

MATERIAL SAFETY DATA SHEET

ARROW ADHESIVES

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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|--|---------------------------------------|--|-----------------------------|----------------------------------|--|
| Company Name Arrow Adhesives Company | Phone Number 1-800-678-9058 | Chemtrec (US) 1-800-424-9300; (International) 1-703-527-3887 | | | |
| Street Address 5457 Spalding Dr. | City Norcross | State GA | Postal Code 30092 | Last Update 06/01/2008 | |
| Product Name Universal Cement | Product Number AA-1108 | | | | |

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

| Hazardous Ingredients | CAS Number | ACGIH | | OSHA | |
|----------------------------|------------|----------|----------|---------|----------|
| | | TLV ppm | STEL ppm | PEL ppm | STEL ppm |
| CPVC Resin (Non-Hazardous) | 68648-82-8 | 10 mg/m3 | NE | NE | NE |
| Tetrahydrofuran | 109-99-9 | 50, skin | 100 | 200 | 250 |
| Cyclohexanone | 108-94-1 | 20, skin | 50 | 25 | |
| Methyl Ethyl Ketone | 78-93-3 | 200 | 300 | 200 | 300 |
| Acetone | 67-64-1 | 500 | 750 | 750 | 1000 |

NE = None Established

SECTION 3 – HAZARD IDENTIFICATION

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| Emergency Overview: Clear - cloudy liquid with ether-like odor. Extremely flammable liquid and vapors. May cause irritation to skin, eye, respiratory tract and other mucous membranes. |
| Potential Health Effects: Routes of exposure include; inhalation, skin absorption, skin contact, eye contact and ingestion. |
| Eyes: Can cause irritation and permanent eye injury. Symptoms include stinging, tearing, redness and swelling of eyes. |
| Skin: May cause mild skin irritation. Prolonged or repeated contact may dry the skin and cause dermatitis. Symptoms may include redness, burning, drying and cracking of skin, and skin burns. |
| Ingestion: If ingestion occurs seek medical attention immediately. May cause irritation of nose, throat and can lead to liver and kidney damage. May be fatal if swallowed. |
| Inhalation: May cause irritation to the nose, throat, mucous membranes and other tissues of the respiratory system. Symptoms include dizziness, drowsiness, fatigue, headache, nausea, coughing and shortness of breath. Overexposure may cause liver and kidney damage. |
| HEALTH HAZARDS: Acute: Over exposure to this product can be irritating to the eyes, skin and mucous membranes, and can also cause central-nervous system effects (dizziness, nausea and headaches). Ingestion of this product, or inhalation of high concentrations of this product's vapors, may be fatal. |
| Chronic: Prolonged or repeated skin exposures can lead to dermatitis. May cause conjunctivitis with prolonged or repeated eye exposure. May cause liver, kidney and reproductive damage. |
| Medical Conditions Aggravated by Exposure: Pre-existing disorders of the following organs may be aggravated by exposure to this material: skin, lung, liver, kidney. |

SECTION 4 – FIRST AID MEASURES

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| Eyes: Immediately move individual away from exposure into fresh air. Flush eye gently with water for at least 15 minutes while holding eyelids apart. Seek immediate medical attention. |
| Skin: Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention. Launder clothing before reuse. |
| Ingestion: Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center. Do not induce vomiting. |
| Inhalation: Move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen; seek medical attention immediately. |

SECTION 5 – FIREFIGHTING MEASURES

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| Flash Point: 6°F / -14°C |
| Explosive limits: Upper (UEL)- 11.8% Lower (LEL)- 1.8% |

Fire Extinguishing Media: Use foam, carbon dioxide (CO₂), dry chemical.

Special Fire Fighting Procedures: Incipient fire responders should wear eye protection. Firefighters must wear self-contained breathing apparatus and full protective equipment.

Unusual Fire and Explosion Hazards: Class IB Flammable Liquid. Keep away from sources of heat, sparks or flame. If ignited, may form carbon dioxide and carbon monoxide, various hydrocarbon vapors and toxic gases. Material is volatile and readily gives off vapors which may travel along the ground or be moved by ventilation and ignited by pilot lights, flames, sparks, heaters, smoking, electric motors, static discharge or other ignition sources at locations near the material handling point.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Spill or Leak: Eliminate all ignition sources (flares, flames including pilot lights electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean metal containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal in accordance with U.S. Federal, State, or local procedures.

SECTION 7 – HANDLING AND STORAGE

Handling and Storage Precautions : Keep container closed and upright when not in use. Do not store near heat, sparks, or open flames. If transferring this material to other containers, ground all containers to avoid static electricity buildup and discharge which may ignite flammable vapors.

Other Precautions: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, solid) all hazard precautions given in the data sheet must be observed. Avoid prolonged or repeated contact with skin or clothing.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection: In confined or poorly ventilated areas, use NIOSH/MSHA approved air respirators. Use only protection authorized in 29 CFR 1910.134 or applicable State regulations.

Eye Protection: Splash goggles or safety glasses.

Hand Protection: Wear rubber gloves

Other Protection: Wear protective clothing appropriate for task (coveralls, apron, Tyvek suit)

Specific Engineering Controls (such as ventilation, enclosed process): Use in well ventilated area. Provide ventilation capable of maintaining emissions at the point of use below recommended exposure limits. Mechanical exhaust (explosion proof) may be required. Emergency eye-wash / safety showers are needed where there is the possibility that an employee's eyes may be exposed to this material, the employer should provide an eye-wash fountain / safety shower within the work area for emergency use.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

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| Physical Form: Liquid | Color: Clear - cloudy | % Volatile by Weight: 80 - 90% |
| pH (concentrate): n/a | Vapor Density [air =1]: 2.5 | Evaporation Rate (BUAC = 1): 8.0 |
| Odor: Ether-like | Vapor Pressure: 143 mm Hg @ 20°C | Specific Gravity: 0.91 |
| Boiling Point: 151°F / 66°C | Solubility in Water: Negligible | |

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable

Hazardous Polymerization: Will not occur.

Incompatibility (Materials to Avoid): Oxidizers, acids and bases.

Reactive Conditions to avoid: Avoid heat, sparks, flames and other sources of ignition.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, hydrogen chloride and other various hydrocarbons.

SECTION 11 – TOXICOLOGICAL INFORMATION

Sensitization: None of the components of this product are know to cause sensitization.

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| Suspected Cancer Agent: None of the components of this product are listed as an IARC, NTP or OSHA carcinogen. Tetrahydrofuran – The National Toxicology Program has reported that exposures of mice and rats to THF vapor levels up to 1800 ppm 6 hr/day, 5 days/week for their lifetime caused an incidence of kidney tumors in male rats and liver tumors in female mice. The significance of these findings for human health are unclear at this time, and may be related to “species specific” effects. Elevated incidences of tumors in humans have not been reported for THF. ACGIH has classified Cyclohexanone and Tetrahydrofuran as “A3”, Confirmed Animal Carcinogens with Unknown Relevance to Humans. | |
| Reproductive Toxicity: This product is not reported to produce reproductive effects in humans. Reproductive toxicity data is available for Acetone, Methyl Ethyl Ketone, Cyclohexanone and Tetrahydrofuran; obtained through clinical studies on test animals exposed to relatively high doses. | |
| Mutagenicity: This product is not reported to produce mutagenic effects in humans. Human mutation data is available for Cyclohexanone; obtained through clinical studies on specific human tissues exposed to relatively high doses. Animal mutation data is available for Acetone, Methyl Ethyl Ketone and Tetrahydrofuran; obtained through clinical studies on specific animal tissues or micro-organisms exposed to relatively high doses. | |
| Medical Conditions Aggravated By Exposure: Pre-existing disorders of the following organs may be aggravated by exposure to this material: skin, lung, liver, kidney. | |
| Tetrahydrofuran: | Oral rat LD50: 1,650 mg/kg Inhalation rat LC50: 21,000 ppm / 3 hours |
| Cyclohexanone: | Oral rat LD50: 1,620 mg/kg Skin rabbit LD50: 1 mL/kg Inhalation rat LC50: 8,000 ppm / 4 hours |
| Methyl Ethyl Ketone: | Oral rat LD50: 2,737 mg/kg Skin rabbit LD50: 6,480 mg/kg Inhalation rat LC50: 23,500 mg/m3 / 8 hours |
| Acetone: | Oral rat LD50: 5,800 mg/kg Inhalation rat LC50: 50,100 mg/m3 / 8 hours |

SECTION 12 – ECOLOGICAL INFORMATION

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| This product is not expected to be toxic to aquatic organisms. | |
| Tetrahydrofuran: | 96 hour LC50 fathead minnow: 2160 mg/l |
| Cyclohexanone: | 96 hour LC50 values for fish is over 100 mg/l |
| Methyl Ethyl Ketone: | 96 hour LC50 values for fish is over 100 mg/l |
| Acetone: | 96 hour LC50 values for fish is over 100 mg/l |

SECTION 13 – DISPOSAL CONSIDERATIONS

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| Waste Disposal: Dispose in accordance with current local, state and federal regulations. |
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SECTION 14 – TRANSPORTATION INFORMATION

| | Proper Shipping Name | | UN Number | | Hazard Class /Packing Group | | Label | |
|-------------|----------------------|----------------------|-----------|-----------|-----------------------------|-----------|-------------------------|------------------|
| | Less than 1 Liter | Greater than 1 Liter | < 1 Liter | > 1 Liter | < 1 Liter | > 1 Liter | < 1 Liter | > 1 Liter |
| DOT | Consumer Commodity | Adhesives | None | UN 1133 | ORM-D | 3, PG II | None | Flammable Liquid |
| IMDG | Adhesives | | UN 1133 | | 3, PG II | | None (Limited Quantity) | Flammable Liquid |

Note: Shipments of containers holding 1-liter or less in volume qualify for a “Limited Quantity” exception. Refer to 49 CFR 173.150 for additional information.

SECTION 15 – REGULATORY INFORMATION

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| SARA Reporting Requirements: This product contains the following chemicals subject to Sections 302 and 313 of Title III of the Superfund Amendments and Reauthorization Act: | CHEMICAL NAME | SARA 302 (40 CFR 355, Appendix A) | SARA 313 (40 CFR 372.65) |
| | Tetrahydrofuran | No | No |
| | Cyclohexanone | No | No |
| | Methyl Ethyl Ketone | No | Yes |
| | Acetone | No | No |
| U.S. CERCLA Reportable Quantity: Tetrahydrofuran = 1000 lbs.; Cyclohexanone = 5000 lbs.; Methyl Ethyl Ketone = 5000 lbs.; Acetone = 500 lbs. | | | |
| California Proposition 65: This product may contain trace levels of chemicals known to the State of California to cause cancer. Exposure to these chemicals above the State of California ‘No Significant Risk Level’ is unlikely under normal use conditions. | | | |
| TSCA Inventory: The components of this product are listed on the TSCA Inventory. | | | |
| Canadian WHIMS Classification: Class B2: Flammable Liquid; Class D2A/B: Materials Causing Other Toxic Effects | | | |

SECTION 16 – OTHER INFORMATION**NFPA and HMIS:**

NFPA Hazard Signal: Health: 2 Flammability: 3 Reactivity: 1 Special: None

HMIS Hazard Signal: Health: 2 Flammability: 3 Reactivity: 1 PPE: G

The information contained herein is based on the data available to us and is believed to be correct. However, Arrow Adhesives Company makes no warranty, expressed, or implied, regarding the accuracy of this data or the results to be obtained from the use thereof. Arrow Adhesives Company assumes no liability for injury from the use of the product described herein. Furthermore, vendee assumes the risk in his use of the material.