

# MATERIAL SAFETY DATA SHEET

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## HMIS HAZARD RATING

HEALTH	3
FIRE	1
REACTIVITY	1
PERSONAL PROTECTION	B

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By: M. Hogan

## SECTION I: PRODUCT IDENTIFICATION

Product Name: **AIT 3402B**  
Chemical Family: Diphenyl methane diisocyanate (MDI)  
Material Usage: Catalyst

## SECTION II: HAZARDOUS INGREDIENTS

<u>Component</u>	<u>Wt %</u>	<u>Recommended Exposure Limits (TWA)</u>
Diphenylmethane diisocyanate, CAS #026447-40-5 Containing Methylene bisphenyl Isocyanate, CAS #000101-68-8	45-52  40-49	ACGIH TLV: 0.005 ppm (TWA) OSHA PEL: 0.02 ppm (Ceiling)
MDI Homopolymer, CAS # 039310-05-9	12-20	ACGIH TLV: 0.005 ppm (TWA) OSHA PEL: 0.02 ppm (Ceiling)
Diisononyl Phthalate CAS #28553-12-0	5-10	None Established (5 mg/m <sup>3</sup> suggested)

## SECTION III: HEALTH HAZARD INFORMATION

**ROUTE (S) OF ENTRY:** Inhalation, skin contact, eye contact.

### HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

**ACUTE INHALATION:** At room temperature vapors are minimal due to low vapor pressure. At elevated temperatures excessive exposure might cause irritation of the eyes, upper respiratory tract, and lungs. May cause respiratory sensitization in susceptible individuals.

**CHRONIC INHALATION:** 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 to isocyanate at levels well below the TLV. These 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 or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanates has also been reported to cause lung damage, including decrease in lung function, which may be permanent. Sensitization may be either temporary or permanent.

**ACUTE SKIN CONTACT:** Isocyanates react with skin protein and moisture and can cause irritation. Symptoms of skin irritation may be reddening, swelling, rash, scaling or blistering. Some persons may develop skin sensitization from skin contact. Cured material is difficult to remove.

**CHRONIC SKIN CONTACT:** Prolonged contact with the isocyanate 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.

**ACUTE EYE CONTACT:** Liquid, aerosols and vapors of this product are irritating and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes.

**CHRONIC EYE CONTACT:** None found.

**ACUTE INGESTION:** Single dose oral toxicity is considered to be extremely low. No hazards anticipated from swallowing small amounts incidental to normal handling operations.

**CHRONIC INGESTION:** None found.

**CARCINOGENICITY:**  
NTP - Not Listed  
IARC - Not Listed  
OSHA - Not Regulated

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Asthma and other respiratory disorders (bronchitis, emphysema, and hyperactivity) skin allergies, eczema.

**EXPOSURE LIMITS:** Not established for product as a whole.

## SECTION IV: FIRST AID PROCEDURES

Keep victim quiet and maintain normal body temperature. Effects may be delayed; keep victim under observation.

**Inhalation:** Move victim to fresh air and call emergency medical care. If not breathing, give artificial respiration; if breathing is difficult, give oxygen. Call a physician.

**Eyes:** In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Seek immediate medical attention. Due to high viscosity, this material may be difficult to remove from the eyes.

**Skin:** In case of contact with material, immediately flush skin with running water for at least 15 minutes. Speed in removing material from skin is of extreme importance. Remove and isolate contaminated clothing and shoes at the site.

**Ingestion:** DO NOT INDUCE VOMITING. Consult a physician. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.

**Note to Physician:** Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation frequently. Workplace vapors could produce reversible corneal epithelial edema impairing vision. Skin: This product is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the product. Inhalation: This product is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material must be removed from any further exposure to any isocyanate.

## SECTION V: FIRE AND EXPLOSION HAZARD DATA

**Flash Point (Method):** >350°F (PMCC)

**Explosive Limits:** LEL = Not Determined UEL = Not Determined

**EXTINGUISHING MEDIA:** Carbon dioxide, dry chemical, or regular foam. If water is used, it should be used in very large quantity. The reaction between water and hot isocyanate may be vigorous.

**Special Firefighting Protection/Emergency Action:** Fire may produce irritating or poisonous gases. Positive pressure self-

contained breathing apparatus (SCBA) and chemical protective clothing may be worn. Structural firefighters' protective clothing is not effective. Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas.

**Unusual Fire/Explosion Hazards:** Some of these materials may burn, but none of them ignites readily. Container may explode violently in heat of fire.

**Products of Combustion:** Carbon monoxide, carbon dioxide, nitrogen oxides, ammonia, and trace amounts of hydrogen cyanide.

## SECTION VI: SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

**Steps To Be Taken In Case Material Is Released or Spilled:** Do not touch or walk through spilled material; stop leak if you can do it without risk. Fully-encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire. Use water spray to reduce vapors (see Section 5).

**Small Spills:** Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

**Large Spills:** Dike far ahead of liquid spill for later disposal.

**CAUTION:** Do not reseal contaminated containers as pressure build-up may rupture them.

## SECTION VII: SAFE HANDLING INFORMATION

**Precautions To Be Taken In Handling/Storage:** Store in cool, well-ventilated area. Keep away from flames, sparks or hot surfaces. Never use a torch to cut or weld on or near container. Empty containers can contain explosive vapors.

**Other Precautions:** Never wear contaminated clothing. Launder or dry clean before wearing. Discard oil-soaked shoes. Wash thoroughly with soap and water (waterless hand cleaner may be helpful in removing residues) after use and before smoking or eating. Avoid excessive skin contact.

## SECTION VIII: EXPOSURE CONTROLS

**REQUIRED WORK/HYGIENE PROCEDURES:** Precautions must be taken so that persons handling this product do not breathe the vapors or have it contact the eyes or skin. In spray operations, protection must be afforded against exposure to both vapor and spray mist.

**EYE PROTECTION REQUIREMENTS:** Safety glasses, splash goggles or face shield. Contact lenses should not be worn.

**SKIN PROTECTION REQUIREMENTS:** Chemical resistant gloves. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area protected only by the cream to a minimum.

**RESPIRATOR REQUIREMENTS:** A respirator that is recommended or approved for use in isocyanate containing environments (air purifying or fresh air supplied) may be necessary. Consider type of application and environment concentrations. Observe OSHA regulations for respirator uses (29 CFR 1910.134). **NOTE ON ODOR WARNING PROPERTIES:** Pure isocyanate materials have odor thresholds that are higher than the TLV or PEL. Thus, if a vapor/particulate air-purifying respirator has exceeded its service life, breakthrough of the filter can result in exposure over the allowable limit without the wearer being able to smell the isocyanate. However, when a polyurethane coating system contains organic solvents; the wearer of a vapor particulate respirator will be warned of filter breakthrough by the odor of solvents before being exposed to isocyanates because: (1) organic solvents have low odor thresholds, and (2) testing has demonstrated that solvents break through filters before isocyanates do.

**VENTILATION REQUIREMENTS:** Exhaust ventilation, sufficient to keep the airborne concentrations of HDI and polyisocyanate below their respective TLV and manufacturer's guide level, must be utilized. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

**MONITORING:** Refer to *Pally's Industrial Hygiene and Toxicology*, Volume 1 (Third Edition), Chapter 17 and Volume III (First Edition), Chapter 3, for guidance concerning appropriate air sampling strategy to determine airborne concentrations.

**MEDICAL SURVEILLANCE:** Medical supervision of all employees who handle or come in contact with this product is recommended. This should include pre-employment and periodic medical examinations with respiratory function tests (FEV<sub>1</sub>, FVC as a minimum). Persons with asthma-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to an isocyanate, no further exposure can be permitted.

**ADDITIONAL PROTECTIVE MEASURES:** Safety showers and eyewash stations should be available. Educate and train employees in safe use of product. Follow all label instructions.

## SECTION IV: REACTIVITY HAZARD DATA

**Stability:** This product will react with water to generate CO<sub>2</sub> gas, which could rupture sealed containers. Reaction is accelerated above 120 °F.

**Incompatibility:** All forms of water, alcohol, bases, acid, metal compounds and surface-active materials.

**Hazardous Decomposition Products:** Carbon monoxide, Carbon Dioxide, oxides of nitrogen, traces of hydrogen cyanide, isocyanate vapor and mist.

**Hazardous Polymerization:** May occur with strong bases, water and/or temperatures above 160 °F.

**Conditions to Avoid:** Contamination by moisture (store under -40 °F dew point air or nitrogen) or other materials that react with isocyanates. Contaminated containers should be left vented and moved to a safe area for neutralization and proper disposal.

## SECTION X: PHYSICAL AND CHEMICAL PROPERTIES

Color:	Black
Appearance:	liquid
Odor:	Not Applicable
Boiling Point (initial):	597 °F (decomposes)
Evaporation Rate (n-Butyl Acetate=1):	Negligible
Vapor Pressure (mmHg @ 25 °C):	Negligible
Solubility in Water:	Reacts with water
Specific Gravity:	1.20
pH:	Not Applicable
Percent Volatile by Volume:	Negligible

## SECTION XI: DISPOSAL CONSIDERATIONS

**Waste Disposal Methods:** Dispose of in accordance with state, local and federal regulations. Materials may become a hazardous waste through use.

## SECTION XII: REGULATORY INFORMATION

VOLATILE ORGANIC CONTENT: (Calculated Values)

VOC per Liter:	0 g/l
VOC per Liter Minus Exempt Solvents & Water:	0 g/l
EPA HAZARDOUS WASTE NUMBER(S) (40 CFR PART 261):	NONE
EPA HAZARD CATEGORY (40 CFR PART 370):	IMMEDIATE (ACUTE) DELAYED (CHRONIC) REACTIVE

**SARA TITLE III:**

This product contains the following TOXIC CHEMICALS subject to the Reporting Requirements of Sec. 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and of 40 CFR Part 372:

Chemical	CAS No.	Wt%
Methylene bis(phenylisocyanate)	000101-68-8	45-55

This product contains the following EXTREMELY HAZARDOUS SUBSTANCE(S) subject to Emergency Planning Requirements under Sec. 301-303 (40 CFR Parts 300 and 355) and Emergency Release Notification Requirements under Sec. 304:

Chemical	CAS No.	Wt %	RQ/TPQ Lbs
NONE			

(CERCLA LIST) This product contains the following HAZARDOUS SUBSTANCE(S) subject to Emergency Release Notification Requirements under Sec. 304 (40CFR Part 302):

Chemical	CAS No.	Wt %	Final RQ Lbs
NONE			

CALIFORNIA PROPOSITION 65 This product may contain trace quantities of the following chemicals that are identified by the State of California under the Safe Drinking Water and Toxic Reinforcement Act of 1986 ("Proposition 65") as either a carcinogenic or reproductive hazard:

Chemical	CAS No.	Estimated Concentration %
NONE		

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