

CERCLA Hazardous Substance (40 CFR 302.4) listed/unlisted specific per RCRA, Sec. 3001; CWA, Sec. 311 (b)(4); CWA, Sec. 307(a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ),

4,4' Diphenylmethane diisocyanate = 5,000 lbs

SARA 311/312 Codes:

Immediate Health Hazard, Delayed Health Hazard, Reactive Hazard

SARA 313 Toxic Chemical (40 CFR 372.65):

Polymethylene polyphenyl isocyanate CAS Number: 9016-87-9 100%

Methylenebis (phenylisocyanate) (MDI) CAS Number: 101-68-8 ca 50%

SARA 302 EHS (Extremely Hazardous Substance) (40 CFR 355):

Not listed, Threshold Planning Quantity (TPQ)

TSCA Status

On the TSCA inventory

OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed

OSHA This product is hazardous under the criteria of the Federal OSHA Communication Standard (29CFR 1910.1200)

State Regulations:**California Proposition 65:**

This product contains the following chemical(s) known to the state of California to cause birth defects or other reproductive harm: None

Delaware Air Quality Management List

<u>Chemical Name</u>	<u>CAS Number</u>	<u>DRQ</u>
Methylenebis(phenylisocyanate)	101-68-8	5000
Note: Must be reported to the DRQ		
Polymeric diphenylmethane diisocyanate	9016-87-9	100

MSDS No. 305551

OlyBond500 Adhesive Fastener, Part 1 (Part A)

Revision: 002

Note: Does not agree with the federal reportable quantity requirements to report

Florida Toxic Substances List:

<u>Chemical Name</u>	<u>CAS Number</u>
Diphenylmethane diisocyanate	101-68-8
Methylene bisphenyl isocyanate	101-68-8

Massachusetts Hazardous Substance List

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Code</u>
Methylene bisphenyl isocyanate	101-68-8	2, 4, F8, F9

Minnesota Hazardous Substance List

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Codes</u>	<u>Hazards</u>	<u>Carcinogen</u>
Diphenylmethane diisocyanate	101-68-8	ANO	--	False
Methylene bisphenyl isocyanate	101-68-8	ANO	--	False

New York List of Hazardous Substances

<u>Chemical Name</u>	<u>CAS Number</u>	<u>RQ Air</u>	<u>RQ Land</u>	<u>Note</u>
Methylene bisphenyl isocyanate	101-68-8	1	1	--

Pennsylvania Hazardous Substances List

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Code</u>
1,1'-methylenebis[4-isocyanato] benzene	101-68-8	Environmental Hazard

Washington Permissible Exposure Limits for Air Contaminants

Methylene bisphenyl isocyanate		
Ceiling	0.02 ppm	0.2 mg/m ³

Section 16 - Other Information

Prepared By: Research and Development

Revision Notes: Added VOC content to Section 9.

Additional Hazard Rating Systems:

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