

MATERIAL SAFETY DATA SHEET

FORSCH POLYMER CORPORATION
3870 NIAGARA STREET
DENVER, COLORADO 80207

IMPORTANT:BEFORE OPENING ANY FORSCH POLYMER PACKAGES, READ WARNING LABELS AND FOLLOW ALL PRECAUTIONS.

TELEPHONE NUMBER: (303) 322-9611 PAGE 1 OF 6

SECTION 1

PRODUCT NUMBER: 80A LIQUID BASE
PRODUCT NAME: 80A LIQUID BASE
CHEMICAL TYPE: ALIPHATIC URETHANE

EMERGENCY NUMBER: 1-800-424-9300 (Chemtrec)
DATE OF REVISION: OCTOBER 1998

HAZARD RATING (4) EXTREME (3) HIGH (2) MODERATE
(1) SLIGHT (0) INSIGNIFICANT
TOXICITY: 3 FIRE: 1 REACTIVITY: 1 SPECIAL:

SECTION 2 HAZARDOUS COMPONENTS

| C.A.S. | (ACGIH) (OSHA) (ACGIH) |
|--------|------------------------|
| NO. | PERCENT TLV PEL STEL |

| | | | |
|--------------------|------------------|---------|---------|
| Vehicle: | | | |
| ALIPHATIC URETHANE | | | |
| PREPOLYMER | > 20.00 | .005ppm | .010ppm |
| FREE DIISOCYANATE | | | |
| MONOMER | 5124-30-1 < 30.0 | .005ppm | .010ppm |

SUSPECTED CANCER AGENT: YES _____ NO X _____

SECTION 3 PHYSICAL DATA

| | | |
|-------------------------|---|-----------------|
| BOILING POINT | : | DECOMPOSES |
| VAPOR DENSITY (AIR = 1) | : | > 1 |
| SOLUBLE IN WATER | : | NEGLIGIBLE |
| SPECIFIC GRAVITY | : | 1.02 @ 20 DEG C |
| % VOLATILE BY VOLUME | : | NEGLIGIBLE |
| EVAPORATION RATE | : | - |
| APPEARANCE AND ODOR | : | CLEAR LIQUID |

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 395 DEG F METHOD: TCC LEL:
EXTINGUISHING 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 FIRE FIGHTERS.

DURING A FIRE, VAPORS AND OTHER IRRITATING, HIGHLY TOXIC GASES MAY BE GENERATED BY THERMAL DECOMPOSITION OR COMBUSTION. (SEE SECTION VIII). CLOSED CONTAINER MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT OR BURST WHEN CONTAMINATED WITH WATER (CO2 EVOLVED).

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SECTION 5 HEALTH HAZARD DATA

ROUTES OF ENTRY: SKIN CONTACT, INHALATION OF VAPORS AND MIST. EYE CONTACT

HUMAN EFFECTS AND SYMPTOMS OF OVER-EXPOSURE

ACUTE INHALATION: INHALATION OF VAPORS AND MIST AT CONCENTRATIONS ABOVE THE TLV 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 HYPERREACTIVITY CAN RESPOND TO CONCENTRATIONS BELOW THE INTENDED TLV WITH SIMILAR SYMPTOMS AS WELL AS AN ASTHMA ATTACK. EXPOSURE WELL ABOVE THE INTENDED TLV MAY LEAD TO BRONCHITIS, BRONCHIAL SPASM AND PULMONARY EDEMA (FLUID IN THE LUNGS). THESE EFFECTS ARE USUALLY REVERSIBLE. CHEMICAL OR HYPERSENSITIVE PNEUMONITIS, WITH FLU-LIKE SYMPTOMS (E.G., FEVER, CHILLS) HAS ALSO BEEN REPORTED.

CHRONIC INHALATION: AS A RESULT OF PREVIOUS REPEATED OVEREXPOSURES OR A SINGLE LARGE DOSE, CERTAIN INDIVIDUALS WILL DEVELOP ISOCYANATE SENSITIZATION (CHEMICAL ASTHMA) WHICH WILL CAUSE THEM TO REACT TO A LATER EXPOSURE TO ISOCYANATE AT LEVELS WELL BELOW THE TLV. THESE SYMPTOMS, WHICH INCLUDE: CHEST TIGHTNESS, WHEEZING, COUGH, SHORTNESS OF BREATH OR ASTHMATIC ATTACK, COULD BE IMMEDIATE OR DELAYED UP TO SEVERAL HOURS AFTER EXPOSURE. SIMILAR TO MANY NON-SPECIFIC ASTHMATIC RESPONSES, THERE ARE REPORTS THAT ONE 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. CHRONIC OVER-EXPOSURE TO ISOCYANATES HAS ALSO BEEN REPORTED TO CAUSE LUNG DAMAGE, INCLUDING DECREASE IN LUNG FUNCTION, WHICH MAY BE PERMANENT. SENSITIZATION MAY BE EITHER TEMPORARY OR PERMANENT.

ACUTE SKIN CONTACT: PRIMARY SKIN IRRITANT, IT REACTS WITH SKIN PROTEIN AND MOISTURE AND CAN CAUSE IRRITATION. SYMPTOMS OF SKIN IRRITATION CAN INCLUDE: REDNESS, SWELLING, RASH, SCALING OR BLISTERING. POTENT SKIN SENSITIZER. EXPERIENCE INDICATES THAT DIRECT SKIN CONTACT IS THE ROUTE OF EXPOSURE MOST LIKELY TO CAUSE SENSITIZATION. ONCE SENSITIZED, AN INDIVIDUAL MAY REACT EVEN TO AIRBORNE LEVELS BELOW THE TLV WITH THE FOLLOWING SYMPTOMS; ITCHING AND TINGLING OF THE EARLOBES AND NECK, RASH, HIVES, SWELLING OF THE ARMS AND LEGS OR OTHER SYMPTOMS COMMON TO ALLERGIC DERMATITIS. THESE SYMPTOMS MAY BE IMMEDIATE OR DELAYED SEVERAL HOURS.

CHRONIC SKIN CONTACT: PROLONGED CONTACT WITH THE ISOCYANATE CAN CAUSE REDDENING, SWELLING, RASH, SCALING OR BLISTERING. IN THOSE WHO HAVE DEVELOPED A SKIN SENSITIZATION, THESE SYMPTOMS CAN DEVELOP AS A RESULT OF CONTACT WITH VERY SMALL AMOUNTS OF LIQUID MATERIAL OR EVEN AS A RESULT OF VAPOR-ONLY EXPOSURE.

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ACUTE EYE CONTACT: LIQUID, VAPORS AND MIST OF THIS PRODUCT ARE IRRITATING AND CAN CAUSE TEARING, REDDENING AND SWELLING OF THE EYES POSSIBLY ACCOMPANIED BY A STINGING SENSATION.

CHRONIC EYE CONTACT: NONE FOUND

ACUTE INGESTION: CAN RESULT IN IRRITATION AND POSSIBLE CORROSIVE ACTION IN THE MOUTH, STOMACH TISSUE AND DIGESTIVE TRACT.

CHRONIC INGESTION: NONE FOUND

CARCINOGENICITY: THIS PRODUCT IS NOT LISTED BY NTP, IARC, OR REGULATED AS A CARCINOGEN BY OSHA.

MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE: SKIN ALLERGIES, ASTHMA AND ANY OTHER RESPIRATORY DISORDERS (BRONCHITIS, EMPHYSEMA, HYPERREACTIVITY), ECZEMA.

EXPOSURE LIMITS: ACGIH TLV: 0.005 PPM TWA; OSHA PEL: 0.01PPM CEILING

SECTION 6 FIRST AID PROCEDURES

EYE CONTACT: FLUSH WITH CLEAN, LUKEWARM WATER (LOW PRESSURE) FOR AT LEAST 15 MINUTES WHILE LIFTING EYELIDS. REFER INDIVIDUAL TO PHYSICIAN OR OPHTHALMOLOGIST FOR IMMEDIATE FOLLOW-UP.

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING IMMEDIATELY. WASH SKIN PROMPTLY AND THOROUGHLY WITH SOAP AND WATER. AFTER WASHING, COVER AFFECTED SKIN WITH POLYETHYLENE GLYCOL (300 - 500 mol wt) AND WASH AGAIN IMMEDIATELY WITH SOAP AND WATER TO THOROUGHLY REMOVE PROPYETHYLENE GLYCOL AND RESIDUAL ISOCYANATE. REPEAT IF NECESSARY. WASH CONTAMINATED CLOTHING THOROUGHLY BEFORE REUSE. FOR SEVERE EXPOSURES, GET UNDER SAFETY SHOWER AFTER REMOVING CLOTHING. SEEK MEDICAL ATTENTION IF IRRITATION OR ALLERGIC DERMATITIS SYMPTOMS DEVELOP, OR IF GROSS EXPOSURE OCCURS.

INHALATION: MOVE TO AN AREA FREE FROM RISK OF FURTHER EXPOSURE. ADMINISTER OXYGEN OR ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN MEDICAL ATTENTION. ASTHMATIC-TYPE SYMPTOMS MAY DEVELOP AND MAY BE IMMEDIATE OR DELAYED UP TO SEVERAL HOURS. TREATMENT IS ESSENTIALLY SYMPTOMATIC. CONSULT PHYSICIAN.

INGESTION: DO NOT INDUCE VOMITING!! GIVE 1 TO 2 CUPS OF MILK OR WATER TO DRINK. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON. CONSULT PHYSICIAN.

NOTE TO PHYSICIAN: EYES: STAIN FOR EVIDENCE OF CORNEAL INJURY. IF CORNEA IS BURNED, INSTILL ANTIBIOTIC/STEROID PREPARATION FREQUENTLY. WORKPLACE VAPORS COULD PRODUCE REVERSIBLE CORNEAL EPITHELIAL EDEMA IMPAIRING VISION. SKIN: THIS COMPOUND IS A POTENT SKIN SENSITIZER. TREAT SYMPTOMATICALLY AS FOR CONTACT DERMATITIS OR THERMAL BURN. INGESTION: TREAT SYMPTOMATICALLY. THERE IS NO SPECIFIC ANTIDOTE. INDUCING VOMITING IS CONTRAINDICATED BECAUSE OF THE IRRITATING NATURE OF THE COMPOUND. INHALATION: TREATMENT IS ESSENTIALLY SYMPTOMATIC. AN INDIVIDUAL HAVING A DERMAL OR PULMONARY SENSITIZATION REACTION TO THIS

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MATERIAL SHOULD BE REMOVED FROM EXPOSURE ANY ISOCYANATE.

SECTION 7 REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: MAY OCCUR; CONTACT WITH MOISTURE OR OTHER MATERIALS WHICH REACT WITH ISOCYANATES MAY CAUSE POLYMERIZATION.

INCOMPATIBILITIES: WATER, AMINES, STRONG BASES, ALCOHOLS, METAL COMPOUNDS AND SURFACE ACTIVE MATERIALS.

INSTABILITY CONDITIONS: MOISTURE, HIGH HEAT

DECOMPOSITION PRODUCTS: BY HIGH HEAT AND FIRE: CARBON DIOXIDE, CARBON MONOXIDE, OXIDES OF NITROGEN, TRACES OF HCN.

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SECTION 8 SPILL OR LEAK PROCEDURES
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EVACUATE NONESSENTIAL PERSONNEL. REMOVE ALL SOURCES OF IGNITION AND VENTILATE THE AREA. DIKE OR IMPOUND SPILLED MATERIAL AND CONTROL FURTHER SPILLAGE IF FEASIBLE. NOTIFY APPROPRIATE AUTHORITIES IF NECESSARY. COVER THE SPILL WITH SAWDUST, VERMICULITE, FULLER'S EARTH OR OTHER ABSORBENT MATERIAL. POUR DECONTAMINATION SOLUTION OVER SPILL AREA AND ALLOW TO REACT FOR AT LEAST 10 MINUTES. COLLECT MATERIAL IN OPEN CONTAINERS AND ADD FURTHER AMOUNTS OF DECONTAMINATION SOLUTION. REMOVE CONTAINERS TO A SAFE PLACE, COVER LOOSELY, AND ALLOW TO STAND FOR 24 TO 48 HOURS. WASH DOWN SPILL AREA WITH DECONTAMINATION SOLUTIONS.

NEUTRALIZATION CHEMICALS: FOR TOOLS AND EQUIPMENT IN WELL VENTILATED AREAS: ISOPROPYL ALCOHOL, 20%; CONCENTRATED AMMONIA SOLUTION, 10%; HOUSEHOLD-TYPE DETERGENT, 2-5%; WATER, BALANCE. FOR CLOTHING, TOOLS, AND EQUIPMENT IN POORLY VENTILATED AREAS: SPARTAN WRD-160 RINSABLE-DEGREASER (SPARTAN CHEMICAL CO., TOLEDO, OH 43607) FOLLOWED BY THE SAME QUANTITY OF 50/50 MONOETHANOL AMINE-WATER SOLUTION. **WASTE DISPOSAL METHOD:** WASTE MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS. INCINERATION IS THE PREFERRED METHOD. EMPTY CONTAINERS MUST BE HANDLED WITH CARE DUE TO PRODUCT RESIDUE.

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SECTION 9 SPECIAL PRECAUTIONS & STORAGE DATA
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STORAGE TEMPERATURE (MIN./MAX.): 68 F(20 C)/122 F(50 C)

SHELF LIFE: 6 MONTHS @ 77 DEG F (25 C)

SPECIAL SENSITIVITY: IF CONTAINER IS EXPOSED TO HIGH HEAT, IT CAN BE PRESSURIZED AND POSSIBLY RUPTURE EXPLOSIVELY. REACTS SLOWLY WITH WATER TO FORM CO2 GAS. THIS GAS CAN CAUSE SEALED CONTAINER TO EXPAND AND POSSIBLY RUPTURE EXPLOSIVELY.

HANDLING/STORAGE PRECAUTIONS: STORE IN TIGHTLY CLOSED CONTAINERS TO PREVENT MOISTURE CONTAMINATION. DO NOT RESEAL CONTAINER IF CONTAMINATION IS SUSPECTED. AT MAXIMUM STORAGE

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TEMPERATURES NOTED, MATERIAL MAY SLOWLY POLYMERIZE WITHOUT HAZARD. IDEAL STORAGE TEMPERATURE RANGE IS 68-81 DEG F (20 - 27 C). AVOID CONTACT WITH SKIN AND EYES. EMPLOYEE EDUCATION AND TRAINING IN THE SAFE USE AND HANDLING OF THIS COMPOUND ARE REQUIRED UNDER THE OSHA HAZARD COMMUNICATION STANDARD.

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SECTION 10 SPECIAL PRECAUTIONS
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DOT STORAGE CATEGORY: SHOULD BE STORED AT ROOM TEMPERATURE AWAY FROM HEAT, SPARKS AND OPEN FLAMES. AVOID PROLONG OR REPEATED CONTACT WITH SKIN.

OTHER PRECAUTIONS: KEEP OUT OF REACH OF CHILDREN. MATERIAL SHOULD BE TIGHTLY CLOSED TO PREVENT CONTAMINATION, FOREIGN MATERIALS AND MOISTURE.

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SECTION 11 EMPLOYEE PROTECTION RECOMMENDATIONS
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REQUIRED WORK/HYGIENE PROCEDURES: PRECAUTIONS MUST BE TAKEN SO THAT PERSONS HANDLING PRODUCT AVOID SKIN AND EYE CONTACT AND DO NOT BREATHE THE VAPORS.

EYE PROTECTION REQUIREMENTS: SAFETY GLASSES, SPLASH GOGGLES OR FACE SHIELD. CONTACT LENSES SHOULD NOT BE WORN.

SKIN PROTECTION REQUIREMENTS: CHEMICAL RESISTANT GLOVES. COVER AS MUCH OF THE EXPOSED SKIN AREA AS POSSIBLE WITH APPROPRIATE CLOTHING. IF SKIN CREAMS ARE USED, KEEP THE AREA PROTECTED ONLY BY THE CREAM TO A MINIMUM. WHEN THERE IS POTENTIAL FOR A MAJOR SPLASH DIRECTLY ONTO THE SKIN, SUCH AS WHEN BREAKING INTO LINES, A FULL ACID SUIT IS REQUIRED. WHEN THE APPLICATION MAY RESULT IN AIRBORNE VAPOR OR MIST, A FULL, PERMEATION RESISTANT, PROTECTIVE SUIT INCLUDING HEAD COVERING AND FACE SHIELD, GLOVES, AND OVERSHOES IS REQUIRED.

RESPIRATORY/VENTILATION REQUIREMENT: EXHAUST VENTILATION SUFFICIENT TO KEEP THE AIRBORNE CONCENTRATION BELOW THE TLV MUST BE UTILIZED. EXHAUST AIR MAY NEED TO BE CLEANED BY SCRUBBERS OR FILTERS TO REDUCE ENVIRONMENTAL CONTAMINATION. IN ADDITION A RESPIRATOR MAY BE NECESSARY. THE USE OF A POSITIVE PRESSURE SUPPLIED AIR RESPIRATOR IS MANDATORY WHEN: AIRBORNE ISOCYANATE CONCENTRATIONS ARE NOT KNOWN OR EXCEED 0.005 ppm; OPERATIONS ARE PERFORMED IN A CONFINED SPACE OR AREA WITH LIMITED VENTILATION; MATERIAL IS HEATED. AN AIR-PURIFYING RESPIRATOR IS NOT RECOMMENDED DUE TO THE POOR WARNING PROPERTIES, (e.g., ODOR OR IRRITATION). BY THE TIME THE WORKER WOULD DETECT LEAKAGE OF THE FACE SEAL OR BREAKTHROUGH OF THE FILTER CARTRIDGE, HIS EXPOSURE COULD BE WELL ABOVE THE TLV. CONSIDER THE TYPE OF APPLICATION, AIRBORNE ISOCYANATE CONCENTRATIONS AND MATERIALS BEING USED CONCURRENTLY WHEN DETERMINING RESPIRATOR USE AND SELECTION. OBSERVE OSHA REGULATIONS FOR RESPIRATOR USE (29 CFR 1910.134). REFER TO PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY-VOLUME 1 (3rd EDITION) CHAPTER 1 AND VOLUME III (1st EDITION) CHAPTER

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3 - FOR GUIDANCE CONCERNING APPROPRIATE AIR SAMPLING STRATEGY TO DETERMINE AIRBORNE CONCENTRATIONS. FORSCH DOES NOT RECOMMEND THIS PRODUCT OR PRODUCTS CONTAINING RESIDUAL MONOMER FOR SPRAY APPLICATION.

MEDICAL SURVEILLANCE: MEDICAL SUPERVISION OF ALL EMPLOYEES WHO COME IN CONTACT WITH THIS PRODUCT IS RECOMMENDED. THIS SHOULD INCLUDE PREEMPLOYMENT AND PERIODIC MEDICAL EXAMINATIONS WITH RESPIRATORY FUNCTION TESTS (FEV, FVC AS A MINIMUM). PERSONS WITH ASTHMATIC-TYPE CONDITIONS, CHRONIC BRONCHITIS, OTHER CHRONIC RESPIRATORY DISEASES OR RECURRENT SKIN ECZEMA OR SENSITIZATION SHOULD BE EXCLUDED FROM WORKING WITH ISOCYANATES. ONCE A PERSON IS DIAGNOSED AS SENSITIZED TO AN ISOCYANATE, NO FURTHER EXPOSURE CAN BE PERMITTED.

ADDITIONAL PROTECTIVE MEASURES: SAFETY SHOWERS AND EYEWASH STATIONS SHOULD BE AVAILABLE. EDUCATE AND TRAIN EMPLOYEES IN SAFE USE OF PRODUCTS. FOLLOW ALL LABEL INSTRUCTIONS.

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DISCLAIMER
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