

SILPAK, INC.
169 ATLANTIC STREET
POMONA, CA. 91768
909-595-6191
FAX 909-598-2446

MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER: SILPAK, INC.
ADDRESS: 169 ATLANTIC STREET/POMONA, CA. 91768
EMERGENCY TELEPHONE #: 909-595-6191
CHEMICAL NAME AND SYNONYMS: POLYMERIC METHYLENE DIISOCYANATE
TRADE NAME AND SYNONYMS: SILMASTER A, SILCAST A, RU-280-A,
SILWHITE A, SILPLASTIC A, SILPLEX A, SILTEC A, SILTEOL A, SP-100-8 A,
SP-328-12 A, SP-238-4 A, SP-328-2 A, SP-200-4 A, SP-200-2 A,
CHEMICAL FAMILY: POLYMERIC ISOCYANATE
THIS PRODUCT MEETS THE REQUIREMENTS OF SECTION 313 OF TITLE III OF
(SARA).
* NOT REGULATED UNDER 5,000#/U.S. ENVIRONMENTAL PROTECTION AGENCY

SECTION II HAZARDOUS INGREDIENTS

COMPONENTS:	APPROX %	CURRENT TLV/PBL
4,4-DIPHENYLMETHANE DIISOCYANATE	30	0.02 PPM
CAS 101-68-8 (OTHER REGULATED SUBSTANCES, LIQUID N.O.S. CLASS 9		
NA 3082 GROUP III *		
HIGHER POLYMERS OF SIMILAR STRUCTURE	30	
AROMATIC NAPHTHA CAS 91-20-3	40	
PETROLEUM PRODUCT CAS 68477-31-6		
PH - 7.8		

SECTION III PHYSICAL DATA

BOILING POINT (F): DECOMPOSES >400F
SPECIFIC GRAVITY: 1.2
VAPOR PRESSURE (mm Hg): <0.0001
PERCENT VOLATILE BY VOLUME (%): 40
VAPOR DENSITY (AIR=1): APPROX 6
SOLUBILITY IN WATER: INSOLUBLE, REACTS
APPEARANCE AND ODOR: VISCOUS LIQUID WITH LIGHT TO DARK AMBER
COLOR.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): 204F ASTM D56 TAG CLOSED CUP
FLAMMABLE LIMITS: LEL - NONVOLATILE LIQUID
EXTINGUISHING MEDIA: WATER FOG, DRY CHEMICAL EXTINGUISHER
SPECIAL FIRE FIGHTING PROCEDURES: USE APPROVED RESPIRATOR &
PROTECTIVE CLOTHING. USE LARGE AMOUNTS OF WATER. CAUTION REACTION
BETWEEN WATER AND HOT ISOCYANATE MAYBE VIGOROUS. COMBUSTIBLE
MATERIAL DUE TO PETROLEUM MATERIAL

UNUSUAL FIRE AND EXPLOSION HAZARDS: WATER CONTAMINATION WILL
PRODUCE CARBON DIOXIDE. DO NOT RESEAL CONTAMINATED CONTAINERS AS
PRESSURE BUILDS UP IT MAY RUPTURE THEM.

SECTION V HEALTH HAZARD DATA

ANIMAL TOXICITY:
ORAL, LD 50 (INGESTION).....>10,000 MG/KG (RATS)
DERMAL, LD (SKIN CONTACT).....>10,000 MG/KG (RABBITS)
INHALATION, LC 50 (4 HOUR).....APPROX. 370 MG/CM (RATS)
AQUATIC, LC 50 (24 HOUR).....>500 MG/L
EYES.....NOT IRRITATING (RABBIT) OECD GUIDELINES
SKIN.....SLIGHT IRRITATION

NO CONCLUSIVE EVIDENCE HAS BEEN DEVELOPED TO INDICATE THAT MDI IS
A CARCINOGENIC, TERATOGENIC, OR THAT IT CAUSES REPRODUCTIVE
DEFECTS IN ANIMALS AND HUMANS; HOWEVER, MDI HAS BEEN REPORTED BY
NIOSH TO BE MUTAGENIC TO SALMONELLA TYPHIMURIUM BACTERIA. THERE
IS NOT FULL AGREEMENT IN THE SCIENTIFIC COMMUNITY AS TO THE SAFETY
OF HUMAN CANCER RISKS.

HUMAN EFFECTS OF OVEREXPOSURE:

INHALATION: SOME INDIVIDUALS MAY DEVELOP SENSITIVITY LEADING TO
ASTHMA-LIKE SYMPTOMS ON SUBSEQUENT EXPOSURES BELOW THE TLV. MAY
CAUSE BREATHLESSNESS, SEVERE COUGHING, CHEST DISCOMFORT,
IRRITATION OF MUCOUS MEMBRANE AND REDUCED PULMONARY FUNCTION.
THIS PRODUCT CONTAINS PETROLEUM SOLVENTS. INHALATION OF THESE
VAPORS COULD ALSO CAUSE HEADACHES, DIZZINESS, AND HAVE OTHER
EFFECTS ON THE CENTRAL NERVOUS SYSTEM.

SKIN: MINOR IRRITATION MAY RESULT FROM ISOCYANATE REACTION WITH
SKIN MOISTURE AND PROTEIN. TEMPORARY STAINS OF THE SKIN MAY
RESULT. ALLERGIC SENSITIVITY MAY OCCUR FOR SOME INDIVIDUALS.
REPEATED CONTACT WITH THE SOLVENT IN THIS PRODUCT MAY LEAD TO
DERMATITIS.

EYES: MAY LEAD TO IRRITATION WITH TEARING. MDI MAY REACT WITH
MOISTURE IN THE EYES.

INGESTION: IRRITATION AND POSSIBLE CORROSIVE ACTION IN THE MOUTH, THROAT, AND STOMACH TISSUES. VOMITING MAY OCCUR.

THRESHOLD LIMIT VALUE (ACGIH): 0.02 PPM (0.2 MG/M3) FOR THE MDI 100 PPM (563 MG/M3) PER 8 HOUR WORK DAY; RECOMMENDED BY EXXON PERMISSIBLE EXPOSURE LIMIT (OSHA): SAME.

EMERGENCY AND FIRST AID PROCEDURES:

EYE CONTACT: FLUSH WITH CLEAN, WARM WATER AT LOW PRESSURE FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING THE EYELIDS. CONSULT A PHYSICIAN IMMEDIATELY.

SKIN CONTACT: WASH EXPOSED SKIN WITH WARM, SOAPY WATER THOROUGHLY. ALCOHOL MAY BE HELPFUL. CONSULT A PHYSICIAN IF SWELLING OR REDNESS APPEARS.

INHALATION: MOVE PERSONNEL OUT OF EXPOSURE AREA IMMEDIATELY. IF BREATHING IS LABORED OR DIFFICULT, OXYGEN SHOULD BE ADMINISTERED BY TRAINED PERSONNEL. IF BREATHING HAS STOPPED, APPLY ARTIFICIAL RESPIRATION. CONSULT A PHYSICIAN IMMEDIATELY. RESPIRATORY RESPONSE MAY BE DELAYED 4-8 HOURS AFTER EXPOSURE.

INGESTION: DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN IMMEDIATELY. ASPIRATION OF THE PETROLEUM SOLVENT CAN CAUSE SEVERE PULMONARY DAMAGE OR DEATH.

NOTE TO PHYSICIAN: TREAT SYMPTOMATICALLY: BRONCHODILATORS; OXYGEN.

SECTION VI REACTIVITY DATA

STABILITY: STABLE, UNDER RECOMMENDED STORAGE. STORE DRY AREA TEMP 70-80°F

CONDITIONS TO AVOID: AVOID TEMPERATURES & WATER GREATER THAN 347°F INCOMPATIBILITY (MATERIALS TO AVOID): WATER, STRONG BASES, ALCOHOLS, METAL COMPOUNDS AND SURFACE ACTIVE AGENTS. WILL CAUSE SOME CORROSION TO COPPER ALLOYS AND ALUMINUM. STRONG OXIDANTS AND IGNITION SOURCES DUE TO PETROLEUM SOLVENT.

HAZARDOUS DECOMPOSITION PRODUCTS: @ >400°F: CARBON MONOXIDE, OXIDES OR NITROGEN AND TRACES OF HYDROGEN CYANIDE AS WELL AS CO AND ALDEHYDES.

HAZARDOUS POLYMERIZATION: MAY OCCUR; CO₂, NH₃, CO

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: ONLY PROPERLY PROTECTED PERSONNEL SHOULD REMAIN IN THE AREA. CONTAIN THE SPILL, COVER LIQUID WITH ABSORBENT MATERIAL (KITTY LITTER, VERMICULITE) PLACE IN OPEN TOP CONTAINERS AND TREAT WITH DECONTAMINATION SOLUTION (90% WATER, 6% AMMONIA, 4% DETERGENT). REMOVE CONTAINERS TO A SAFE AREA AND LET STAND 24-48 HOURS. VENTILATE AREA TO REMOVE VAPORS.

SECTION VIII SPECIAL PROTECTION INFORMATION

EYE PROTECTION: LIQUID CHEMICAL GOGGLES OR FULL FACE SHIELD. NO CONTACT LENSES SHOULD BE WORN.

SKIN PROTECTION: CHEMICAL RESISTANT GLOVES SUCH AS NATURAL RUBBER OR POLYVINYL ALCOHOL. COVER AS MUCH OF THE EXPOSED SKIN AS POSSIBLE WITH APPROPRIATE CLOTHING. IF SKIN CREAMS ARE USED, KEEP AREA COVERED BY CREAM TO MINIMUM.

RESPIRATORY PROTECTION: FOR SHORT TERM EXPOSURES, USE AN ORGANIC FILTER RESPIRATOR MASK OF A TYPE APPROVED BY NIOSH OR U.S. MINING ENFORCEMENT AND SAFETY ADMINISTRATION. SUPPLIED AIR OR SELF-CONTAINED BREATHING APPARATUS IS PREFERRED. MDI HAS A LOW VAPOR PRESSURE AND IS MANDATORY. NO SMOKING OR OPEN LIGHTS ARE PERMITTED.

VENTILATION: GENERAL MECHANICAL OR LOCAL EXHAUST TO MAINTAIN LEVELS BELOW TLV.

OTHER: SAFETY SHOWERS AND EYE WASH STATIONS SHOULD BE ACCESSIBLE IN ALL WORK AREAS. ALL EMPLOYEES SHOULD BE PROPERLY TRAINED.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: KEEP CONTAINER CLOSED. STORE IN A COOL PLACE.

OTHER PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS AND FLAME. USE ONLY WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.

AVERAGE SHELF LIFE: 6 MONTHS FROM DATE OF MANUFACTURING SHIPPING & STORAGE OF LESS THAN 5000 POUNDS IS NOT DOT REGULATED EPA REPORTABLE: QUANTITIES GREATER THAN 5000 POUNDS

SECTION X SHIPPING DATA

HMIS _____ NFPA

1 - HEALTH	1 - HEALTH
1 - FLAMMABILITY	1 - FLAMMABILITY
1 - REACTIVITY	1 - REACTIVITY

MATERIAL SAFETY DATA SHEET

COMPONENT

SECTION I

CHEMICAL NAME AND SYNONYMS: POLYMERIC ALCOHOL
 TRADE NAME AND SYNONYMS: SILMASTER B, SILCAST B, SP-100-B, SILMITE B, SILPLASTIC B, SILPLEX B, SILTEC B, SILTOOL B, SP-328-12 B, SP-328-4 B, SP-328-2 B, SP-200-2 B, SP-200-4 B, RU-280-B
 CHEMICAL FAMILY: POLYETHER POLYOL
 FORMULA: POLYOL, URETHANE RESIN
 TSCA STATUS: ON INVENTORY

SECTION II HAZARDOUS INGREDIENTS

HYDROXYL TERMINATED POLY (OXYALKYLENE) POLYETHER-CAS N/A: 30 N.E.
 PETROLEUM BLEND -CAS 68477-31-6: 40
 AMINE BEARING HYDROXYL TERMINATED POLY (OXYALKYLENE): 30
 POLYETHER-CAS 25214-63-5

SECTION III PHYSICAL DATA

BOILING POINT (P): DECOMPOSES SPECIFIC GRAVITY: 1.06
 VAPOR PRESSURE (mm Hg.) @ N.E.
 PERCENT VOLATILE BY VOLUME: 40
 SOLUBILITY IN WATER: SLIGHTLY SOLUBLE
 VAPOR DENSITY (AIR=): N.E. EVAPORATION RATE: N/A
 APPEARANCE & ODOR: VISCOUS LIQUID, COLOR DETERMINED BY PRODUCT

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): 245F ASTM D56 TAG CLOSED CUP
 FLAMMABLE LIMITS: NOT MEASURED
 EXTINGUISHING MEDIA: DRY CHEMICAL, TYPE MONAMMONIUM PHOSPHATE,
 POTASSIUM SULFATE, POTASSIUM CHLORIDE, CARBON DIOXIDE, HIGH
 EXPANSION (PROTEINIC) CHEMICAL FOAM, WATER SPRAY FOR LARGE FIRES.
 SPECIAL FIRE FIGHTING PROCEDURES: DO NOT DIRECT SOLID WATER,
 STREAM OR FOAM INTO HOT BURNING POOLS.

UNUSUAL FIRE AND EXPLOSION HAZARDS: VAPOR CAN BE IGNITABLE. STORE
 AWAY FROM WELDING, CUTTING, GRINDING OR SOURCES OF HEAT AND
 SPARKS.

SECTION V HEALTH HAZARD DATA

ANIMAL TOXICITY:

ORAL, LD 50 (INGESTION).....N.E.
 DERMAL, LD 50 (SKIN CONTACT).....N.E.
 INHALATION, LC 50 (4 HOURS).....N.E.
 AQUATIC, LC 50 (24 HOURS).....N.E.
 EYES.....N.E.
 SKIN.....N.E.

THRESHOLD LIMIT VALUE (ACGIH): NO TLV HAS BEEN ESTABLISHED FOR
 THIS PRODUCT AS A SYSTEM.

PERMISSIBLE EXPOSURE LIMIT (OSHA): SAME AS ABOVE.

EFFECTS OF OVEREXPOSURE:

EYE CONTACT: FLUSH WITH CLEAN, Lukewarm water at low pressure for
 at least 15 minutes, occasionally lifting eyelids. CONSULT A
 PHYSICIAN IMMEDIATELY.

INGESTION: INDUCE VOMITING. NEVER INDUCE VOMITING OR GIVE
 ANYTHING TO DRINK TO AN UNCONSCIOUS PERSON

INHALATION: REMOVE VICTIM FROM AREA OF EXPOSURE TO SAFE AREA

SKIN: REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREAS
 THOROUGHLY WITH WARM SOAPY WATER. CONTAMINATED CLOTHING SHOULD
 BE PROPERLY LAUNDERED BEFORE REUSING.

NOTE TO PHYSICIAN: TREAT SYMPTOMATICALLY; BRONCHODILATORS; OXYGEN.

SECTION VI REACTIVITY DATA

STABILITY: STABLE
 INCOMPATIBILITY: ISOCYANATES, ACIDS AND OXIDIZING MATERIALS
 HAZARDOUS DECOMPOSITION PRODUCTS: NONE
 HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VII

SPECIAL PRECAUTIONS & STORAGE DATA

STORAGE TEMPERATURE (MIN./MAX).....: 64F (18C) TO 86F (30C)
 STORAGE SHELF LIFE.....: 6 MONTHS
 SPECIAL SENSITIVITY (HRAF, LIGHT, MOISTURE).....: THIS PRODUCT IS
 HYGROSCOPIC. CONTAINERS SHOULD BE TIGHTLY SEALED TO PREVENT
 MOISTURE CONTAMINATION. DO NOT EXPOSE TO HIGH TEMPERATURES FOR
 ANY LENGTH OF TIME.

SECTION VIII SHIPPING DATA

TECHNICAL SHIPPING NAME..... POLYOL SYSTEM
 DOT HAZARD CLASSIFICATION..... NON-REGULATED
 FREIGHT CLASS-BULK..... POLYPROPYLENE GLYCOL
 FREIGHT CLASS-PACKAGE..... SAME AS ABOVE
 PRODUCT LABEL..... PER LABEL DESCRIPTION

HMS _____ NFPA

1 - HEALTH	1 - HEALTH
1 - FLAMMABILITY	1 - FLAMMABILITY
0 - REACTIVITY	0 - REACTIVITY

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
 CONTAIN THE SPILL OR LEAK, SCRAPE UP WITH CARDBOARD OR A BAG AND
 PLACE IN A CONTAINER.

WASTE DISPOSAL METHOD: WASTE MATERIAL MAYBE INCINERATED OR
 DISPOSED OF UNDER LOCAL, STATE AND FEDERAL REGULATIONS.

PREPARED BY: PHILIP J. GALARRAUD 1-3-98