

Ultralane 781A/C

Polyurethane Encapsulation System

Ultralane 781A/C is a room temperature curing polyurethane system, formulated for potting and encapsulating electrical and electronic components requiring a tough, semi-flexible encapsulant with outstanding thermal conductivity. Typical applications for this system include encapsulation of transformers, power supplies, and capacitors

Properties

- No TDI or MOCA®
- Tough – impact and thermal shock resistant
- Excellent insulation properties
- Very good thermal conductivity and very low coefficient of thermal expansion

Benefits

Ultralane 781A/C provides the end-user with a tough, black, flexible, thermally conductive encapsulant with low stress on embedded component and a very low CTE. The low viscosity of the mixed system facilitates air release and superior impregnation. Its processing characteristics allow the end-user many options when handling the system.

Product description

(average values)

Ultralane® 781A

Viscosity, cP	ASTM D-2393	at 25°C	200
Density, g/cm ³	ASTM D-792	at 25°C	1.22
Flash point, °C	ASTM D-92		>200
As-supplied form		translucent liquid	
Shelf life, months		6	
Disposal		Regular procedures approved by national and/or local authorities	

Ultralane® 781C

Viscosity, cP	ASTM D-2393	at 25°C	510,000
Density, g/cm ³	ASTM D-792	at 25°C	2.36
Flash point, °C	ASTM D-92		>130
As-supplied form		black thick liquid	
Shelf life, months		6	
Disposal		Regular procedures approved by national and/or local authorities	

Storage

The products described in this instruction sheet should be stored at 60-100°F. They are moisture sensitive and packaged under a blanket of dry nitrogen. Maintain factory seal after use blanket with dry nitrogen and tightly reseal. Under these conditions their shelf lives will be six months from date of shipping.

System preparation

Mix using meter-mix dispensing equipment, or manually, as follows:

Weigh the desired amount of hardener into a mixing container with resin. Mix thoroughly by means of mechanical mixer or manual stirring. Be sure to scrape the side and walls of the mixing container during mixing. Check for uniform color as a sign of complete mixing.

Vacuum deairing is recommended to remove any entrapped air from the mixing procedure. To deair most products, 1-2 minutes under full vacuum is recommended for each quart of volume of mixed material. Quickly dispense potting material into cavity or channel to be sealed; be certain not to trap air bubbles as viscosity builds.

To reduce the cure time, the casting is often allowed to gel at room temperature and then post-cured 2-6 hours at 60-80°C. Small castings can be processed and directly cured at slightly higher temperatures (40-60°C.)

Mix ratios System

	parts by weight	parts by volume
Ultralane® 781A	10	20
Ultralane® 781C	100	100

Processing data System

(average values)

Initial viscosity, cP	ASTM D-2393	at 25°C	3,500
Pot life, minutes	OC-WL-001	at 25°C	75
Recommended cure time, hours		at 25°C	24*
Gel Time, 10 grams			
minutes		at 25°C	160
minutes		at 60°C	25

* Cure schedule results in approximately 90% of final properties, additional room temperature or elevated temperature curing is required for 100% properties.

Properties

not for specification purposes

			Typical physical properties
Density, g/cm ³	ASTM D-792	2.15	
Hardness, Shore A	ASTM D-2240	85	
Elongation at break, %	ASTM D-638	30	
Tensile strength at break, psi	ASTM D-638	1000	
Tg, °C	Perkin Elmer Application Case #20	-5	
Coefficient of thermal expansion, mm/mm/°C	ASTM E-381		
	Alpha 1 (<-5°C)	29 x 10 ⁻⁶	
	Alpha 2 (-5–125°C)	85 x 10 ⁻⁶	
Water absorption, % by weight, 24 hours at 25°C	ASTM D-570	0.1	
Thermal conductivity, W/mK	ASTM D-2214	1.1	
Flame retardant	UL 94 HB	0.2 in / min	

Typical electrical properties

Volume resistivity, Ω-cm	ASTM D-257	at 25°C	1.8 x 10 ¹⁶
Dielectric strength, V/mil	ASTM D-149		565
Dielectric constant	ASTM D-150		
60 Hz			4.5
Dissipation factor	ASTM D-150		
60 Hz			0.11

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

Ultralane® 781A

Warning! Harmful if inhaled. Causes skin and eye irritation. Causes allergic skin and respiratory reaction. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

Ultralane® 781C

Caution! In accord with good industrial practice, handle with due care. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

First aid

In case of contact:

- Skin:** Immediately wash with soap and water. Remove contaminated clothing and laundry before reuse. Destroy contaminated shoes.
- Eyes:** Immediately flush with water for at least 15 minutes. Call a physician.
- Ingestion:** If conscious, give plenty of water to drink. Do not induce vomiting. Call a physician.
- Inhalation:** Remove to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.
- Other:** Referral to physician is recommended if there is any question about the seriousness of any injury.

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