Product Datasheet

SP&S Specialty Polymers and Services

"RED ARATHANE"

Arathane® 5753A/B mixtures per LM AZ11234-0070 and 2280878-12

Low density Urethane Potting, Sealing, Staking, & Bonding Material

"RED ARATHANE" is a mixture made from the popular Arathane® 5753A/B(LV) polyurethane system produced by Huntsman Advanced Materials. The "RED ARATHANE" system has been modified to per the Lockheed Martin specifications in certain ways to provide a useful thickened potting, sealing, staking, or bonding system, which is non-sagging even during a heat cure, while retaining the low outgassing and excellent electrically properties of the standard Arathane® 5753A/B(LV) system. It also provides a reduced density which reduces stress on encapsulated components and also lowers the dielectric constant for improve high frequency performance.

This system is excellent for sealing connectors, filling gaps, potting & encapsulation, and staking & general bonding where non-sagging bonds are required.

APPLICATIONS & BENEFITS:

- Potting & impregnation of low voltage electronic devices, such as coils, potentiometers, modules, and hydrophones
- Low modulus & low density - excellent for use with stress-sensitive & cryogenic components
- Low Dielectric Constant – excellent for high frequency applications.
- Low outgassing for use in optical, space and other high vacuum environments. (Meets NASA and ESA requirements)
- Highly resistant to reversion even with high heat and humidity exposure
- Repairable

HANDLING PROPERTIES		VALUE	TEST METHOD
Visual Appearance, Part A		red liquid	
Density, Part A		1.20 g/cm³	ASTM E-201
Viscosity, Part A, at 25ºC		50 - 100 cps	ASTM D-2196
Visual Appearance, Part B		Whitish semi-paste	
Density, Part B		0.70 g/cm³	ASTM E-201
Viscosity, Part B, at 25ºC		250,000 cps	ASTM D-2196
Density Mixed, g/cm³		0.74 g/cm³	ASTM E-201
Viscosity Mixed, @ 25ºC		80,000 cps	ASTM D-2196
Mix Ratios by weight:		15.2A:85.3B (or 17.82A:100B)	
Processing Temp.	Gel time	Tack Free time	Full Cure time
24ºC ±5.5ºC	90 – 120 minutes	24 – 48 hours	5 - 7 days
60ºC ±5.5ºC	15 – 25 minutes	3 hours	16 hours *

*plus up to 3-4 days at room temperature for best results.

PHYSICAL PROPERTIES	VALUE	TEST METHOD
Color	Opaque Pinkish-Red	Visual
Shore A Hardness	≥ 58	ASTM D-2240
Glass Transition Temp. (Tg)	-69ºC	ASTM D-648
Max. Continuous Use Temp:	130ºC	
Fungus Resistance	Non-Nutrient	Mil-I-46058C

NOTE: Values are based on laboratory or average production results – not for specification purposes.

SUGGESTED PROCESSING GUIDELINES:

To use, mix the individual containers of the Part A and Part B thoroughly prior to use as they will settle and separate and it is important to thoroughly re-disperse the pigments and fillers prior to using the material. Once the components are ready, weight them out in the recommended by weight mix ratio as accurately as possible into a clean mixing container. Mixing containers should preferably be made of polypropylene, polyethylene, glass, or non-corroding metal. (Stainless steel, aluminum, etc.). Always use weighing equipment having accuracy that is ±1% or less of the smallest quantity that you will be weighing.

Blend Part A & B thoroughly using a spatula or stirring stick for at least 2-3 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture.

If desired, vacuum de-gassing after mixing is helpful to remove air. Vacuum degassed material will produce the strongest possible bonds and provide the best insulation values, but vacuum de-gassing is not required in LM AZ 11234 for the -0070 formulation and may not be desirable for low density potting application as it will tend to increase the density. So each user should consider their application requirements when deciding if vacuum de-gassing is desirable or not.

Apply the mixed material to clean, dry surfaces. Suitable application methods include by brush, by spatula or other tools, by pouring, from a syringe, etc.

Stripping / Removal:

Uncured or partially cured "RED ARATHANE" can be removed with acetone, MEK, Ultralane Thinner, or other solvents **Mechanical removal:** Due to the soft, flexible nature of cured "RED Arathane", it may be relatively easily cut with a sharp knife and then scraped or peeled from some surfaces. If repairing the area where the material was removed, lightly sand down rough edges of the intact polymer, and wipe the repair area clean with isopropyl alcohol or acetone. Allow to dry 15 minutes at 80ºC or at least 1-2 hours at room temperature. Then mix fresh "RED ARATHANE" per the instructions and apply to the repair area with a clean, dry brush, spatula or other method. Cure, following one of the recommended cure schedules and perform any necessary quality control of performance testing on the repair to ensure satisfactory performance.

Chemical removal Use Ultralane Stripper A/B for selective or total removal of cured compound. **Important:** Laboratory tests indicate that if suggested procedures are followed, there will be little or no adverse effects to printed circuit board and most components from using the Ultralane Stripper, but please test first on scrap components or boards prior to trying on parts you want to rework. The most likely materials to be affected by the Ultralane Stripper are other inks, adhesive, encapsulants and coatings.

Localized chemical removal: Prepare parts by masking off area to remain intact using suitable chemical resistant masking tapes. Using an acid brush, apply generous amounts of Ultralane Stripper A/B over components in repair area. Do not allow to dry. Keep applying stripper until polymer starts to swell and flake off (approximately 10-20 minutes). While keeping repair area saturated, periodically brush or cut away loosened material. After 20-30 minutes exposure to stripper, wipe up or drain off all remain stripper, wash with isopropyl alcohol and allow to dry. Scrape or cut away any loose polymer. If further removal is necessary, apply fresh stripper and

repeat process for up to an additional 20 minutes. When done, be sure to flush out all of the stripper with clean isopropyl alcohol and allow to dry. Then remove masking / damming materials, perform any component replacement or repairs and clean again with isopropyl alcohol. Dry board 2 hours at 80ºC. Apply fresh "RED ARATHANE" and follow recommended cure schedules.

Note: Effectiveness of Ultralane Stripper A/B will decrease with use. See separate Ultralane Stripper technical datasheet & MSDS for additional usage and handling instructions. Do not use if amber color or other contaminants become visible. Use only explosion-proof equipment. Keep away from flame and sparks.

STORAGE GUIDELINES:

Store this material in a clean, cool and dry environment in its tightly closed original container. Protect the "RED ARATHANE" Part A from extended exposure to temperature below 20ºC (68ºF) and from temperature above 40ºC (104ºF). Crystallization may occur if the 5753A is exposed to cold for extend periods. . Also protect the Part B from exposure to moisture or high humidity. Tightly re-seal containers after use and blanket with dry nitrogen or another dry inert gas if available. If the recommended storage conditions are observed the products will have a minimum shelf-life of 6 months from the date of shipment.

HANDLING PRECAUTIONS:

Mandatory and recommended industrial hygiene procedures should be followed whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

PERSONAL HYGIENE:

"RED ARATHANE" Part A

DANGER! Harmful if inhaled. Causes skin and eye irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. May cause respiratory irritation. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly after handling. Avoid breathing vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Do not take internally.

"RED ARATHANE" Part B

DANGER! Causes serious eye damage. Suspected of causing cancer. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly after handling. Avoid breathing vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Do not take internally.

FIRST AID

In case of contact:

Skin – Immediately wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Destroy contaminated shoes and other articles made of leather.

Eyes – Immediately flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Inhalation - Remove person to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

Ingestion - Do not induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person.

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