1/15/2008

Rev. 2.0

PTU-46201™

UL RECOGNIZED ENCAPSULANT/ADHESIVE

FILLED, ELECTRONICS GRADE, POLYURETHANE,
ROOM TEMPERATURE REPAIRABLE, ANTISTATIC, BLACK ADHESIVE/ENCAPSULANT

The two component polyurethane compound described in this data sheet is specifically designed for the encapsulation by casting of completed circuit boards. When applied in thin layers, < 0.01" it acts as an adhesive and provides excellent thermal contact between dissimilar materials such as alumina and aluminum. The cured material meets the flammability requirements of UL 94, V-O at thickness of 0.125 in. and greater (UL File Number E116296) and provides long term circuit protection from -55ºC. to 125ºC., and allows dissipation of heat generated by encapsulated parts. The material bonds well to most metals, ceramics and plastics as well as to epoxy and paper phenolic circuit boards material. The cured material allows repair by cutting away material in the area of the affected component, replacing the component and repotting.
Some of the important properties of PTU-46201 are highlighted below:

* LOW SHRINKAGE DURING CURE
* EXCELLENT FLEXIBILITY AT LOW AND HIGH TEMPERATURE
* EXCELLENT FLOW BEFORE AND DURING CURE
* SMOOTH SURFACE AFTER CURE
* EXCELLENT HEAT RESISTANCE
* ROOM TEMPERATURE REPAIRABILITY
* EXCELLENT ADHESION TO MOST SUBSTRATES WITHOUT PRIMERS
* FLAME RETARDANT
* HIGH THERMAL CONDUCTIVITY
* EXCELLENT HUMIDITY RESISTANCE
* ANTISTATIC

TYPICAL PROPERTIES

Uncured, Mixed System

PROPERTY TESTED	PTU-46201
Mix Ratio By Weight: By Volume	100 : 100 or 13 Part A 4 : 7.6 or 1 Part B
Viscosity At 77ºF.	Approx. 70,000 Cp
Pot Life At 77ºF.	1.5hrs. Viscosity Double

RECOMMENDED CURE CYCLES: 24-48 Hr./RT (>70ºF.) or 3 Hr./180ºF. or 2 Hr./212ºF. or 1/2 Hr/250ºF.

	CURE 2 Hour at 212ºF.
Specific Gravity	2.2
Hardness, Shore (ASTM A 2240, Note 8)	A/70/1, A/70/10
Thermal Conductivity, BTU/ft.ºF. Hr.	0.7
Color (May be modified to meet your requirements)	Black
Glass Transition Temperature, ºF.	-40
% Linear Shrinkage on Cure	1.0
Heat Resistance (Aged 1 week at 250ºF.)	
%Weight Loss	0.2
Hardness	A/70/1, A/70/10
Steam Resistance (Aged 1 week at 5PSI Sat. Steam)	

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% Weight Change	+1.8
Hardness	A/60/1, A/60/10
Flammability (1/8"-1/2")	
UL94	VO

ELECTRICAL PROPERTIES

Dielectric Constant	
1.0kHz	8.46
100.0kHz	8.27
Dissipation Factor	
1.0kHz	0.013
100.0kHz	0.030
Volume Resistivity (DC), Ohm-cm	
100 V	2.6×10^{11}
500 V	2.1×10^{11}

APPLICATION INSTRUCTIONS

EGE-201 contains no MDI or TDI. Neither Part A nor Part B should be exposed to ambient air for prolonged periods of time, and the containers should be covered when not in use. If the components are to be used in a gravity feed, continuous mixer, the feed tanks SHOULD be vented through a desiccated air vent or dry Nitrogen.

Components to be encapsulated should be clean and dry, and should not be contaminated with solder flux, silicone grease or other uncured materials. If thermal grease is required to heat sink a component, PTU-46201 may be used as a non-contaminating thermal grease. **DO NOT PREHEAT PART A OR PART B. DO NOT USE PAPER CONTAINERS TO WEIGH OR MIX COMPONENTS.** Under high humidity conditions, paper may contain enough absorbed water to cause bubbling in curing material. Lined or unlined metal cans, polyethylene and polypropylene containers are suggested mixing and weighing containers. Add Part B to Part A at room temperature (for best results, room temperature should be 77-90ºF or greater), mix well and vacuum degas material to 0.5mmHg or less for about 5 minutes. If meter-mix equipment is used, no degassing should be required. Pour the appropriate amount of material over the components to be encapsulated and cure 2 Hr. at 212ºF..

The shelf life of PTU-46201 is one year when stored at temperatures of <85ºF. in original unopened containers. It is recommended that Part A containers be rotated 180º, top to bottom, every month, to prevent filler settling. The frequency of rotation required will depend on ambient temperature. Higher temperatures will require more rotation and lower temperatures, less. In order to slow down filler settling, Part A (only) should be stored at <70ºF.. If stored in a refrigerator or freezer settling will essentially stop, however it is necessary to allow it to come to room temperature before opening the can. To determine if filler settling has occurred, plunge a long steel spatula or screw driver to the bottom of the can. If all of the material is of the same consistency, the material may be used as is. If not, the Part A must be mixed and degassed prior to addition of Part B.

Alternate cures are: 24-48 Hrs. at RT (>70ºF.)
3 Hrs. at 180ºF. or
1/2 Hr. at 250ºF (Forced Convection Oven).

AVAILABILITY

PTU-46201 is available in two part kits.

NOTE:

The safe use of the products or procedures described above requires proper ventilation, cleanliness, protective clothing and minimum contact. The products are for industrial use only, and it is assumed that the uncurled materials will contact only properly trained persons competent to work with the resins and hardeners. Workers and the work area should be cleaned with soap and water immediately after contamination. Use protective gloves and goggles or face masks. In case of eye contact, irrigate eyes immediately with large volumes of water for at least 15 minutes and obtain prompt medical attention. Product safety data sheets are available on request. The information contained herein is believed to be reliable. Properties given are typical values and are not intended for use in preparing specifications. For information concerning specification preparation, contact IPN INDUSTRIES, INC.™