MATERIAL SAFETY DATA SHEET

Section 1 – Product and Company Identification

Company Identification
ARDEX Engineered Cements
400 Ardex Park Dr.
Aliquippa, PA 15001

Emergency Phone
(800) 255 – 3924 (24 hours) CHEM-TEL
or (813) 248 – 0588 (call collect)
Contact Phone for product information
(724) 203-5000 (9:00 a.m. – 5:00 p.m. EST)

Effective Date: 7/19/2012 | Print Date: 7/19/2012 | MSDS #: ARDIFIX

Product Name: ARDEX ARDIFIX

Section 2 – Composition/Information on Ingredients

Part A: Hazardous Component	CAS #	% By Weight	PEL	TLV	STEL
Polymeric MDI	9016-87-9	30 - 60%	0.02 ppm	0.005 ppm	NE
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	6846-50-0	15 - 40%	NE	NE	NE
4,4'-Diphenylmmethane Diisocyanate	101-68-8	10 - 30%	0.02 ppm	0.005 ppm	NE
Part B: Hazardous Component	CAS #	% By Weight	PEL	TLV	STEL
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	6846-50-0	30 - 60%	NE	NE	NE
N,N,N',N'-Tetrakis (2-Hydroxylpropyl)Ethylenediamine	102-60-3	10 - 30%	NE	NE	NE
Polyether Triol	25791-96-2	10 - 30%	NE	NE	NE
1,4-Butanediol	110-63-4	3.0 – 7.0%	NE	NE	NE

Section 3 – Hazards Identification

Part A: Danger! Harmful or fatal if swallowed. Causes eye, skin and respiratory irritation. Respiratory and Skin Sensitizer. Contains isocyanates.
Part B: Danger! Corrosive. May cause skin or eye burns. Harmful if swallowed. Skin Sensitizer. May cause respiratory or digestive tract irritation. Vapors may cause drowsiness or dizziness.

WHMIS Hazard Symbols Required on Product Label:

Part A

Part B

Signs and Symptoms of Short-Term (Acute) Exposure:
Part A: *Inhalation* – May cause severe irritation to the nose, throat, and respiratory tract. Symptoms may include burning sensation, coughing, shortness of breath, wheezing, and reduced lung function. Persons with a pre-existing, nonspecific bronchial hypersensitivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Symptoms may be delayed several hours. *Skin* – Causes irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. *Eyes* – Causes irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor may cause irritation with symptoms of burning and tearing. *Ingestion* – May cause irritation to the mouth, throat, and stomach. Symptoms may include pain, vomiting, and diarrhea.
Part B: *Inhalation* – May cause drowsiness or dizziness. *Skin* – May cause severe skin irritation or burns. *Eyes* .-May cause severe eye irritation or burns, possibly resulting in permanent damage or blindness. *Ingestion* – May cause pain, vomiting, and diarrhea.

Effects of Long-Term (Chronic) Exposure:
Part A: *Inhalation* – As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to diisocyanates or polyisocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to diisocyanates or polyisocyanates at levels well below the exposure limits or guidelines. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be delayed up to several hours after exposure. Persons who suffer from hypersensitivity of the respiratory tract (e.g. asthmatics and chronic bronchitis sufferers) should avoid handling this product. *Skin* –Prolonged skin contact can cause reddening, swelling, rash, and, in some cases, skin sensitization.
Part B: Repeated ingestion of large amounts of this material may cause severe kidney, liver and gastrointestinal effects. Symptoms of excessive overexposure may be central nervous system effects, nausea, vomiting, and anesthetic or narcotic effects.

Medical Conditions Aggravated by Exposure: Pre-existing skin, eye, and respiratory disorders.

Routes of Exposure: Dermal, Inhalation, ingestion

Carcinogenicity: Neither MDI nor polymeric MDI are listed by the NTP, IARC, or regulated by OSHA as carcinogens.

Section 4 – First Aid Measures

Inhalation: Move to fresh air; give oxygen if breathing is difficult. Call a physician if symptoms persist.

Eyes:	Flush with copious amount of water, preferable lukewarm water for at least 15 minutes, holding eyelids open all the time. Refer individual to physician or ophthalmologist for immediate follow up.
Skin:	Remove contaminated clothing. Wash affected skin thoroughly with soap and water. Wash contaminated clothing thoroughly before reuse. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.
Ingestion:	DO NOT INDUCE VOMITING. Give 1 – 2 cups of milk or water to drink. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Consult a physician immediately.
Inhalation:	Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as necessary. Obtain medical attention. Asthmatic type symptoms may develop and may be immediate or delayed up to several hours. Consult physician should this occur.
Other:	Referral to a physician is recommended if there is any question about the seriousness of the injury/exposure. If Sensitization occurs, future contact with the material should be avoided.

Section 5 – Fire Fighting Measures

Flash Point: *Part A:* 390°F /199°C. *Part B:* 265°F / 129°C | **Extinguisher Media:** Dry Chemical; Carbon Dioxide; Foam; Water Spray for large fires

Special Fire Fighting Procedures: Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, MDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustions (see stability

MATERIAL SAFETY DATA SHEET

and reactivity). At temperatures greater than 400˚F (204˚C), isocyanates can polymerize and decompose which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cold water to cool fire-exposed containers.

Unusual fire and Explosion Hazards: None known. Thermal decomposition products can be formed.

Section 6 – Accidental Release Measures

Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment, including respiratory equipment during clean-up. Large quantities may be pumped into closed, but not sealed, containers for disposal.
Minor Spill: Absorb isocyanates with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with large amounts of water. Allow to stand uncovered for 48 hours to let CO_2 gas escape.
Clean up: Decontaminate floor with water, letting stand for at least 15 minutes.

Section 7 – Handling and Storage

Avoid contact with eyes, skin and clothing. Do not breathe aerosols, or vapors. Avoid prolonged inhalation of vapors. Use with adequate ventilation. Wash thoroughly after handling. Store in tightly sealed containers in a cool dry place out of direct rays of the sun. Do not reseal containers if contamination is suspected. Keep from freezing. Store between 65ºF /18°C and 85º F / 29°C. DO NOT EXCEED 120°F /49°C.

Section 8 – Exposure Control/Personal Protection

Precautions: Use only with adequate ventilation. Avoid breathing mist or vapors. Avoid contact with eyes, skin, and clothing. Wear appropriate air purifying respirator when ventilation is inadequate. Do not ingest. Do not eat, drink, or smoke in areas where this product is being used. Wear impervious gloves, long-sleeved shirt, and splash proof safety goggles. Promptly remove clothes that have been contaminated. Discard clothing that has been contaminated with Part A. Launder clothing that has been contaminated with Part B before reusing. Persons with a history of skin sensitization problems or a history of asthma should not use this product. Protect from moisture. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling. Keep out of reach of children.

Ventilation: Local exhaust should be used to maintain airborne isocyanate levels below the TLV or PEL. If monitoring determines that the isocyanate levels exceed the TLV or PEL, or are unknown, respiratory protection must be worn.

Respiratory Protection: Concentrations greater than the TLV or PEL can occur when isocyanates are sprayed, heated or used in a poorly ventilated area. In such cases, or whenever concentrations of isocyanate exceed the TLV or PEL, or isocyanate levels are unknown, respiratory protection such as a NIOSH-approved air purifying respirator equipped with an organic vapor cartridge and particulate pre-filters must be worn. Observe OSHA regulations for respirator use (29 CFR 1910.134). Respirator users should be individually fit tested before using in an environment with high or unknown levels of isocyanates.

Eye Protection: Wear splash proof chemical goggles. Vapor resistant goggles should be worn when contact lenses are in use. In a splash hazard environment chemical goggles should be used in combination with a full face shield.

Protective Gloves: Permeation resistant gloves (butyl rubber, nitrile rubber, polyvinyl alcohol). However, please note that PVA degrades in water. Cover as much of the exposed skin area as possible with appropriate clothing.

Monitoring: Isocyanate exposure levels must be monitored. Monitoring of airborne isocyanates in the breathing zone of individuals should become part of the overall employee exposure characterization program. Monitoring techniques have been developed by NIOSH and OSHA.

Medical Surveillance: Medical supervision of all employees who handle or come in contact with isocyanates is recommended.

Other Protective Clothing or Equipment: Wear appropriate apparel to prevent skin contact. Safety showers & eyewash stations should be available.

Section 9 – Physical and Chemical Properties

Physical Form: *Part A:* Liquid *Part B:* Liquid		**Specific Gravity (g/cc):** *Part A:* 1.069 *Part B:* 1.03	
Color: *Part A:* Light yellow *Part B:* Blue-Gray		**Freezing Point:** *Part A:* Below 32°F /0°C for MDI *Part B:* Not Determined	
Odor: Part A: Sweet **Part B:** Slight	**pH: Part A:** N/D **Part B:** N/D	**Boiling Point: Part A:** 406°F. (209°C) **Part B:** Not determined	**VOC Content:** 0 g/L
Solubility in Water: Part A: Soluble. Reacts slowly with water to liberate CO_2 gas; **Part B:** Slightly soluble			**Evaporation Rate:** Non-volatile
Vapor Pressure: Part A: Less than 1 x 10^{-5} mm Hg @ 77˚F (25˚C) for MDI; **Part B:** 0.1 mm Hg @ 77˚F (25˚C)			**Vapor Density:** 8.5 (MDI) (Air = 1)

Section 10 – Stability and Reactivity

Hazardous Polymerization: May occur. Contact with moisture or other materials which react with isocyanates or temperatures above 400°F (204°C), may cause polymerization. **Stability:** Stable

Incompatibility: Water, amines, strong bases alcohols. Will cause some corrosion to copper alloys and aluminum.

Hazardous Decomposition Products: Thermal decomposition can yield carbon monoxide, oxides of nitrogen, traces of HCN, MDI.

Conditions to Avoid: Exposure to excessive heat and storage above 95º F /35°C will shorten shelf life

Section 11 – Toxicological Information

Part A: Acute Toxicity; *Oral LD50*- The acute oral LD50 (rat) for this material is greater than 10,000 mg/kg. *Dermal LD50*- The acute dermal LD50 (rabbit) is greater than 5,000 mg/kg. This product may be a skin irritant. *Inhalation LC50*- The acute LC50 (rat) is 1.5 mg/L. *Eye effects*- This product should be considered a moderate eye irritant. Eye contact may cause corneal opacity. *Skin Effects*- Chronic dermal exposure may cause sensitization to diisocyanates. *Sensitization*- Chronic inhalation of this product may cause respiratory sensitization. *Chronic Toxicity*- Not Known. *Carcinogenicity/Mutagenicity*- This product is not expected to be carcinogenic or mutagenic.
Part B: Acute Toxicity; *Oral LD50*- The acute oral LD50 (rat) for this material is greater than 2,000 mg/kg. *Dermal LD50*- The acute dermal LD50 (rabbit) is greater than 2,000 mg/kg. This product may be corrosive to skin. *Inhalation LC50*- The acute LC50 (rat) has not been determined. *Eye effects*- This product may cause eye burns. Eye contact may cause corneal opacity. *Skin Effects*- Chronic dermal exposure may cause sensitization. *Sensitization*- This product is not expected to cause respiratory sensitization. *Chronic Toxicity*- Not Known. *Carcinogenicity/Mutagenicity*- This product is not expected to be carcinogenic or mutagenic.

Section 12 – Ecological Information

Part A: Aquatic Toxicity- 48 hours LC50 for Daphnia magna 112-150 mg/L; **Part B:** No data is available at this time

Section 13 – Disposal Considerations

If discarded in its purchased form, this material does not meet the criteria of a hazardous waste as defined in 40 CFR 261, Subpart C. As a non-hazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations. Incineration is the preferred method.

Section 14 – Transport Information

This material is not regulated as a hazardous material by DOT, IMO, IATA.

Section 15 – Regulatory Information

Hazard Communication: This MSDS has been prepared in accordance with the federal OSHA Hazard Communication Standard.

OSHA Status: Hazardous | **TSCA Inventory Status:** Chemical components listed on TSCA inventory

CERCLA Reportable Quantity: Not Applicable

MATERIAL SAFETY DATA SHEET

EPA Waste Code(s): Not regulated by EPA as a hazardous waste

SARA Title III:

Section 302 Extremely Hazardous Substance: **Part A:** TPQ – None established; **Part B:** None
Section 311/312 Hazard Categories: **Part A:** Health Hazard: Immediate (Acute); **Part B:** Immediate Health Hazard, Delayed Health Hazard
Section 313 Toxic Chemicals: **Part A:** None present **Part B:** None

California Proposition 65: To the best of our knowledge, this product does not contain any chemicals known to the State of California to cause cancer and/or reproductive harm.

Canadian Regulations

Canadian WHMIS Classification: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Controlled Products Regulations (CPR). It is classified as follows:

Part A	Part B
Class D1B (Toxic Material)	Class D2B (Skin and Eye Irritant)
Class D2A (Materials Causing Other Toxic Effects, Very Toxic Material).	Class E (Corrosive)

This product has been classified according to the hazard criteria of the CPR. The MSDS contains all of the information required by the CPR.

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

Section 16 – Other Information

HMIS Rating	Part A	Part B	NFPA Hazard Rating	Part A	Part B
Health	2	0	**Health**	2	2
Flammability	1	0	**Flammability**	1	1
Reactivity	0	1	**Reactivity**	1	1
PPE	B	0	**Other**		

Abbreviations: **PEL** = OSHA Permissible Exposure Limit; **TLV** = ACGIH Threshold Limit Value; **C** = Ceiling; **STEL** = Short Term Exposure Limit; **NE** = None Established; **NA** = Not Applicable. **ND** = Not Determined; **ppm** = parts per million