SAFETY DATA SHEET
PMDI-ISO

SECTION 1: Identification

Product Name(s): **PMDI-ISO**

Chemical Name: Diphenylmethane Diisocyanate (MDI)
(A-COMPONENT)

COMPONENT A

Recommended Use: Component of an AMBIT Spray-Applied Polyurethane System.

Restrictions on Use: For Industrial Use Only.

Distributed by: AMBIT Polyurethane
2925 Galleria Drive · Arlington, TX 76011
Phone: (817) 677-1200
Email: Info@AmbitPU.com · Website: www.AmbitPU.com

Emergency Contact: For Chemical Emergency (spill, leak, fire, exposure or incident) within the US or Canada call CHEMTREC (800) 424-9300.

SECTION 2: Hazards Identification

GHS Classification ***(In accordance with 29 CFR 1910.1200)***

Acute Toxicity (Inhalation):	Category 4
Skin Irritation:	Category 2
Eye Irritation:	Category 2B
Respiratory Sensitization:	Category 1
Skin Sensitization:	Category 1
Specific Target Organ Toxicity – Single Exposure:	Category 3 (Respiratory System)

GHS Label Elements

Hazard Pictograms:

GHS07
Harmful

GHS08
Health Hazard

Signal Word: DANGER

Hazard Statements:
H315 + H320 Causes skin and eye irritation.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.

Precautionary Statements:
PREVENTION:
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves.
P285 In case of inadequate ventilation, wear respiratory protection.
RESPONSE:
P302 + P352 If on skin, wash with plenty of soap and water.
P304 + P340 + P312 If inhaled, remove person to fresh air and keep comfortable for breathing. Call Poison Control Center/doctor if you feel unwell.
P305 + P351 + P338 If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
P333 + P313 If skin irritation or rash occurs, get medical advice/attention.
P337 + P313 If eye irritation persists, get medical advice/attention.
P342 + P311 If experiencing respiratory symptoms, call Poison Control Center/doctor.
P362 Take off contaminated clothing and wash before reuse.
STORAGE:
P403 + P233 Store in well-ventilated place. Keep container tightly closed.
P405 Store locked up.
DISPOSAL:
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other Hazards: None known.

Section 3: Composition/Information on Ingredients

Substance/Mixture: Substance

Hazardous Components

Chemical Name	CAS #	Concentration (%)
Diphenylmethanediisocyanate	9016-87-9	50-70
4,4' – methylenediphenyl diisocyanate	101-68-8	30-50

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

Section 4: First-Aid Measures

General Advice: Move out of dangerous area. Do not leave the victim unattended. Consult a physician. Show this safety data sheet to the doctor in attendance.

If Inhaled: If breathed in, move person into fresh air. Call a physician or poison control center immediately. Keep patient warm and at rest. Keep respiratory tract clear. If breathing is difficult, give oxygen. If breathing is irregular or stopped, administer artificial respiration. If unconscious, place in recovery position and seek medical advice. Consult a physician immediately if symptoms such as shortness of breath or asthma are observed. A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitized persons. LC50 (rat): ca. 490mg/m^3 (4 hours): using experimentally produced respirable aerosol having aerodynamic diameter <5 microns.

In case of Skin Contact: In case of skin contact, immediately flush skin with soap and plenty of water. Take of contaminated clothing and shoes immediately. Wash contaminated clothing before reuse. Thoroughly clean shoes before reuse. Call a physician if irritation develops or persists. An MDI study has demonstrated that a polyglycol-based skin cleanser (such as D-TamTM, PEG-400) or corn oil may be more effective than soap and water.

In case of Eye Contact: Rinse immediately with plenty of water, also under the eyelids for at least 15 minutes. If easy to do, remove contact lens, if worn. Protect unharmed eye. Keep eye wide open while rinsing If eye irritation persists, consult a specialist.

If Swallowed:	Gently wipe or rinse the inside of the mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Keep respiratory tract clear. Keep at rest. If a person vomits when lying on his/her back, place him/her in the recovery position. Never give anything by mouth to an unconscious person. Take victim immediately to hospital. If symptoms persist, call a physician.
Most Important Symptoms and Effects, both Acute and Delayed	Severe allergic skin reactions, bronchiospasm and anaphylactic shock. This product is a respiratory irritant and potential respiratory sensitizer: repeated inhalation of vapor or aerosol at levels above the occupational exposure limit could cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons.
Protection of First-Aiders:	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. 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.
Notes to Physician:	Symptomatic and supportive therapy as needed. Following severe exposure medial follow-up should be monitored for at least 48 hours. The first-aid procedure should be established in consultation with the doctor responsible for industrial medicine.

Section 5: Firefighting Measures

Suitable Extinguishing Media:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Foam, Carbon dioxide (CO_2), Dry powder.
Unsuitable Extinguishing Media:	Water may be used if no other is available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous.
Specific Hazards During Firefighting:	Do not allow run-off from firefighting to enter drains or water courses. The pressure in sealed containers can increase under the influence of heat. Exposure to decomposition products may be a hazard to health.
Hazardous Combustion Products:	Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500˚C), aniline is suspected of being formed.
Specific Extinguishing Methods:	Cool containers/tanks with water spray.
Further Information:	Standard procedure for chemical fires. Due to reaction with water producing CO_2 – gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Prevent fire extinguishing water from contaminating surface water or the ground water system. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special Protective Equipment for Firefighters:	Wear an approved positive pressure self-contained breathing apparatus in addition to standard firefighting gear.

Section 6: Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures:	Immediately evacuate personnel to safe areas. Use personal protective equipment. If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. Ensure adequate ventilation. Keep people away from the upwind of spill/leak. Only qualified personnel equipped with suitable protective equipment may intervene. For additional precautions and advice on safe handling, see Section 7. Never return spills in original containers for re-use. Make sure that there is a sufficient amount of neutralizing/absorbent material near the storage area. The danger areas must be delimited and identified using relevant warning and safety signs. Treat recovered material as described in the section "Disposal Considerations". For disposal considerations, see Section 13.

Environmental Precautions:	Do not allow uncontrolled discharge of product into the environment. Do not allow material to contaminate ground water system. Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and Materials for Containment and Cleaning up:	Clean-up methods – small spillage. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local/national regulations (see section 13). Clean contaminated surface thoroughly. Sweep up or vacuum up spillage and collect in suitable container for disposal. Neutralize small spillages with decontaminant. The compositions of liquid decontaminants are given in Section 16. Remove and dispose of residues. Clean-up methods – large spillage if the product is in its solid form: Spilled MDI flakes should be picked up carefully. The area should be vacuum cleaned to remove remaining dust particles completely. If the product is in its liquid form: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Leave to react for at least 30 minutes. Shovel into open-top drums for further decontamination. Wash the spillage area with water. Test atmosphere for MDI vapor. Keep in suitable, closed containers for disposal.

Section 7: Handling and Storage

Technical Measures:	Ensure that eyewash stations and safety showers are close to the workstation location.
Local/Total Ventilation:	Use only with adequate ventilation.
Advice on Protection Against Fire and Explosion:	Normal measures for preventative fire protection.
Advice on Safe Handling:	For personal protection see Section 8. Avoid formation of aerosol. Do not breath vapor/spray mist/dust. Do not swallow. Do not get in eyes or mouth or on skin. Do not get on skin or clothing. Avoid exposure – obtain special instructions before use. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Keep container closed when not in use. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local, regional, national and international regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Conditions for Safe Storage:	Keep container tightly closed in a dry and well-ventilated place. Keep in properly labelled containers. Observe label precautions. Protect from moisture. Electrical installation/working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Materials to Avoid:	Acids, Amines, Bases, Metals, Water
Recommended Storage Temperature:	68-77˚F / 20-25˚C
Further Information on Storage Stability:	Stable under recommended storage conditions.

Section 8: Exposure Controls/Personal Protection

Components with Workplace Control Parameters

Components	CAS #	Value Type (Form of Exposure)	Control Parameters/ Permissible Concentration	Basis
4,4'-methylenediphenyl diisocyanate	101-68-8	TWA	0.005 ppm	ACGIH
		C	0.02 ppm 0.2 mg/m³	OSHA Z-1

Personal Protective Equipment

Respiratory Protection:

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. In emergency, non-routine and unknown exposure situations, including confined space entries, a NIOSH-certified full-face piece pressure demand self-contained breathing apparatus (SCBA) or a full-face piece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply, should be used.

Hand Protection:

The suitability for a specific workplace should be discussed with the producers of the protective gloves. Protective gloves should be worn when handling freshly made polyurethane products to avoid contact with trace residual materials which may be hazardous in contact with skin. Use chemical resistant gloves classified under Standard EN374: protective gloves against chemicals and microorganisms. Examples of glove materials that might provide suitable protection include: butyl rubber, chlorinated polyethylene, polyethylene, ethyl vinyl alcohol copolymers, laminated ("EVAL", polychloroprene (neoprene*), nitrile/butadiene rubber ("nitrile" or "NBR"), polyvinyl chloride ("PVC" or "vinyl"), fluoroelastomer (Viton*). When prolonged or frequently repeated contact may occur, a glove with protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN374) is recommended. When only brief contact is expected, a glove with protection class of 3 or higher (breakthrough time greater than 240 minutes according to EN374) is recommended. Notice: The selection of a specific glove for a particular application and duration of use in a workplace should also consider all requisite workplace factors such as, but not limited to: other chemicals that may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as instructions/specifications provided by the glove supplier.

Eye Protection:

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. Chemical splash goggles. Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded. Please follow all applicable local/national requirements when selecting protective measures for a specific workplace. Ensure that eyewash stations and safety showers are close to the work location.

Skin and Body Protection:

Impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place. Recommended: Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C', Tyvek Pro 'F' disposable coverall.

Protective Measures:

Personal protective equipment comprising of suitable protective gloves, safety goggles and protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Ensure that eye flushing systems and safety showers are located close to the working place.

Hygiene Measures:

Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. When using do not eat or drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Wash hands before breaks and immediately after handling the product. Wash hands before breaks and at the end of the workday.

Section 9: Physical and Chemical Properties

Appearance	Liquid
Color	Brown, Clear
Odor	Slight, Musty
Odor Threshold	No data is available on the product itself.

pH	No data is available on the product itself.
Freezing Point	No data is available on the product itself.
Melting Point	No data is available on the product itself.
Boiling Point	No data is available on the product itself.
Flash Point	>302˚F / > 150˚C (Method: Closed Cup)
Evaporation Rate	No data is available on the product itself.
Flammability (Solid, Gas)	No data is available on the product itself.
Flammability (Liquids)	No data is available on the product itself.
Upper Explosion Limit / Upper Flammability Limit	No data is available on the product itself.
Lower Explosion Limit / Lower Flammability Limit	No data is available on the product itself.
Vapor Pressure	<0.00001 hPa (68˚F/20˚C)
Relative Vapor Density	No data is available on the product itself.
Relative Density	1.23
Density	1.23 g/cm^3 (68˚F/20˚C) (Method: Estimated)
Solubility in Water	Decomposes in contact with water. (68˚F/20˚C) (Method: Information given is based on data obtained from similar substances.
Solubility in Other Solvents	No data is available on the product itself.
Partition coefficient: n-octanol/water	No data is available on the product itself.
Auto-Ignition Temperature	No data is available on the product itself.
Thermal Decomposition	No data is available on the product itself.
Self-Accelerating Decomposition Temperature (SADT)	No data is available on the product itself.
Viscosity, Dynamic	200 mPa.s (77˚F/25˚C)
Explosive Properties	No data is available on the product itself.
Oxidizing Properties	No data is available on the product itself.
Particle Size	No data is available on the product itself.

Section 10: Stability and Reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable under normal conditions.
Possibility of Hazardous Reactions:	Reaction with water (moisture) produces CO_2 gas. Exothermic reaction with materials containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents. MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface. A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.
Conditions to Avoid:	Extremes of temperature and direct sunlight. Exposure to air or moisture over prolonged periods.
Incompatible Materials:	Acids, Amines, Bases, Metals, Water
Hazardous Decomposition Products:	Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>932˚F/>500˚C), aniline is suspected of being formed.

Section 11: Toxicological Information

Information on Likely Routes of Exposure: No data is available on the product itself.

Acute Toxicity:

Acute Oral Toxicity – Product:	LD50 (Rat, Male): >10,000 mg/kg Method: OECD Test Guideline 401

Acute Inhalation Toxicity – Product:

Acute toxicity estimate: 1.36 mg/l
Exposure Time: 4 hours
Test Atmosphere: dust/mist
Method: Calculation Method

Acute Dermal Toxicity – Product:

LD50 (Rabbit, Male and Female): >9,400 mg/kg
Method: OECD Test Guideline 402

Acute Toxicity (Other Routes of Administration):

No data available.

Skin/Corrosion/Irritation

Component: Diphenylmethanediisocyanate
Species: Rabbit
Assessment: Irritating to skin.
Method: OECD Test Guideline 404
Result: Skin Irritation

Component: 4,4' – Methylenediphenyl Diisocyanate
Species: Rabbit
Method: OECD Test Guideline 404
Result: Irritating to Skin.

Serious Eye Damage / Eye Irritation:

Component: Diphenylmethanediisocyanate
Species: Rabbit
Result: Irritation to eyes, reversing within 7 days
Assessment: mild eye irritant
Method: OECD Test Guideline 405

Component: 4,4' – Methylenediphenyl Diisocyanate
Species: Rabbit
Result Mild eye irritation

Respiratory or Skin Sensitization:

Component: Diphenylmethanediisocyanate
Exposure Routes: Skin
Species: Guinea Pig
Method: OECD Test Guideline 406
Result: May cause sensitization by skin contact.

Component: 4,4' – Methylenediphenyl Diisocyanate
Exposure Routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitization by skin contact.

Component: Diphenylmethanediisocyanate
Exposure routes: Respiratory Tract
Species: Rat
Result: Mild Eye Irritation

Component: 4,4' – Methylenediphenyl Diisocyanate
Exposure routes: Respiratory Tract
Species: Guinea Pig
Result: May cause sensitization by inhalation.

Assessment:

May Cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Germ Cell Mutagenicity

Product: Genotoxicity in Vitro:

Concentration: 200 ug/plate
Metabolic activation: with and without metabolic activation
Method: Directive 67/548/EEC, Annex, B.13/14
Result: Negative

Product: Genotoxicity in Vivo:

Application Route: Inhalation
Result: Not classified due to inconclusive data.

Application Route: Inhalation
Exposure Time: 3 Weeks
Dose: 113 mg/m^3
Method: OECD Test Guidelines 474
Result: Negative

Product: Germ Cell Mutagenicity – Assessment:	Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Product:

Remarks: Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in a chronic pulmonary irritation at higher concentrations. Only at the top level (6mg/m3), there was a significant incidence of benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). There were no lung tumors at 1mg/m^3 and no effects at 0.2 mg/m^3. Overall, the tumor incidence, both benign and malignant, and the number of animals with the tumors were not different from controls. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the 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.

Species: Rat (Male and Female)
Application Route: Inhalation
Exposure Time: 24 Months
Dose: 1mg/m^3
Frequency of Treatment: 5 Daily
Method: OECD Test Guideline 453
Result: Positive

Species: Rat (Male and Female)
Application Route: Inhalation
Exposure Time: 24 Months
Dose: 1mg/m^3
Frequency of Treatment: 5 Daily
Method: OECD Test Guideline 453
Result: Positive

Carcinogenicity – Assessment: No Data Available.

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH No Component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive Toxicity

Product: Effects on Fertility:

Species: Rat, Male and Female
Application Route: Inhalation
Method: OECD Test Guideline 414
Remarks: No significant adverse effects were reported.

Product: Effects on Fetal Development:

Species: Rat, Male and Female
Application Route: Inhalation
General Toxicity Maternal: 4mg/m^3
Method: OECD Test Guideline 414
Result: No teratogenic effects.

Product: Reproductive toxicity Assessment:	No toxicity to reproduction. No evidence of adverse effects on sexual function and fertility or development, based on animal experiments.

Specific Target Organ Toxicity (STOT)

Product: Single Exposure (STOT-SE):	Exposure routes: Inhalation Target Organs: Respiratory Tract Assessment: May cause respiratory irritation.
Product: Repeated Exposure (STOT-RE):	Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure. Remarks: Lung decrement has been reported in some studies as a consequence of repeated exposure to MDI. However, this effect can only be observed after inhalation exposure in the tissue at the point of contact and does not represent systemic toxicity. It is a local effect that is already covered by respiratory irritation (STOT single exposure, Cat. 3) and respiratory sensitization (Category 1). In humans some, but not all epidemiological studies have found long term decreases in ventilatory function and respiratory symptoms (EU RA 2005). However, there is generally co-exposure to other materials and sometimes also to the diisocyanate toluene diisocyanate which may have contributed to lung decrement. Therefore, it is concluded that possible lung effects do not qualify as specific target organ systemic toxicity after repeated exposure in accordance to chapter 3.9.1.6 of the GHS (UNECE 2003). In addition, all warning and safety measures for local effects as well as for acute inhalation toxicity already provide for a protection of workers and professional users that are involved in the handling of MDI.

Repeated Dose Toxicity

Product:	Species: Rat, Male and Female Dose: 0.2 mg/m^3 Exposure Time: 2 years Number of Exposures: 5 days Method: OECD Test Guideline 453
Repeated Dose Toxicity – Assessment	No data available.

Aspiration Toxicity

No Data Available.

Experience with Human Exposure

General Information:	No data available.
Inhalation:	No data available.
Skin Contact	No data available.
Ingestion:	No data available.

Toxicology, Metabolism, Distribution

No data available.

Neurological Effects

No data available.

Further Information

Ingestion:	No data available.

Section 12: Ecological Information

Ecotoxicity

Toxicity to fish – Product:	LC50 (Brachydanio Rerio (Zebrafish)): >1,000 mg/l Exposure Time: 96 hours Test Type: Static Test Test Substance: Fresh Water Method: OECD Test Guideline 203 LC0: >1,000 mg/l Exposure Time: 96 hours
Toxicity to Daphnia and Other Aquatic Invertebrates – Product:	EC50 (Daphnia Magna (Water Flea)): >1,000 mg/l Exposure Time: 24 hours Test Type: Static Test Test Substance: Fresh Water Method: OECD Test Guideline 202
Toxicity to Algae – Product:	EC50 (Desmodesmus Subspicatus (Scenedesmus Subspicatus)): >1,640 mg/l Exposure Time: 72 hours Test Type: Static Test Test Substance: Fresh Water Method: OECD Test Guideline 201
M-Factor (Acute Aquatic Toxicity):	No data available.
Toxicity to Fish (Chronic Toxicity):	No data available.
Toxicity to Daphnia and Other Aquatic Invertebrates (Chronic Toxicity) – Product:	NOEC (Daphnia Magna (Water Flea)): >=10 mg/l Exposure Time: 21 days Test Type: Semi-Static Test Test Substance: Fresh Water Method: OECD Test Guideline 211
M-Factor (Chronic Aquatic Toxicity:	No data available.
Toxicity to microorganisms – Product:	EC50 (Activated Sludge): >100 mg/l Exposure Time: 3 hours Test Type: Static Test Test Substance: Fresh Water Method: OECD Test Guideline 209
Toxicity to Soil Dwelling Organisms – Product:	EC50 (Eisenia Fetida (earthworms)): >1,000mg/kg Exposure Time: 336 hours Method: OECD Test Guideline 207
Plant Toxicity:	No data available.
Sediment Toxicity:	No data available.
Toxicity to Terrestrial Organisms:	No data available.
Ecotoxicology Assessment	No data available.

Acute Aquatic Toxicity:

Chronic Aquatic Toxicity: No data available.

Toxicity Data on Soil: No data available.

Other Organisms Relevant to the Environment: No data available.

Persistence and Degradability

Biodegradability – Product: Inoculum: Domestic Sewage
Concentration: 30mg/l
Result: Not Biodegradable
Biodegradation: 0%
Exposure Time: 28 days
Method: Inherent Biodegradability: Modified MITI Test (II)

Biochemical Oxygen Demand (BOD): No data available.

Chemical Oxygen Demand (COD): No data available.

BOD/COD: No data available.

ThOD: No data available.

Dissolved Organic Carbon (DOC): No data available.

Physico-Chemical Removability: No data available.

Stability in Water:

Component: Diphenylmethanediisocyanate
Degradation Half Life (DT50): 0.8 days (77˚F/25˚C)
Method: No Information Available.
Remarks: Fresh Water

Component: 4,4'-Methylenediphenyl Diisocyanate
Degradation Half Life (DT50): 20 hours (77˚F/25˚C)
Method: No Information Available.
Remarks: Fresh Water

Photodegradation: No data available.

Impact on Sewage Treatment: No data available.

Bioaccumlative Potential

Bioaccumulation – Product: Species: Cyprinus Carpio (Carp)
Bioconcentration Factor (BCF): 200
Remarks: Bioaccumlation is unlikely.

Partition Coefficient: n-octanol/water: Component: 4,4'-Methlynenediphenyl Diisocyanate
Log Pow: 4.51 (68˚F/20˚C)
pH: 7
Method: OECD Test Guideline 117

Mobility in Soil

Mobility:	No data available.
Distribution Among Environmental Compartments:	No data available.
Stability in Soil:	No data available.

Other Adverse Effects

Environmental Fate and Pathways:	No data available.
Results of PBT and vPvB Assessment:	No data available.
Endocrine Disrupting Potential:	No data available.
Adsorbed Organic Bound Halogens (AOX):	No data available.

Hazardous to the Ozone Layer

Ozone-Depletion Potential:	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone – CAA Section 602 Class I Substances Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App. A + B).
Additional Ecological Information:	No data available.
Global Warming Potential (GWP:	No data available.

Section 13: Disposal Considerations

Disposal Methods

Waste from Residues:	Dispose of contents and container in accordance with all local, regional, national and international regulations. Do not dispose of waste in sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated Packaging:	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Dispose of contents and container in accordance with all local, regional, national and international regulations. Do not re-use empty containers.

Section 14: Transport Information

International Regulations

IATA:	Not regulated as dangerous goods.
IMDG:	Not regulated as dangerous goods.
Transport in bulk according to Annex II of MARPOL	Not applicable for product as supplied.

73/78 and the IBC Code:

National Regulations

DOT Classification

UN/ID/NA Number:	NA 3082
Proper Shipping Name:	OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (Methylene Diphenyl Diisocyanate)
Class:	9
Packing Group:	III
Labels:	CLASS 9
ERG Code:	171
Marine Pollutant:	No

Special Precautions for User

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet (SDS). Transportation classifications may vary by mode of transportation, package sizes and variations in regional or country regulation.

Section 15: Regulatory Information

EPCRA – Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS #	Component RQ (lbs.)	Calculated Product RQ (lbs.)
4,4'-Methylenediphenyl Diisocyanate	101-68-8	5,000	11,904
Chlorobenzene	108-60-7	100	-

*Calculated RQ exceeds reasonable attainable upper limit.

SARA 311/312 Hazards: Acute toxicity (any route of exposure). Skin corrosion or irritation. Serious eye damage or eye irritation. Respiratory or skin sensitization. Specific target organ toxicity (single or repeated exposure).

SARA 313: The following components are subject to reporting levels established by SARA Title III, Section 313:

Diphenylmethanediisocyanate	9016-87-9	50-70%
4,4'-Methylenediphenyl Diisocyanate	101-68-8	30-50%

HAP: The following chemical is listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR) 61):

4,4'-Methylenediphenyl Diisocyanate	101-68-8	42%

California Prop. 65: This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

The Components of the Product are reported in the following Inventories:

CH INV:	On the inventory, or in compliance with the inventory.
TSCA:	On the inventory, or in compliance with the inventory.
DSL:	All components of this product are on the Canadian DSL.
AICS:	On the inventory, or in compliance with the inventory.
NZIoC:	On the inventory, or in compliance with the inventory.
ENCS:	On the inventory, or in compliance with the inventory.
KECI:	On the inventory, or in compliance with the inventory.
PICCS:	On the inventory, or in compliance with the inventory.
IECSC:	On the inventory, or in compliance with the inventory.
TCSI:	On the inventory, or in compliance with the inventory.

Inventories: AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan),

KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA).

U.S. Toxic Substances Control Act (TSCA) Section 5(a) Significant New Use Rule List of Chemicals:	No substances are subject to TSCA 12(b) export notification requirements.
U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)	No substances are subject to TSCA 12(b) export notification requirements.

Section 16: Other Information

Further Information

NFPA 704 Ratings (Scale 0-4)

Health 2
Flammability 1
Instability 0

HMIS® IV Ratings (Scale 0-4)

HEALTH	*	2
FLAMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.*

Liquid Decontaminants (Percentages by weight or volume):

Decontaminant 1:
*-Sodium Carbonate: 5 – 10%
*-Liquid Detergent: 0.2 – 2%
*-Water: to make up to 100%
*-Reacts slower with diisocyanates but is more environmentally friendly than Decontaminant 2.

Decontaminant 2:
*-Concentrated Ammonia Solution: 3 – 8%
*-Liquid Detergent: 0.2 – 2%
*-Water: to make up to 100%
*-Contains Ammonia. Ammonia presents health hazards. (see supplier safety information.)

ACGIH OSHA Z-1:
USA. ACGIH Threshold Limit Values (TLV)
USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants

ACGIH/TWA/ASHA Z-1/C:
8-hour, time-weighted average
Ceiling

Abbreviations:

DOT	U.S. Department of Transportation
IATA	International Air Transport Association
ACGIH	American Conference of Governmental Industrial Hygienists
NTP	National Toxicology Program
IARC	International Agency for Research on Cancer
PPE	Personal Protective Equipment
OSHA	U.S. Occupational Safety & Health Administration
SARA	Superfund Amendments and Reauthorization Act
TSCA	US Toxic Substances Control Act
CEPA	Canadian Environmental Protection Act
DSL	Canada Domestic Substance List
NPRI	National Pollutant Release Inventory
NFPA	National Fire Protection Association
HMIS	Hazardous Materials Identification System

NOTICE: The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication. Nothing herein is to be construed as a warranty, express or otherwise. In all cases, it is the responsibility of the user to determine the applicability of such information and recommendations and the suitability of any product for its particular purpose. The product may present hazards and should be used with caution. While certain hazards are described in this publication, no guarantee is made that these are the only hazards that exist. Hazards, toxicity and behavior of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behavior should be determined by the user and made known to handlers, processors and end users. The trademarks above are the property of AMBIT Polyurethane or an affiliate thereof. No person or organization except a duly authorized AMBIT Polyurethane employee is authorized to provide or make available safety data sheets for AMBIT Polyurethane products. Safety data sheets from unauthorized sources may contain information that is no longer current or accurate.

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