

## Arathane® 5753A/B(LV-FD)

### Highly Flexible Urethane Adhesive, Coating, & Encapsulant

Arathane® 5753A/B(LV-FD) is a variant of the popular Arathane® 5753A/B(LV) polyurethane system produced by Huntsman Advanced Materials. The Arathane® 5753A/B(LV-FD) system is produced from the standard Arathane 5753A/B(LV) by adding a fluorescent dye that causes the cured polymer to fluoresce with a blue-white color when exposed to black light. This fluorescent property can be helpful to allow for optical inspection of the material coverage and to allow end users to create hidden product coding or authentication regimes. The cured properties of the material are not affected by the addition of the fluorescent dye.

#### APPLICATIONS & BENEFITS:

- Potting & impregnation of low voltage electronic devices, such as coils, potentiometers, modules, and hydrophones
- Low modulus - excellent for use with stress-sensitive and cryogenic components
- Allows for inspection and identification under black light
- 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

<b>HANDLING PROPERTIES</b>		<u>VALUE</u>	<u>TEST METHOD</u>
Visual Appearance, Part 5753A		Clear, yellow to orange liquid	
Density, Part A		1.20 g/cm <sup>3</sup>	ASTM E-201
Viscosity, Part A, @ 25°C		50 cps	ASTM D-2196
Visual Appearance, Part 5753B(LV-FD)		Clear to milky liquid	
Density, Part B		0.96 g/cm <sup>3</sup>	ASTM E-201
Viscosity, Part B, @ 25°C		8000 cps	ASTM D-2196
Density Mixed, g/cm <sup>3</sup>		1.00 g/cm <sup>3</sup>	ASTM E-201
Viscosity Mixed, @ 25°C		5500 cps	ASTM D-2196
Mix Ratios by weight (by volume):		20A:100B (15.6A:100B)	
<u>Processing Temp.</u>	<u>Gel time</u>	<u>Tack Free time</u>	<u>Full Cure time</u>
25°C	90 – 120 minutes	16 – 24 hours	7 days
65°C	15 – 25 minutes	2 – 3 hours	8 - 16 hours
95°C	5 – 10 minutes	1 – 2 hours	4 - 8 hours

<b>PHYSICAL PROPERTIES</b>		<u>VALUE</u>	<u>TEST METHOD</u>
Color		Translucent, light yellow to amber	Visual
Shore A Hardness		50 – 60	ASTM D-2240
Tensile Strength, psi		650 psi	ASTM D-638
Tensile Elongation at break		>200%	ASTM D-638
Glass Transition Temp. (Tg)		<-70°C	ASTM D-648
Coefficient of Thermal Expansion (CTE):			ASTM E-831
Below Tg / Above Tg		100 ppm/°C / 180 ppm/°C	

Maximum Suggested Continuous Use Temperature:	130°C	
Fungus Resistance	Non-Nutrient	Mil-I-46058C
Outgassing:		ASTM E-595
Total Mass Loss (TML) %	0.41%	
CVCM %	0.03%	
WVR %	0.01%	
Dielectric Strength @ 3 mil	>1500 V/mil	Mil-I-46058C
Insulation Resistance, ohms	>1.0 x 10 <sup>15</sup> ohms	Mil-I-46058C
Dielectric Constant @ 25C		ASTM D-150
@ 1 k Hz / 100 KHz	2.5 / 3.0	
Dielectric Constant @ 100C		ASTM D-150
@ 1 k Hz / 100 KHz	3.6 / 3.2	
Loss tangent @ 25C		ASTM D-150
@ 1 k Hz / 100 KHz	0.022 / 0.025	
Loss tangent @ 100C		ASTM D-150
@ 1 k Hz / 100 KHz	0.024 / 0.027	
Thermal Conductivity	0.22 W/mK	

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

### **SUGGESTED PROCESSING GUIDELINES:**

To use, weigh Part A and Part B in the recommended ratio as accurately as possible into a clean mixing container. Mixing containers should preferably be made of 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. 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.

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

### **Stripping / Removal:**

Uncured or partially cured Arathane® 5753A/B(LV-FD) can be removed with acetone, MEK, Ultralane Thinner, or other solvents. Fully cured Ultralane Arathane® 5753A/B(LV-FD) may be removed using the following mechanical or chemical methods.

**Mechanical removal:** Due to the soft, flexible nature of cured Arathane® 5753A/B(LV-FD), it may be fairly easily cut with a sharp knife and then scraped or peeled from the surface. If repairing the area where the material was removed, lightly sand down rough edges of intact polymer, and wipe repair area clean with isopropyl alcohol. Allow to dry 15 minutes at 80°C or 1 or more hours at room temperature. Then mix fresh Arathane® 5753A/B(LV-FD) per instructions and apply to repair area with a clean, dry, acid brush, spatula or equivalent. Cure, following one of the recommended cure schedules and perform any necessary quality control of performance testing on the board, component or repair area to ensure a 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 5–10 minutes). While keeping repair area saturated, periodically brush or cut away loosened material. After 20 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 80°C. Apply fresh Arathane® 5753A/B(LV-FD and follow recommended cure schedules.

**Total coating removal:** Place parts into a container of Ultralane Stripper A/B . Agitation will increase stripper efficiency. For safety reasons, using Ultralane Stripper A/B at room temperature is preferable, but with proper ventilation and fire/explosion proof equipment heating the stripper up to as much as 50°C is possible and will reduce the time required to remove the coating. At room temperature, leave the part in the stripper for 15 minutes. The polymer will swell and start to fall separate from embedded components. Periodically, brush parts with stiff brush to help remove loosened material. After 15 minutes, remove parts from stripper and examine. Brush or cut away any loosened material. Repeat the process until majority of material is removed then apply stripper by brush to any localized areas where the polymer remains.

**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 Arathane® 5753A from extended exposure to temperature below 20°C (68°F). Crystallization may occur if the 5753A is exposed to cold for extend periods. If this occurs, heat the entire container of 5753A for 4 hours at 70°C to re-liquefy the crystals. Allow to cool to ambient temperature prior to using. Also protect the 5753B(LV-FD) 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:**

### **Arathane® 5753A**

**WARNING! Contains organic isocyanate** May cause severe eye & skin irritation. Prolonged or repeated skin contact or inhalation of vapors may cause allergic skin or respiratory reactions. Harmful if inhaled or swallowed. 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.

### **Arathane® 5753AB(LV-FD)**

**Caution!** May cause eye & skin irritation. Prolonged or repeated skin contact may cause allergic skin reactions. Harmful if inhaled or swallowed. 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.

**NOTE:** Arathane® is a registered trademark of Huntsman Advanced Materials, The Woodlands, Texas. It is used here with the permission of Huntsman Advanced Materials, but this does not indicate that any of the information presented herein is endorsement or certified in any way by Huntsman. Arathane 5753B(LV-FD) is made by SP&S from Arathane 5753B(LV) by SP&S and SP&S is solely responsible for all details of its manufacture, testing, packaging and supply.

## **DISCLAIMER:**

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