SAFETY DATA SHEET
Polyurethane (MDI/TDI)

ARGONICS
ENGINEERED POLYURETHANE

Date-Issued: 1-10-99
MSDS Ref. No: SAF-99-015-REV-5
Date-Revised: 06-01-15
Revision No: 5

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Thermoset Polyurethane Elastomer
GENERAL USE: Soft Plastic
PRODUCT CODE: PU
PRODUCT FORMULATION NAME: Polyester and Polyether Elastomers
CHEMICAL FAMILY: Soft Plastics
GENERIC NAME: Polyurethane CAS # 9009-54-5

MANUFACTURER

ARGONICS, INC
520 9th St.
Gwinn, MICHIGAN
49841

CONTACT: Human Resources
Customer SERVICE: (906) 226-9747

Emergency Number:
1-800-991-2746

24 HR. EMERGENCY TELEPHONE NUMBERS

National Poison Control Center (Medical) 1-800-222-1222

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. HAZARDS IDENTIFICATION

SIGNAL WORD: WARNING

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Solid rubbery like material.

IMMEDIATE CONCERNS: Burning gives off toxic fumes. Slippery especially when wet. Dusts from grinding operations may aggravate existing lung disorders when proper protection is not used.

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

However, hazardous dusts, vapors, gases and fumes may be released by mechanical or thermal processing by thermal decomposition.

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

CARCINOGENICITY: Cured polyurethane is not listed as a carcinogen

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 under normal use

TARGET ORGAN STATEMENT: None known under normal use

SENSITIZATION: Fumes could contain trace amounts of MDI isocyanates and or curatives. Repertory or skin exposure may produce an asthma-like lung sensitization.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%
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 – Trade Secret		
Kryptane – Trade Secret (other ingredients)		10
Flame Retardant – Trade Secret		

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

4. FIRST AID MEASURES: If dust from grinding causes irritation

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 if needed.

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^{o}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, do not remove SCBA until smoke is gone and the area is completely ventilated with clean air. 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

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. Wear latex or nitrile gloves when handling urethane to protect from mold release saturation.

STORAGE: Store under cool and dry conditions. Store elastomers in areas equipped with sprinkler systems. Do not store near sparks, flames, or other ignition sources. Thermal degradation may occur at temperatures over 300°F.

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)

EXPOSURE LIMITS

		OSHA PEL		ACGIH TLV	
Polyurethane		**ppm**	**mg/m^3**	**ppm**	**mg/m^3**
TDI	**TWA**	0.005	0.036	0.005	0.036
	STEL	0.002	0.140	0.002	0.140
MDI	**TWA**	0.020	0.200	0.005	0.051

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. Wear a face shield during grinding operations.

SKIN: Not hazardous. Large pieces may require hand and arm protection. Wear latex or nitrile gloves to avoid mold release saturation.

RESPIRATORY: If airborne dust is present, use a NIOSH approved particulate respirator. Do not create excessive heat on polyurethane through the use of hotwire or other thermal processing operations.

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
FLASH POINT: Not Available
FLAMMABLE EXPOSURE LIMITS: LEL: N/A UEL: N/A
EVAPORATION RATE: Not Available

Dust from processing operations may be combustible.

10. STABILITY AND REACTIVITY

STABLE: YES

HAZARDOUS POLYMERIZATION: NO

CONDITIONS TO AVOID: Hazardous reactions will not occur, avoid direct contact with flame or other heat sources.

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). Decomposition through burning produces fumes consisting of organic particulates and gaseous hydrocarbons.

INCOMPATIBLE MATERIALS: Strong Acids or bases.

11. TOXICOLOGICAL INFORMATION

Under normal conditions not applicable.

ACUTE

DERMAL LD_{50}: Not Available

ORAL LD_{50}: Not Available

INHALATION LC_{50}: 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 us 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

Under normal conditions not applicable.

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

Not regulated as a hazardous material.

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: Brandon Holman **TITLE:** Chemical Control Specialist

PREPARED BY: Facilities/Maintenance Department

INFORMATION CONTACT: Chemical Control Specialist

REVISION SUMMARY This SDS revision number was reset to CCFM-4 and replaces the July 17, 2013 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.