



MATERIAL SAFETY DATA SHEET

FILE NO.: U1V4
MSDS DATE: 06/04/2009
MSDS No.: U1060409

Product: U1

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: U1 Urethane Adhesive, Part B
PRODUCT CODES: U1ML50, U1ML250, U1QT1B, U1GL1B, U1GL5B
COMPANY NAME: SmartAdhesives LLC
ADDRESS: San Francisco, CA 94129

EMERGENCY PHONE: Chemtrec: 1-800-424-9300

PRODUCT USE: Part B of two part Urethane adhesive; Industrial use
ISSUE DATE: 6-04-2009

SECTION 2: INGREDIENTS

| <u>INGREDIENT:</u> | <u>C.A.S. No.</u> | <u>% by Wt.</u> |
|-----------------------------------|-------------------|-----------------|
| Modified MDI | not disclosed | 60-100% |
| 4-4'-Diphenylmethane Diisocyanate | 101-68-8 | 20-40% |

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Normal physical form - liquid

Slowly reacts with water to produce carbon dioxide (reacts more quickly at higher temperatures). Can rupture closed containers.

IMMEDIATE HEALTH AND ENVIRONMENTAL HAZARDS

May cause eye and skin irritation

POTENTIAL HEALTH EFFECTS

EYE CONTACT: Product may be irritating to eyes. May cause temporary corneal injury.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation. Acute skin contact: Isocyanates react with skin protein and moisture to cause irritation which may include reddening, swelling, rash, scaling or blistering.

INHALATION: MDI vapors at concentrations above the TLV can irritate the mucous membranes in the respiratory tract (nose, throat, lungs) causing a runny nose, soar throat, coughing, chest discomfort, shortness of breath and reduced lung function. Persons with pre-existing, nonspecific bronchial hyper reactivity can respond to concentrations below TLV with similar symptoms as well as asthma attack. Overexposure to isocyanates has also been reported to cause lung damage (including decrease in lung function) which may be permanent.

INGESTION: Gastrointestinal irritation. Symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

OTHER HEALTH HAZARDS:

Lung tumors have been observed in laboratory animals exposed to aerosol droplets of MDI/Polymeric MDI (6 mg/m³) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Pre-existing eye, skin & respiratory disorders, such as asthma, bronchitis, emphysema, bronchial hyper reactivity, skin allergies, and eczema, may be aggravated by exposure to fumes or vapors of this product.

SECTION 4: FIRST AID MEASURES

- EYE CONTACT:** Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Seek medical attention.
- SKIN CONTACT:** Immediately remove contaminated clothing or shoes, and wipe excess from skin. Wash with soap and plenty of warm water. If symptoms develop, seek medical attention. Wash contaminated clothing prior to reuse.
- INHALATION:** Remove to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing and immediately seek medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed for up to several hours.
- INGESTION:** Do not induce vomiting unless instructed to do so by a physician. Drink 2 glasses of water. Get medical attention immediately. **DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.**

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:

SECTION 5: FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLAMMABLE LIMITS

- LEL -** Not determined (% by volume)
- UEL -** Not determined (% by volume)

FLASH POINT: > 110 °C (230 °F) (PMCC test method)

AUTOIGNITION TEMPERATURE:
> 600 °C

NFPA HAZARD CLASSIFICATION

HEALTH: 2 FIRE HAZARD: 1 REACTIVITY: 1 OTHER: none

HMIS HAZARD CLASSIFICATION

HEALTH: 2 FIRE HAZARD: 1 REACTIVITY: 1

EXTINGUISHING MEDIA: Use Class B fire extinguishing agents. For small fires, use dry chemical powder. For large fires, use water spray, foam or water fog. Water jet is not recommended.

FIRE FIGHTERS PROTECTION

SPECIAL FIRE FIGHTING PROCEDURES:

Full emergency equipment with self-contained breathing apparatus and full protective clothing (including full suit, boots, gloves, splash goggles) should be worn by fire fighters. Do not enter a confined space without full bunker gear, including a positive pressure NIOSH approved self-contained breathing apparatus. During fire, irritating and toxic gases may be generated by thermal decomposition or combustion. Product reacts with water. Reaction may produce heat and / or gases.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES:

Warn everybody of potential hazards and evacuate if necessary. No action shall be taken involving any personal risk or without suitable training. Evacuate untrained and unprotected people from release areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the appropriate federal, state and local regulatory agencies.

SPILL CLEAN UP METHODS

Contain and absorb spillage with inert, non-combustible, absorbent material (such as sand or earth). Place into open-top drums or plastic bags for potential further decontamination. Wash spillage area with decontaminant (see next paragraph). Test atmosphere for MDI. Containers with collected spillage must be properly labeled with correct contents and hazard symbol and dispose of properly (see Section 13 for disposal considerations). Notify appropriate governmental agency if release is reportable (CERCLA RQ for 4,4'-MDI is 5,000 lbs).

Decontamination solution: Prepare solution of 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Always follow instructions and precautions on the supplier's MSDS. When using the solution, allow deactivated material to stand for at least 30 minutes before placing into drums. Do not tighten the bungs. Mixing with wet earth is also effective (but slower).

SECTION 7: HANDLING AND STORAGE

HANDLING: Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and using adequate ventilation to ensure the occupational exposure limit is not exceeded. Avoid breathing aerosols, vapors, and mist. Avoid personal contact with the product.

STORAGE: Store indoors in a well ventilated, dry place away from heat. Ideal storage temperature is between 60 to 100 °F (16-38 °C). Keep containers tightly closed when not in use. Product reacts with water to produce carbon dioxide gas. A hazardous gas build-up could occur if contaminated containers are re-sealed. Keep product away from atmospheric moisture and maintain a nitrogen atmosphere in the containers at all times. Do not store product contaminated with water to prevent potential hazardous reaction. Do not store in containers made of copper, copper alloys or galvanized surfaces. Refer to Section 10 of the MSDS for Stability and Reactivity data.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

VENTILATION: Hazard control from vapor or spray mist is ideally performed by the use of engineering controls. MDI levels must be monitored.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use an approved positive-pressure supplied - air respirator. Avoid breathing vapors which may be produced under some conditions such as heating or applications. Avoid breathing aerosols and mists. Use NIOSH / MSHA approved respiratory protection equipment when airborne exposure is excessive. Observe OSHA regulations for respirator use (29 CFR 1910.134).

EYE PROTECTION: Safety glasses, chemical/splash goggles.

SKIN PROTECTION: Avoid contact with skin and clothing. Use permeation resistant gloves such as butyl rubber, nitrile rubber or neoprene gloves. Thin latex gloves should be avoided for repeated use. Protective clothing should be selected and used in accordance with ACGIH's "Guidelines for the Selection of Chemical Protective Clothing".

EXPOSURE GUIDELINES:

| | <u>Organization</u> | <u>Type</u> | <u>Limit</u> |
|-----------------------------------|---------------------|-------------|--------------|
| 4,4'-Diphenylmethane Diisocyanate | ACGIH (TLV) | TWA | 0.05 mg/m3 |
| | OSHA (PEL) | CEIL | 0.20 mg/m3 |
| | NIOSH (REL) | TWA | 0.05 mg/m3 |
| | NIOSH (REL) | CEIL | 0.20 mg/m3 |

ACGIH: American Conference of Governmental Industrial Hygienists
 OSHA: Occupational Safety and Health Administration
 NIOSH: National Institute of Occupational Safety and Health

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|--------------------------------|-----------------|----------------------------------|--------------------|
| COLOR & APPEARANCE: | Beige liquid | MELTING POINT: | Not applicable |
| ODOR: | Musty odor | FREEZING POINT: | Not applicable |
| PHYSICAL FORM: | Liquid | VAPOR PRESSURE (mmHg): | < 10-5 mmHg @ 77°F |
| pH AS SUPPLIED: | Not applicable | VAPOR DENSITY (AIR=1): | 8.5 (MDI) |
| BOILING POINT: | >572°F (300 °C) | SPECIFIC GRAVITY (H2O=1): | 1.2 @ 77°F |
| VISCOSITY: | 1,500 ± 50 cP | BULK DENSITY: | 10.0 lbs/gal. |
| | | EVAPORATION RATE: | Not available |

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guarantee analysis of any specific lot or as specifications for the product.

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Product is stable under normal conditions of storage and handling. Product is very unstable when contaminated with water.

MATERIAL AND CONDITIONS TO AVOID (STABILITY):

Avoid temperatures above 100°F. Avoid temperatures below 60°F. Avoid moisture. Product can decompose at elevated temperatures.

Avoid contact with metals such as aluminum, brass, copper, galvanized metals, zinc. Reaction with water can generate carbon dioxide. Generation of gas can cause pressure build up in closed systems. Avoid contact with acids, alcohol, amines, ammonia, bases, metal compounds, moist air, strong oxidizers, water. Avoid unintended contact with polyols.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:

| <u>SUBSTANCE</u> | <u>CONDITION</u> |
|------------------|-------------------|
| Isocyanates | During combustion |
| Carbon monoxide | During combustion |
| Carbon dioxide | During combustion |
| Hydrogen cyanide | During combustion |
| Nitrous Oxide | During combustion |

HAZARDOUS POLYMERIZATION:

Can occur. Polymerization can occur at elevated temperatures in the presence of strong bases, tertiary amines, and metal compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION

ACUTE TOXICITY: Oral LD50 : > 5,000 mg/kg (Rat)
 Dermal LD50: > 5000 mg/kg (Rabbit)
 Inhalation LC50:
 (4 hour Rat Respirable aerosol) = .49 mg/m3
 (1 hour Rat Respirable aerosol) = 2240 mg/m3

MUTAGENICITY: There is no substantial evidence of mutagenic potential.

CARCINOGENIC EFFECTS: The ingredients are not classified as carcinogenic by ACGIR or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.

REPRRODUCTIVE EFFECTS: No adverse reproductive effects are anticipated.

NOTES: There are reports that chronic exposure to diisocyanates by inhalation may result in permanent decreases in lung function.

SECTION 12: ECOLOGICAL INFORMATION**ECOLOGICAL INFORMATION:**

ECOTOXICITY: Polymeric MDI: LC50 (Zebra Fish) > 1,000 mg/l; EC50 (Daphnia magna)(24 hour) > 1,000 mg/l; EC50 (E. Coli) > 100 mg/l

PERSISTENCE: Immiscible with water, but will react with water to produce inert and non-biodegradable solids.

SECTION 13: DISPOSAL CONSIDERATIONS**WASTE DISPOSAL METHOD:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations. This material is not a hazardous waste under RCRA 40 CFR 261. Small quantities should be treated with a decontaminant solution (see Section 6). Empty containers should be decontaminated and passed to an approved drum recycler or destroyed. Never pour any material into soil, drains, sewers or waterways.

RCRA HAZARD CLASS: Not regulated.

NOTE: Please consult applicable regulations or authorities before disposal.

SECTION 14: TRANSPORT INFORMATION**U.S. DEPARTMENT OF TRANSPORTATION**

PROPER SHIPPING NAME: Not regulated under 5,000 lbs.
Single containers with 5,000 lbs or more are regulated as: Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082, PGIII, RQ.

HAZARD CLASS: Not applicable
UN NUMBER: Not applicable
PACKING GROUP: PG III
DOT PRODUCT RQ. Lb.: 25,000 lbs.
LABEL STATEMENT: Not applicable

TDG, IMO/IMDG, ICAO/IATA CLASSIFICATION:
Not regulated.

SECTION 15: REGULATORY INFORMATION**U.S. FEDERAL REGULATIONS****OSHA HAZARDOUS COMMUNICATION STANDARD (29 CFR 1910.1200):**

Classified as hazardous. HCS Classification: Toxic material, Irritating material, Sensitizing material.

TSCA (TOXIC SUBSTANCE CONTROL ACT):

All ingredients in this products are listed in the T.S.C.A. inventory.

EPCRA SECTION 313 (40 CFR 372) CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION, AND LIABILITY ACT):

Reportable quantity of 5,000 lbs for 4,4' -Diphenylmethane Diisocyanate , CAS # 101-68-8. Any spill or release above the reportable quantity must be reported to the National Response Center (800) 424-8802.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):**313 REPORTABLE INGREDIENTS:**

Diisocyanate Compounds (Category Code N120) 20-40% by weight

RCRA: If discarded in its purchased form, this product would not be a hazardous waste by listing. However, under RCRA, it is the responsibility of the product user to determine at the time

of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

STATE REGULATIONS:

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:

HMIS Rating

| | |
|--------------------|----------|
| Health | 2 |
| Fire Hazard | 1 |
| Reactivity | 1 |

NFPA Rating

| | |
|---------------------|----------|
| Health | 2 |
| Flammability | 1 |
| Reactivity | 1 |

Causes damage to the following organs: lungs, respiratory tract, skin, eyes. May be harmful if inhaled. May cause respiratory tract, eye, and skin irritation. May cause allergic respiratory and skin reaction.

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SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: U1 Urethane Adhesive, Part A
PRODUCT CODES: U1ML50, U1ML250, U1QT1A, U1GL1A, U1GL5A

COMPANY NAME: SmartAdhesives LLC
ADDRESS: San Francisco, CA 94129

EMERGENCY PHONE: Chemtrec: 1-800-424-9300

PRODUCT USE: Part A of two part Urethane adhesive; Industrial use
ISSUE DATE: 6-04-2009

SECTION 2: INGREDIENTS

| <u>INGREDIENT:</u> | <u>C.A.S. No.</u> | <u>% by Wt.</u> |
|------------------------------------|-------------------|-----------------|
| Polyol Blend | (Trade Secret) | 45-65% |
| Tris-(2-chloroisopropyl)-phosphate | 13674-84-5 | 35-55% |

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Normal physical form - liquid

IMMEDIATE HEALTH AND ENVIRONMENTAL HAZARDS

Eye and skin irritant. May cause respiratory tract irritation.

POTENTIAL HEALTH EFFECTS

EYE CONTACT: Acute - May result in irritation.

SKIN CONTACT: Acute - May result in irritation.

INHALATION: Acute - May result in respiratory irritation, with symptoms of coughing, sore throat, and runny nose.

INGESTION: Acute - May result in abdominal pain, nausea, vomiting, and diarrhea.

OTHER: Chronic inhalation may cause kidney damage and liver damage. May cause target organ damage based on animal data.

SECTION 4: FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Seek medical attention.

SKIN CONTACT: Immediately remove contaminated clothing or shoes, and wipe excess from skin. Wash with soap and plenty of warm water. If symptoms develop, seek medical attention. Wash clothes before reuse.

INHALATION: Remove to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing and immediately seek medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed for up to several hours.

INGESTION: Do not induce vomiting unless instructed to do so by a physician. Give victim 2 glasses of water. Get medical attention immediately. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SECTION 5: FIRE FIGHTING MEASURES**FLAMABLE PROPERTIES****FLAMMABLE LIMITS**

LEL - Not determined (% by volume)

UEL - Not determined (% by volume)

FLASH POINT: > 320 °F (160 °C) (PMCC test method)

AUTOIGNITION TEMPERATURE:
No data available

NFPA HAZARD CLASSIFICATION

HEALTH: 1 **FIRE HAZARD:** 1 **REACTIVITY:** 0 **OTHER:** none

HMIS HAZARD CLASSIFICATION

HEALTH: 1 **FIRE HAZARD:** 1 **PHYSICAL HAZARD:** 0

EXTINGUISHING MEDIA: Use Dry Chemical, Carbon Dioxide, Foam or Water Fog.

FIRE FIGHTERS PROTECTION**SPECIAL FIRE FIGHTING PROCEDURES:**

Full emergency equipment with self-contained breathing apparatus and full protective clothing (including full suit, boots, gloves, splash goggles) should be worn by fire fighters. Do not enter a confined space without full bunker gear, including a positive pressure NIOSH approved self-contained breathing apparatus. During fire, irritating and toxic gases may be generated by thermal decomposition or combustion. Reaction may produce heat and / or gases.

SECTION 6: ACCIDENTAL RELEASE MEASURES**ACCIDENTAL RELEASE MEASURES:****PERSONAL PRECAUTIONS**

Warn everybody of potential hazards and evacuate if necessary. No action shall be taken involving any personal risk or without suitable training. Evacuate untrained and unprotected people from release areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Remove sources of ignition. Avoid contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet.

ENVIRONMENTAL PRECAUTIONS

Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the appropriate regulatory body.

SPILL CLEAN UP METHODS

Contain and absorb spillage with inert, non-combustible, absorbent material (such as sand or earth). Transfer to a container for disposal (RCRA hazardous waste). Containers with collected spillage must be properly labeled with correct contents and hazard symbol. Finish cleaning by spreading water on contaminated surface and allow to evacuate through sanitary system.

SECTION 7: HANDLING AND STORAGE**HANDLING:**

Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and avoiding contact with the material to eyes, skin and clothing. Avoid breathing vapors or spray mist. Use with adequate ventilation.

STORAGE:

Store indoors in a well ventilated, cool, dry place away from heat, sunlight, and incompatible materials (see Section 10). Ideal if stored between 50 to 85 °F and do not store above 104 °F (40 °C). Keep containers tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**VENTILATION:**

Use local exhaust ventilation to maintain airborne concentrations below the TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it.

RESPIRATORY PROTECTION:

Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use an approved positive-pressure supplied - air respirator. Avoid breathing vapors which may be produced under some conditions such as heating or applications. Avoid breathing aerosols and mists.

Use NIOSH / MSHA approved respiratory protection equipment when airborne exposure is excessive. Observe OSHA regulations for respirator use (29 CFR 1910.134).

EYE PROTECTION: Safety glasses, chemical/splash goggles.

SKIN PROTECTION: Avoid contact with skin and clothing. Use impervious, chemical resistant gloves such as butyl rubber, nitrile rubber or neoprene gloves. Thin latex gloves should be avoided for repeated use.

| | | |
|---|--|---|
| EXPOSURE GUIDELINES: Polyol Blend tris-(2-chloroisopropyl)-phosphate | ACGIH (TVL) not applicable not applicable | OSHA (PEL) not applicable not applicable |
|---|--|---|

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|--------------------------------|---------------|----------------------------------|----------------|
| COLOR & APPEARANCE: | Clear liquid | MELTING POINT: | Not applicable |
| ODOR: | slight | FREEZING POINT: | Not applicable |
| PHYSICAL FORM: | Liquid | VAPOR PRESSURE (mmHg): | Not applicable |
| | | VAPOR DENSITY (AIR=1): | Not applicable |
| pH AS SUPPLIED: | Not available | SPECIFIC GRAVITY (H2O=1): | 1.2 @ 68°F |
| BOILING POINT: | Not available | EVAPORATION RATE: | Not available |
| VISCOSITY: | 2,000 ± 50 cP | BULK DENSITY: | 10.0 lbs./gal. |

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guarantee analysis of any specific lot or as specifications for the product.

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Product is stable under normal conditions of storage and handling.

MATERIAL AND CONDITIONS TO AVOID (STABILITY):
Incompatible with oxidizing agents.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:

| <u>SUBSTANCE</u> | <u>CONDITION</u> |
|-----------------------|-------------------|
| Carbon monoxide | During combustion |
| Carbon dioxide | During combustion |
| Amines | During combustion |
| Hydrochloric acid | During combustion |
| Oxides of nitrogen | During combustion |
| Oxides of phosphorous | During combustion |

HAZARDOUS POLYMERIZATION:
Does not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION

Tris-(2-chloroisopropyl)-phosphate (13674-84-5)

Inhalation LC50 Rat: 5 mg/L/ (4 hours); Inhalation LC50 Rat: >17.8 mg/L/ (1 hour); Oral LD50 Rat: 500 mg/kg; Dermal LD50 Rat: >5000 mg/kg; Dermal LD50 Rabbit: 1230 mg/kg

Reproductive effects have been observed in animal studies.

Polyether Polyol (25791-96-2)

Dermal LD50 Rabbit: >16,800 mg/kg; Oral LD50 Rat > 2,000 mg/kg

Dipropylene Glycol (25265-71-8)

Dermal LD50 Rabbit: 20,500 mg/kg; Oral LD50 Rat > 14,800 mg/kg; Inhalation (Dusts and Mists) LC50 Rat: 6 to 8 mg/L (8 hours)

Triethylenediamine(280-57-9)

Dermal LD50 Rabbit: > 2,000 mg/kg; Oral LD50 Rat 700 to 1,700 mg/kg; Inhalation (Dusts and Mists) LC50 Rat: > 5 mg/L (4 hours)

SECTION 12: ECOLOGICAL INFORMATION**ECOLOGICAL INFORMATION:****Tris-(2-chloroisopropyl)-phosphate (13674-84-5)**

Biodegradation: Aerobic, 0%, Exposure time: 28 days. Not readily biodegradable.

Bioaccumulation: Carp, Exposure time: 42 days. Approximately 0.8 - 2.8 BCF

Acute and Prolonged Toxicity to Fish:

LC50: approx. 84 mg/L (Bluegill (*Lepomis macrochirus*), 96 hours).

LC50: 51 mg/L (Fathead minnow (*Pimephales promelas*), 96 hours).

LC50: 30 mg/L (Guppy (*Poecilia reticulata*), 96 hours).

Acute Toxicity to Invertebrates

EC50: approx. 131 mg/L (Water flea (*Daphnia magna*), 48 hours).

Toxicity to Aquatic Plants

EC50: 45 mg/L End Point: biomass (Green algae (*Scenedesmus subspicatus*), 72 hours)

EC50: 4 mg/L End Point: biomass (Green algae (*Selenastrum capricornutum*), 96 hours)

Toxicity to Microorganisms

EC50: 295 mg/L (Photobacterium phosphoreum), 30 min.

EC50: 784 mg/L (Activated sludge microorganisms), 3 hours.

SECTION 13: DISPOSAL CONSIDERATIONS**WASTE DISPOSAL METHOD:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations. Dispose of waste material at an approved waste treatment or disposal facility. Empty containers should be decontaminated and passed to an approved drum recycler or destroyed. Never pour any material into soil, drains, sewers or waterways.

RCRA HAZARD CLASS: Not regulated.

NOTE: Please consult applicable regulations or authorities before disposal.

SECTION 14: TRANSPORT INFORMATION**U.S. DEPARTMENT OF TRANSPORTATION**

PROPER SHIPPING NAME: Not regulated.

HAZARD CLASS: Not applicable

UN NUMBER: Not applicable

TDG CLASSIFICATION: Not regulated.

IMO/IMDG CLASSIFICATION: Not regulated.

ICAO/IATA CLASSIFICATION: Not regulated.

SECTION 15: REGULATORY INFORMATION**U.S. FEDERAL REGULATIONS****OSHA HAZARDOUS COMMUNICATION STANDARD (29 CFR 1910.1200):**

Classified as hazardous. HCS Classification: Irritating material, Target organ effects.

TSCA (TOXIC SUBSTANCE CONTROL ACT):

All ingredients in this product are listed in the T.S.C.A. inventory or exempt.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT):

None.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

302 HAZARD CATEGORIES:

None.

311/312 HAZARD CATEGORIES:

Under applicable definitions, the product is considered to meet following categories:
Acute Health Hazard.

313 REPORTABLE INGREDIENTS:

None.

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:

HMIS Rating

| | |
|----------------------------|----------|
| Health Hazard | 1 |
| Fire Hazard | 1 |
| Reactivity | 0 |
| Personal Protection | X |

NFPA Rating

| | |
|---------------------|----------|
| Health | 1 |
| Flammability | 1 |
| Reactivity | 0 |

DISCLAIMER: The material in this Material Safety Data Sheet (MSDS) is, to the best of our knowledge, accurate as of the date issued. However, neither SmartAdhesives nor any of its subsidiaries or agents assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. Compliance with all applicable federal, state, and local laws and regulations remains the responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that may exist. Given the quantity of variables that affect use and application of our products, many of which are within the user's control and unique to each user's knowledge, SMARTADHESIVES MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE.