

MATERIAL SAFETY DATA SHEET

Polyurethane



Date-Issued: 1-10-99
MSDS Ref. No: SAF-99-015-REV-2
Date-Revised: 11-25-09
Revision No: 2

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Polyurethane
GENERAL USE: Soft Plastic
PRODUCT CODE: PU
PRODUCT FORMULATION NAME: Polyester and Polyether Elastomers
CHEMICAL FAMILY: Soft Plastics
GENERIC NAME: Polyurethane

MANUFACTURER

ARGONICS, INC
520 9TH STREET
GWINN, MICHIGAN 49841

24 HR. EMERGENCY TELEPHONE NUMBERS
National Poison Control Center (Medical): 1-800-222-1222

CONTACT: Human Resources
Customer Service: 906 226-9747
Emergency Number: 1-800-991-2746

COMMENTS: To the best of our knowledge, this Material Safety Data Sheet conforms to the requirements of US OSHA 29 CFR 1910.1200, 91/155/EEC and Canadian Hazardous Products Act.

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS#</u>	<u>Wt.%</u>
diphenylmethane diisocyanate (MDI) (CAS # 101-68-8) with 1,4-butanediol (CAS # 110-63-4) and polytetramethylene ether glycol (CAS#25190-06-1) (Polyether)		
Polyurethane resins derived from reactions of diphenylmethane diisocyanate (MDI) (CAS # 101-68- 8) with hexanedioic acid, polymer with 1,4-butanediol and ethanediol (CAS # 26570-73-0) and 1,4- butanediol (CAS # 110-63-4). (Polyester)	37383-28-1 or 9018-04-6	90
Pigment - Proprietary		
Kryptane - Proprietary (other ingredients)		
Flame Retardant - Proprietary		
Metal - iron, aluminum, and titanium		<10%
Fabric		
Ceramics		

COMMENTS: Product composition ranges shown are typical values for health, safety and environmental use and are not intended as specifications.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Solid rubbery like material.

IMMEDIATE CONCERNS: **CAUTION! Burning gives off toxic fumes. Slippery especially when wet. Metal**

OSHA Hazard Communication Standard: Polyurethane elastomers are fully reacted polymers forming particles which are not considered "Hazardous" as defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200

POTENTIAL HEALTH EFFECTS

EYES: Not affected during normal use.

SKIN: Not affected during normal use.

INGESTION: Not affected during normal use.

INHALATION: Inhalation of dust during machining and inhalation of vapors during hot wire cutting or branding can be irritating and lead to coughing. Fumes can contain traces of isocyanates such as MDI or TDI, carbon monoxide, oxides of nitrogen, and traces of hydrogen cyanide.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

EYES: Not effected during normal use.

SKIN: Not effected during normal use. **INGESTION:** Possible nausea and/or vomiting.

INHALATION: Not effected during normal use. Use NIOSHA approved respirator for any grinding or burning operation. For grinding wear a dust respirator. If generating gas by grinding, cutting, or thermal processing, wear an air - purifying respirator with organic cartridge or supplied - air respirator if ventilation is inadequate.

ACUTE TOXICITY: No test data is available for acute dermal toxicity.

Not expected to cause significant adverse effects if ingested.

No test data is available for acute inhalation toxicity.

CHRONIC: Animal studies indicate that chronic inhalation or overexposure to dust may cause inflammation of the lungs, fibrosis, and airway destruction.

CARCINOGENICITY: Not Listed by NTP

Not listed by IARC

Not listed by OSHA

MUTAGENICITY: Not Available

REPRODUCTIVE TOXIN

REPRODUCTIVE EFFECTS: Not Available

TERATOGENIC EFFECTS: Not Available

MEDICAL CONDITIONS AGGRAVATED: None known

TARGET ORGAN STATEMENT: None known

SENSITIZATION: Not Available

4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water for two to three minutes. Remove any contact lenses and continue flushing for 15 minutes. Get medical attention.

SKIN: Remove contaminated clothing including shoes and immediately wash affected area with plenty of soap and water. Seek medical attention. Wash contaminated clothing and shoes before reuse.

INGESTION: Wash out mouth with water and keep at rest. Seek immediate medical attention.

INHALATION: Remove from further exposure. Keep warm and at rest. If cough or other symptoms develop, seek medical attention.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: > 300°C (572°F)

FLAMMABLE LIMITS: May melt above 380°F

AUTOIGNITION TEMPERATURE: Not Applicable

FLAMMABLE CLASS: Nonflammable

FLAME PROPAGATION OR BURNING RATE OF SOLIDS: Not Available

GENERAL HAZARD: Evacuate personnel downwind of fire to avoid inhalation of irritating and/or harmful fumes and smoke.

EXTINGUISHING MEDIA: Chemical type foam, CO₂ (Carbon Dioxide), Dry Chemical, Water Fog

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, carbon dioxide, hydrogen cyanide, and oxides of nitrogen.

FIRE FIGHTING PROCEDURES: Evacuate all non-emergency personnel to a safe area. Stay downwind avoiding smoke, fumes, and decomposition products. Use water spray to quench smoldering elastomers. However, hazardous decomposition and combustion products may be formed in a fire situation. Cool exposed containers with water spray to prevent overheating.

FIRE FIGHTING EQUIPMENT: Respiratory and eye protection are required for fire fighting personnel. Full protective equipment (Bunker Gear) and self contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of a SCBA may not be required. Avoid breathing vapors/fumes of heated or burning polyurethane.

SENSITIVE TO STATIC DISCHARGE: Not Available

SENSITIVITY TO IMPACT: Not Available

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Normally this does not constitute any health problems. Pick up and handle as a solid material. Caution should be used when handling large pieces such as sheets or metal backed product. The material is slippery especially when wet.

Wearing the appropriate personal protective equipment including proper eye, hands, and arm protection

Pick or sweep up spilled material and dispose of at appropriate waste disposal facility according to current applicable laws and regulations. Flush area with water and ensure that the contaminated water is handled according to applicable laws.

LARGE SPILL: Construct temporary dikes of dirt, sand, or any appropriate readily available material to prevent spreading of the material.

Wearing the appropriate personal protective equipment designated in Section 8, close or cap valves and/or block or plug hole in leaking container and transfer to another container.

Contain material as described above and call the local fire or police department for immediate emergency assistance.

ENVIRONMENTAL PRECAUTIONS

WATER SPILL: Use appropriate containment to avoid runoff or release to sewer or waterways.

LAND SPILL: Use appropriate containment to avoid runoff or release to ground.

GENERAL PROCEDURES: Remove containers of strong oxidizers from release area.

RELEASE NOTES: If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number 800-424-8802.

In case of accident or road spill notify:

- CHEMTREC in USA at 800-424-9300
- CANUTEC in Canada at 613-996-6666
- CHEMTREC, other countries, at (International code)+1 703 527 3887

COMMENTS: See Section 13 for disposal information and Section 15 for regulatory requirements.

Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

7. HANDLING AND STORAGE

HANDLING: Use appropriate personal protective equipment as specified in Section 8. Handle in a well ventilated area.

Handle and use in a manner consistent with good industrial/manufacturing techniques and practices.

STORAGE: Store under cool and dry conditions. Store elastomers in area's equipped with sprinkler systems. Do not store near sparks, flames, or other ignition sources.

Do not store with, or close to oxidizers, strong acid or bases.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES:

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200)

	<u>EXPOSURE LIMITS</u>					
	<u>OSHA PEL</u>		<u>ACGIH TLV</u>		<u>SUPPLIER OEL</u>	
	<u>ppm</u>	<u>mg/m³</u>	<u>ppm</u>	<u>mg/m³</u>	<u>ppm</u>	<u>mg/m³</u>
Polyurethane						
TDI			TWA	.005	NL	NL
			STEL	.002	NL	NL
MDI						
TWA	.005					

ENGINEERING CONTROLS: If dust is generated, provide local exhaust ventilation to control airborne levels below the ACGIH TLV-TWA exposure limit for Particulates Not Otherwise Classified of 10 mg/m³ for inhalable particles and 3 mg/m³ for respirable.

PERSONAL PROTECTIVE EQUIPMENT:

EYES AND FACE: Wear safety glasses with side shields or goggles when handling this material.

SKIN: Not hazardous. Large pieces may require hand and arm protection.

RESPIRATORY: If airborne dust is present, use a NIOSH approved particulate respirator.

WORK HYGIENIC PRACTICES: Facilities storing or using this material should be equipped with an eyewash facility and a safety shower.

Good personal hygiene practices should always be followed.

COMMENTS: This product contains no known OSHA hazardous ingredients per 29 CFR 1910.1200.

No PEL's, TLV's or OEL's for this product or it's ingredients are listed in the current issue of ACGIH's Guide to Occupational Exposure Values nor have they been determined by the manufacturer.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid

ODOR: Odorless

APPEARANCE: Rubbery Material

COLOR: Various

pH: Not Applicable.

VAPOR PRESSURE: Not Applicable

VAPOR DENSITY: Not Applicable

BOILING POINT: Not Applicable

FREEZING POINT: Not Available

MELTING POINT: Range 177°C to 232°C (350.6°F to 449.6°F). May degrade above 134.6°C (300°F)

SOLUBILITY IN WATER: Insoluble

DENSITY: 1.05 to 1.25 g/ml at 20°C (68°F)

SPECIFIC GRAVITY: 1.05 to 1.25@ 20°C(68°F)

VISCOSITY: Solid

MOLECULAR FORMULA: Not Available

MOLECULAR WEIGHT: Not Available

COEFF. OIL/WATER: Not Available

10. STABILITY AND REACTIVITY

STABLE: YES

HAZARDOUS POLYMERIZATION: NO

CONDITIONS TO AVOID: High Heat or Fire.

STABILITY: The product is stable under normal ambient conditions of temperature and pressure.

POLYMERIZATION: Will not occur

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen Cyanide, Acrolein, Oxides of both Carbon and Nitrogen, and traces of Diphenylmethane Diisocyanate (MDI), or Toluene Diisocyanate (TDI)

INCOMPATIBLE MATERIALS: Strong Acids or bases.

11. TOXICOLOGICAL INFORMATION

ACUTE

DERMAL LD₅₀: Not Available

ORAL LD₅₀: Not Available

INHALATION LC₅₀: Not Available

EYE EFFECTS: Does Not effect the eyes under normal use. For grinding use safety goggles and face shield.

SKIN EFFECTS: Does Not effect the skin under normal use. When grinding use protective clothing

SENSITIZATION: Not Available

TARGET ORGANS: Does not normally target organs unless grinding or heating. While grinding, use proper gloves and safety glasses/face shield. If heating, proper engineering controls must be in place. Also use NIOSHA approved respirator whenever levels are suspect.

Eyes

Skin

Gastrointestinal tract

Respiratory system

CARCINOGENICITY:

Listed by IARC - No

Listed by NTP - No

Listed by OSHA - No

MUTAGENICITY: Not Available

REPRODUCTIVE EFFECTS: Not Available

TERATOGENIC EFFECTS: Not Available

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: May cause adverse environmental impact if material reaches waterways.

ECOTOXICOLOGICAL INFORMATION: Not Available

DISTRIBUTION: Not Available

CHEMICAL FATE INFORMATION: Not Available

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Not Considered a Hazardous Waste. Do not dispose of into any sewers, on the ground, or into any body of water. Dispose of waste at a local licensed waste disposal facility according to current applicable laws and regulations. Disposal practices must be in compliance with all Federal, State/Provincial and local laws. Waste characterization and compliance with applicable laws are the responsibility solely of the waste generator. Argonics, Inc. has no control of the use or management practices of the parties using this material.

FOR LARGE SPILLS: Contain material and call local authorities for emergency assistance. In consultation with the appropriate authorities, determine the disposal method or contact.

GENERAL COMMENTS: Refer to Section 6, Accidental Release Measures for additional information.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Not restricted by DOT

TECHNICAL NAME: Polyurethane, PU

LABEL: Use Product Identifier, "Trade Name", with technical name below.

CANADA TRANSPORT OF DANGEROUS GOODS

PROPER SHIPPING NAME: Not restricted

LABEL: Polyurethane.

AIR (ICAO/IATA)

PROPER SHIPPING NAME: Not restricted

LABEL: Use Product Identifier, "Trade Name", with technical name below.

INTERNATIONAL

PROPER SHIPPING NAME: Not restricted

LABEL: Use Product Identifier, "Trade Name", with technical name below.

EUROPEAN TRANSPORTATION:

ADR/RID HAZARD CLASSIFICATION: Not Regulated

U.S. CUSTOMS HARMONIZATION NUMBER: 3402.19.50.00

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES:

FIRE: NO PRESSURE GENERATING: NO REACTIVITY: NO ACUTE: NO CHRONIC: NO

313 REPORTABLE INGREDIENTS: Not Applicable

TITLE III NOTES: Not Applicable

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA RQ: Not Applicable

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA REGULATORY: All intentional ingredients are listed on the TSCA Inventory.

NATIONAL RESPONSE CENTER: U.S. Coast Guard National Center telephone # 1-800-424-8802

CANADA

WHMIS (WORKER HAZARDOUS MATERIALS INFORMATION SYSTEM): This product is WHMIS controlled.

CANADA INGREDIENT DISCLOSURE LIST: This product does not contain any known ingredient(s) on the "Ingredient Disclosure List".

CANADIAN ENVIRONMENTAL PROTECTION ACT: All intentional ingredients are listed on the DSL (Domestic Substance List).

EUROPEAN COMMUNITY

EUROPEAN COMMUNITY REGULATORY: All intentional ingredients are listed on the European's EINECS Inventory.

MEXICO This product is considered to be an irritant according to Mexican Standard, Instruction No. 9, ANNEX 1.

STATE REGULATIONS Not Available

REGULATIONS

STATE REGULATIONS: Not Available

LOCAL REGULATIONS: Not Available

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

16. OTHER INFORMATION

REASON FOR ISSUE: Revision

APPROVED BY: Robert V. Kelly **TITLE:** Chemical Control Specialist

PREPARED BY: Facilities/Maintenance Department

INFORMATION CONTACT: Chemical Control Specialist

REVISION SUMMARY This MSDS revision number was reset to CCFM-3 and replaces the August 10, 1999 issue.

HMIS RATING	
HEALTH:	1
FLAMMABILITY:	1
PHYSICAL HAZARD:	0
PERSONAL PROTECTION:	C

NFPA RATING	
HEALTH:	1
FIRE:	1
REACTIVITY:	0

Key

- 4 = Severe
- 3 = Serious
- 2 = Moderate
- 1 = Slight
- 0 = Minimal

DATA SOURCES: Product Health Hazard Review by Consultant Toxicologist, Dr. R. V. Blanke

MANUFACTURER DISCLAIMER: Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.