

SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION

Product Identifiers

Product Name : **ARDEX Ardifix™ Part A**
Code No. : 1291801
Trade Name/Synonyms : ARDEX Ardifix Part A
Material Use : Low viscosity rigid polyurethane for crack and joint repair
Restrictions on Use : Use only as recommended in the product's Technical Data Sheet

Details of the Supplier

Manufacturer's name and address:

Supplier's name and address:



Refer to Manufacturer

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

Information Telephone No. : (724) 203-5000

Website Address : <http://www.ardexamericas.com>

24 Hr Emergency Telephone #

: CHEM-TEL: 1-800-255-3924 OR 1-813-248-0585 (call collect)

SECTION 2 – HAZARDS IDENTIFICATION

GHS Classification per 29 CFR 1910.1200 (OSHA HCS 2012) and HPR (WHMIS 2015)

: Acute Toxicity, Inhalation; Category 1
Skin Corrosion/Irritation; Category 2
Serious Eye Damage/Eye Irritation; Category 2A
Sensitisation, Respiratory; Category 1
Sensitization, Dermal; Category 1
Specific Target Organ Toxicity, Single Exposure; Respiratory Tract Irritation;
Category 3
Specific Target Organ Toxicity, Repeated Exposure; Category 1

GHS Pictograms

:



Signal Word

: Danger

Hazard Statements

: Fatal if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause respiratory irritation.
Causes damage to organs <lungs> through prolonged or repeated inhalation.

Precautionary Statements : Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. In case of inadequate ventilation wear respiratory protection. Wear protective gloves/protective clothing/eye protection. Wash hands and exposed skin thoroughly after handling. Take off contaminated clothing and wash before reuse. Store in a well-ventilated place. Keep container tightly closed. Store locked up. Dispose of contents / container in accordance with federal, state, and local laws. Do not allow product to enter drains.

Hazards Not Otherwise Classified: Contains Isocyanates.

% Composition with unknown acute toxicity data

: Less than 1% of this product consists of ingredients with unknown acute toxicity.

Special Instructions

: This product is sold as a dual cartridge with both Ardifix Part A (Isocyanate) and Ardifix Part B (Polyol) combined in a single unit. In case of a spill or fire, consult both Safety Data Sheets for information about both products.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS #	% (by weight)
Polymethylene polyphenyl isocyanate	9016-87-9	30 - 50
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	6846-50-0	20 - 40
Methylene diphenyl diisocyanate (4,4'-MDI)	101-68-8	10 - 20

The exact percentages of the ingredients are withheld as trade secrets.

SECTION 4 – FIRST AID MEASURES

General Information : Call a POISON CENTER or doctor/physician if you feel unwell. Show the Safety Data Sheet to the medical personnel.

Inhalation : Move to an area free from further exposure. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours. Extreme asthmatic reactions can be life threatening.

Skin contact : Remove/Take off immediately all contaminated clothing. Wash/shower affected skin with soap and water for at least 20 minutes. Seek immediate medical attention/advice.

Eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention.

Ingestion : Rinse mouth with water. Do NOT induce vomiting. Seek immediate medical attention/advice.

Notes for Physician : Treat symptomatically.

Signs and symptoms of short-term (acute) exposure

Inhalation : Isocyanate vapors or mist at concentrations above the TLV or PEL can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyper-reactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

Skin : Causes skin irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove. Contact with MDI can cause discoloration.

- Eyes* : Causes irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.
- Ingestion* : May cause irritation; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Effects of long-term (chronic) exposure

- : As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to diisocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to diisocyanates at levels well below the TLV or PEL. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. 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. Sensitization can be permanent. Chronic overexposure to diisocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent. Prolonged contact can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Indication of need for immediate medical attention or special treatment

- : Difficulty breathing persists after removing the person to fresh air.
Any exposure to the skin causing a rash, swelling, itch, or pain.
Any exposure to the eye which causes irritation.
Ingestion.

SECTION 5 – FIRE FIGHTING MEASURES

- Suitable extinguishing media** : Dry chemical, carbon dioxide, foam.
- Unsuitable extinguishing media** : High pressure water jet may spread the fire. Isocyanates react with water to produce heat and evolve (non-flammable) gases.
- Hazardous combustion products** : Carbon monoxide carbon dioxide, nitrogen oxides, hydrogen cyanide, and/or low molecular weight hydrocarbons. Vapors/fumes are toxic.

Fire hazards/conditions of flammability

- : Vapors will ignite at high temperatures. In a fire, this product will generate toxic vapors.

Flammability classification (OSHA 29 CFR 1910.1200, WHMIS 2015)

- : Not classified as flammable.

- | | | | |
|----------------------------------|-----------------------|---|-----------------|
| Flash point | : >390°F (199°C) | Lower flammable limit (% by vol) | : Not available |
| Flash point method | : Setflash closed cup | Upper flammable limit (% by vol) | : Not available |
| Auto-ignition temperature | : N/Av | Oxidizing properties | : None |
| Flame projection length | : Not available | Flashback observed | : Not available |

Explosion data: Sensitivity to mechanical impact / static discharge

- : Not expected to be sensitive to mechanical impact or static discharge.

Special fire-fighting procedures/equipment

- : Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate can be extremely dangerous.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

- Personal precautions** : See Section 7 for safe handling procedures. Wear chemically resistant personal protective equipment during cleanup. Restrict access to area until completion of clean-up. All persons dealing with clean-up must be properly trained and wear the appropriate chemically protective equipment. Refer to Section 8 on this Safety Data Sheet, EXPOSURE CONTROLS / PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.
- Environmental precautions** : Do not allow product to enter waterways. Do not allow material to contaminate ground water system.
- Spill response / clean-up** : Ventilate area of release. Stop spill or leak at source if safely possible. Contain product with inert absorbent material, preventing it from entering sewer lines or waterways. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri®, etc...). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion, and do not tighten the lid on the container. Repeat application of absorbent material until all liquid has been removed from the surface.
- After removing spilled material as described above, decontaminate surfaces involved with the spill using a neutralization solution (mix detergent floor cleaner [if a concentrate, dilute 1 part concentrate into 9 parts water] and about 10% household ammonia); scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous surfaces. Use caution, as the surface may be slippery. Wait at least 15 minutes after first application of the neutralization solution. Cover the area with absorbent material and shovel this into an approved metal container. Note: Always wear proper PPE when cleaning up an isocyanate spill and using a neutralization solution. It may take two or more applications of the neutralization solution to decontaminate the surface. Clean up any detergent residue with fresh water.
- With the lid still loosely in place, move the container holding the isocyanate waste to an isolated, well-ventilated area to allow release of carbon dioxide. After 72 hours, seal the container, and properly dispose of the waste material in accordance with existing federal, state and local regulations.
- Prohibited materials** : Avoid strong oxidizing agents. Do not allow spilled material to mix with epoxy resins. Chemical reaction with epoxides causes polymerization and release of heat energy.
- Special spill response procedures** : If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8002).
- US CERCLA Reportable quantity (RQ): 101-68-8 Methylene diphenyl diisocyanate (4,4'-MDI) – 5000 lbs (2273 kg).

SECTION 7 – HANDLING AND STORAGE

- Safe handling procedures** : Do NOT get into eyes, on skin or on clothing. Do NOT breathe vapor. Do NOT swallow. Use only with adequate ventilation. Observe good hygiene standards. Do not eat, drink or smoke in the work area. Wash thoroughly after handling. Wear protective clothing to prevent skin contact. Promptly remove any clothing that becomes contaminated. Clean contaminated clothing before reuse. Keep container tightly closed.
- Storage requirements** : Store in a cool, dry, well-ventilated area. Store away from heat and open flame. Avoid storing in direct sunlight. Keep from freezing. Recommended storage temperature range is between 18 °C and 29 °C (65 °F and 85 °F). DO NOT EXCEED 49 °C/120 °F. Store in original container. Keep tightly closed when not in use. Do not reuse empty container without commercial cleaning or reconditioning.
- Incompatible materials** : See Section 10.
- Special packaging materials** : Always keep in containers made of the same materials as the supply container.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Ventilation and engineering measures**: Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits. Ventilation should effectively remove and prevent buildup of any vapor or mist generated from the handling of this product. In cases where the

ventilation is insufficient or where operational procedures require it (e.g. spraying or heating isocyanates, large spills, etc.), suitable respiratory protection equipment must be used. See "Respiratory protection" below.

- Respiratory protection** : If work process generates excessive quantities of vapor, or exposures in excess of any PEL, wear a NIOSH approved organic vapor cartridge respirator.
- Skin protection** : Wear chemical resistant protective clothing and impervious gloves. Materials such as nitrile rubber or Viton (fluorocarbon rubber) are recommended.
- Eye / face protection** : Chemical goggles must be worn when using this product. A face shield is recommended if splashing is possible.
- Other protective equipment** : Where extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact. An eyewash station and safety shower should be made available in the immediate working area.
- General hygiene considerations** : Avoid contact with eyes, skin and clothing. Do not breathe vapors/dust. Do not eat, drink or smoke when using this product. Clean all equipment and clothing at end of each work shift. Contaminated work clothing should not be allowed out of the workplace.

Permissible exposure levels :

Component	CAS #	ACGIH TLV		OSHA PEL	
		TLV	STEL	PEL	STEL
Polymethylene polyphenyl isocyanate	9016-87-9	N/Av	N/Av	N/Av	N/Av
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	6846-50-0	N/Av	N/Av	N/Av	N/Av
Methylene diphenyl diisocyanate (4,4'-MDI)	101-68-8	0.005 ppm	N/Av	0.02 ppm	N/Av

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

- | | | | |
|---|---|---|------------------|
| Physical state | : Liquid | Appearance | : Yellow-brown |
| Odor | : Earthy, musty | Odor threshold | : N/Av |
| pH | : N/Av | Specific gravity | : 1.07 |
| Boiling point | : 406°F (209°C) | Coefficient of water/oil distribution | : N/Av |
| Melting/Freezing point | : < 0 °C (32 °F) | Solubility in water | : Insoluble |
| Vapor pressure (mm Hg @ 20°C / 68°F) | : < 1 x 10 ⁻⁵ mm Hg @ 25°C (MDI) | | |
| Vapor density (Air = 1) | : N/Av | Evaporation rate (n-Butyl acetate = 1) | : N/Av |
| Volatile organic compounds (VOCs) | : 0 g/L A+B per ASTM D2369 | | |
| General information | : N/Av | Volatiles (% by weight) | : N/Av |
| Particle size | : N/Av | Flammability properties | : See Section 5. |

SECTION 10 – REACTIVITY AND STABILITY INFORMATION

- Stability and reactivity** : Stable under the recommended storage and handling conditions prescribed.
- Hazardous polymerization** : When handled according to the directions in the Technical Data Sheet, this product chemically reacts with Ardifix Part B to form a polymer, generating low levels of heat. This product is capable of reacting with polyols, amines, and water. Under certain conditions, this reaction could generate sufficient heat to burn or scald, and also release toxic vapors. Only use this product according to the directions on the Technical Data Sheet.
- Conditions to avoid** : Avoid exposure to excessive heat.
- Materials to avoid and incompatibility** : Strong acids, peroxides, and other oxidizing agents.
- Hazardous decomposition products** : Refer to hazardous combustion products in Section 5.

SECTION 11 – TOXICOLOGICAL INFORMATION

- Routes of Exposure** : *Inhalation*: YES *Skin Absorption*: No *Skin and Eyes*: Yes *Ingestion*: YES

Symptoms of acute overexposure : See Section 4.

Symptoms of chronic overexposure : See Section 4.

Calculated Acute Toxicity Estimates for the Product

Inhalation : 0.49 mg/L
Oral : > 4000 mg/kg
Dermal : > 4000 mg/kg

Toxicological data : See below for individual ingredient acute toxicity data.

Ingredients	CAS No.	LC50 (4 hr) Inhalation, rat	LD50 Oral, rat	LD50 Dermal, rabbit
Polymethylene polyphenyl isocyanate	9016-87-9	0.49	49000	> 9400
2,2,4-trimethyl-1,3-pentenediol diisobutyrate	6846-50-0	N/Av	> 2000	> 2000
Methylene diphenyl diisocyanate (4,4'-MDI)	101-68-8	0.178	9200	10000

Repeated Dose Effects : Chronic overexposure to diisocyanates has been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

Carcinogenic status : No components are listed as carcinogens by ACGIH, IARC, OSHA, NIOSH or NTP. rat, Male/Female, inhalation, 2 Years, 6 hrs/day 5 days/week. Exposure to a level of 6 mg/m³ polymeric MDI was related to the occurrence of lung tumors. This level is significantly over the TLV for MDI.

Reproductive effects : None known.

Teratogenicity : rat, female, inhalation, gestation days 6-15, 6 hrs/day, NOAEL (teratogenicity): 12 mg/m³, NOAEL (maternal): 4 mg/m³. No Teratogenic effects observed at doses tested., Fetotoxicity seen only with maternal toxicity.

Germ Cell Mutagenicity : None known.

Epidemiology : Not available.

Target Organ Effects : Isocyanates are known to cause respiratory irritation.

Sensitization to material : Contains isocyanates, which are known to cause both respiratory and skin sensitization reactions.

Synergistic materials : N/Av

Irritancy/Corrosivity : Irritating to skin and respiratory system. Seriously irritating to eyes.

Other important hazards : See hazards listed in Section 2.

SECTION 12 – ECOLOGICAL INFORMATION

Environmental effects : The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

Important environmental characteristics

: N/Av

Ecotoxicological : No data is available on the product itself. Information on components is listed below.

Polymethylene polyphenyl isocyanate (9016-87-9)

Ecotoxicity

LC0: > 1,000 mg/l (Danio rerio (zebra fish), 96 h)
LC0: > 3,000 mg/l (Oryzias latipes (Orange-red killifish), 96 h)
EC50: > 1,000 mg/l (Water flea (Daphnia magna), 24 h)
NOEC: 1,640 mg/l, Aquatic Plants: (Green algae (Scenedesmus subspicatus), 72 h)
EC50: > 100 mg/l, (Microorganisms: activated sludge, 3 h)

Biodegradability : After 28 days, 0% degraded. Not biodegradable.

Bioaccumulative potential : Oncorhynchus mykiss (rainbow trout), Exposure time: 112 d, < 1 BCF
Does not bioaccumulate

Mobility in soil : No data available.
PBT & vPvB assessment : No data available.
Other adverse effects : No data available.

Methylene diphenyl diisocyanate (4,4'-MDI) (101-68-8)

Ecotoxicity

LC50: > 500 mg/l (Zebra fish (Brachydanio rerio), 24 h)
 EC50: > 500 mg/l (Water flea (Daphnia magna), 24 h)

Biodegradability : No data available.
Bioaccumulative potential : No data available.
Mobility in soil : No data available.
PBT & vPvB assessment : No data available.
Other adverse effects : No data available.

Other Adverse Effects

None reported.

SECTION 13 – DISPOSAL CONSIDERATION

Handling for disposal : Handle waste according to recommendations in Section 7.
Methods of disposal : You must test your waste using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes. Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.
Packaging : Handle contaminated packaging in the same manner as the product.
RCRA : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14 – TRANSPORTATION INFORMATION

Regulatory Information	UN Number	Shipping Name	Class	Packing Group	Label
TDG	None	This product is not regulated according to Canadian TDG regulations.	None	None	None
TDG Additional Information	None				
49 CFR/DOT	None	This product is not regulated according to US DOT regulations.	None	None	None
49 CFR/DOT Additional Information	None				

SECTION 15 – REGULATORY INFORMATION

Canadian Information:

This product has been classified according to the hazard criteria of the Hazardous Products Regulations (HPR). This SDS contains all of the information required by the HPR.

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

US Federal Information:

TSCA: All listed ingredients appear on the Toxic Substances Control Act (TSCA) inventory.

CERCLA Reportable Quantity (RQ) (40 CFR 117.302):

101-68-8 Methylene diphenyl diisocyanate (4,4'-MDI) – 5000 lbs (2273 kg)..

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes:

- Immediate (Acute) Health Hazard
- Chronic Health Hazard

Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SARA TITLE III: Sec. 313, Toxic Chemicals Notification, 40 CFR 372: This material is subject to SARA notification requirements, since it contains Toxic Chemical constituents above *de minimus* concentrations.

101-68-8 Methylene diphenyl diisocyanate
9016-87-9 Polymethylene polyphenyl isocyanate

U.S. State Right To Know Laws

California Proposition 65: This product does not contain any chemicals known to the State of California to cause cancer and/or reproductive effects.

Other State Right to Know Laws:

Component	CAS	CA	MA	MN	NJ	NY	PA	RI
Polymethylene polyphenyl isocyanate	9016-87-9	No	No	YES	YES	No	No	No
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	6846-50-0	No	No	YES	No	No	No	No
Methylene diphenyl diisocyanate (4,4'-MDI)	101-68-8	YES	YES	YES	YES	YES	YES	YES

SECTION 16 – OTHER INFORMATION

HMIS Rating : * - Chronic Hazard 0 - Minimal 1 – Slight 2 – Moderate 3 – Serious 4 – Severe
Health: *2 Flammability 1 Physical Hazard 1
Recommended PPE: Gloves, safety glasses with side shields, vapor respirator

NFPA Rating : 0 - Minimal 1 – Slight 2 – Moderate 3 – Serious 4 – Severe
Health: 2 Flammability 1 Reactivity 1 Special Hazards 0

Legend : ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
DOT: Department of Transportation
DSL: Domestic Substances List
EPA: Environmental Protection Agency
GHS: Globally Harmonized System
HPA: Hazardous Products Regulations
IARC: International Agency for Research on Cancer
Inh: Inhalation
N/Av: Not Available
N/Ap: Not Applicable
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible exposure limit

RCRA: Resource Conservation and Recovery Act
SARA: Superfund Amendments and Reauthorization Act
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

Disclaimer of Liability

The Information presented herein is supplied as a guide to those who handle or use this product and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive. The manner and conditions of use and handling may involve other and additional considerations. Safe work practices must be employed when working with any materials. It is important that the end user makes a determination regarding the adequacy of the safety procedures employed during the use of this product. No warranty of any kind is given or implied. ARDEX Engineered Cements will not be liable for any damages, losses, injuries or consequential damages which may result from the use or reliance on any information contained herein.

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