MATERIAL SAFETY DATA SHEET

FLX

Prototype Photopolymer
for Stereolithography

GENERAL INFORMATION

Composition of Monomer: 100% Acrylated monomers/oligomers

Initiator Package: Proprietary

DOT Proper Shipping Name: Not Applied

UN/NA Number: Not Applied

DOT Hazard Class: Not Regulated

PHYSICAL DATA

Appearance: Grey Liquid

Odor: Slight acrylic odor

Vapor Pressure: Negligible

Evaporation Rate (n butyl acetate = 1): Negligible

Volatile Fraction by Weight: Negligible

Specific Gravity: Not available

Solubility in Water: Negligible

Conditions and materials to avoid: High temperatures, direct sunlight, oxidizing conditions, freezing conditions, ultraviolet/visible light.

FIRE AND EXPLOSION HAZARD DATA

Flash Point (PMCC): → 93C/200F

Autoignition temp. method: N/AP

Flammable Limits (% Volume in air), Lower: N/AP, Upper: N/AP

Extinguishing Media: Water spray; dry chemical; carbon dioxide; foam; water fog.

Special Fire Fighting Procedures: Do not enter fire area without proper protection. See section on decomposition products possible. Fight fire from safe distance/protected location. Heat/impurities may increase temperature/build pressure/rupture closed containers, spreading fire, increasing risk of burns/injuries. Water may be in effective in firefighting due to low solubility. Use water spray/fog for cooling. Pressure relief system may plug with solid, increasing risk of overpressure. Notify authorities if liquid enters sewer/public waters.

Fire and Explosion Hazards: High Temperatures, inhibitor depletion, accidental impurities, exposure to radiation, oxidizers, exposure to intense light may cause spontaneous polymerizing reaction, generating heat/pressure. Closed containers may rupture and/or explode during runaway polymerization.

REACTIVITY DATA

Stability: Stable when stored in container designed for use with light sensitive materials.

Hazardous Decomposition Products: Acrid Fumes -- Smoke/Carbon Monoxide/Carbon Dioxide may be released during a fire.

Hazardous Polymerization: May occur.

TOXICITY AND HEALTH HAZARD DATA

A. EXPOSURE LIMITS:

Not established

B. EXPOSURE EFFECTS:

Inhalation: No significant signs or symptoms indicative of any adverse health hazard are expected to occur at standard conditions due to the low volatility of this material. However, aerosols, or vapors which may be generated at elevated processing temperatures, may cause respiratory tract irritation. Symptoms of irritation may include coughing, mucous production and shortness of breath.

Skin Absorption -- Primary Route: Repeated/Prolonged skin contact with this material may result in absorption through the skin, causing systemic toxicity. Symptoms may include convulsion tremors and ataxia.

Skin Irritation -- Primary Route: May cause delayed skin irritation and blistering. Prolonged or repeated skin contact may cause a more severe skin response such as ulcers and scarring. Although no appropriate human or animal health effects data is known to exist, this material may cause an allergic skin reaction (sensitization) in susceptible individuals upon repeated exposure.

Eyes -- Primary route: May cause moderate irritation, including burning sensation, tearing, redness or swelling.

Ingestion: No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of ingestion.

Medical conditions aggravated by exposure: This material or its emissions may induce an allergic or sensitization reaction and thereby aggravate systemic disease.

C. FIRST AID:

Inhalation: If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

Skin contact: Immediately remove contaminated clothing. Wash skin thoroughly with mild soap/water. Flush w/ lukewarm water for 15 minutes. If sticky, use waterless cleaner first. Look for burns or signs of allergic reaction. Seek medical attention if ill effect or irritation develops.

Eyes: In case of eye contact, immediately rinse with clean water for 20- 30 minutes. Retract eyelids often. Con tact an Ophthalmologist immediately.

Ingestion: If large quantity swallowed, give lukewarm water (pint) if victim is completely conscious/alert. Do not induce vomiting -- risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.

VENTILATION AND PERSONAL PROTECTION

A. VENTILATION AND RESPIRATORY PROTECTION:

If this material is handled at elevated temperature or under mist forming conditions, NIOSH/MSHA approved respiratory protection equipment should be used. Local exhaust ventilation is recommended if this material is handled at elevated temperature or under mist forming conditions.

B. EYE PROTECTION:

Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses should not be worn.

C. SKIN PROTECTION:

When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, head and face protection should be worn. This equipment must be cleaned thoroughly after each use.

D. OTHER HYGIENIC PRACTICES:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

SPECIAL STORAGE AND HANDLING PRECAUTIONS

Store in tightly closed, properly vented containers away from heat, sparks, open flame, strong oxidizers, radiation, and other initiators. Prevent contamination by foreign materials and moisture contact. Use only non-sparking tools and limit storage time.

SPILL, LEAK, AND DISPOSAL PROCEDURES

Spilled or released material may polymerize and release heat and/or gases. Extinguish all ignition sources. Blanket with firefighting foam. Impound/recover large land spill; soak up small spill with inert solids. On water, contain/minimize dispersion/collect. Report per regulatory requirements.

Dispose of by curing with light until it polymerizes and then simply throw it away. Caution: If disposing of monomer in large quantities, the material should be cured in thin layers so that any heat that may evolve from polymerization is allowed to dissipate.

SUPPLEMENT

NPCA HMIS RATING

Chronic Health Effects: Results from a mouse lymphoma test were positive on one of the components of the FLX prototype photopolymer for stereolithography system (20% of entire FLX prototype photopolymer for stereolithography), indicating that this material may have a mutagenic potential. However, an 80 week carcinogenicity study of this monomer component in mice showed no increased incidence of skin or visceral tumors. In addition, an Ames test for mutagenicity was negative. Therefore, there is reason to believe that th mouse lymphoma assay was a false positive finding. It should be noted that this assay system produces a high incidence of false responses. This material was not fetotoxic or teratogenic when administered orally to mice at a mater nally toxic dose.