



PNU-46203™

REV 3.1

DEFINITION

PNU-46203™ is an electronics grade, two-component polyurethane adhesive or encapsulant for high temperature resistance. PNU-46203™ is designed for the encapsulation by casting of completed circuit boards. Cured PNU-46203™ is expected to meet the flammability requirements of UL 94, V-0 at thicknesses of 0.070 inch (1.8 mm) or greater. The cured materials provide long-term circuit protection and bond stability from -55°C to 125°C. PNU-46203™ bonds well to most metals, ceramics and plastics as well as to epoxy and paper phenolic circuit boards.

PRODUCT DESCRIPTION

Appearance	Liquid
Odor	Faint
Color	Clear (optically clear) (may be modified to meet your requirements)

Property	Result	Methods
Viscosity	15,000 mPa·s	Brookfield RVT, Spindle 27, Small Sample Adaptor, 10 rpm, 25°C

Other information		
Work life time @ 25 ± 2°C	>30 minutes (viscosity doubles)	
Specific gravity @ 25°C (g/cm³)	1.4	
Possible curing cycles	30 minutes @ 100°C (212°F) 1 hour @ 80°C (176°F) 24-48 hours @ 25°C (77°F)	
Mix Ratio:	By weight:	Part A 100 Part B 25
	By Volume:	Part A 100 Part B 25
Storage stability (unmixed)	1 year at room temperature	

APPLICATION PROPERTIES

- **PNU-46203™** polymer backbone provides excellent flexibility at low and high temperatures, UV and moisture resistance. (no yellowing)
- **PNU-46203™** has low shrinkage on curing.
- **PNU-46203™** has excellent adhesion to most substrates without primers.
- **PNU-46203™** is unaffected by soldering or cleaning processes.
- **PNU-46203™** is flame retardant.
- **PNU-46203™** has room temperature reparability by cutting away the material around the area of the affected component, replacing the component, then repot.

APPLICATION RECOMMENDATIONS

- **PNU-46203™** contains no MDI or TDI and all active isocyanate is polymeric in nature. Therefore no extraordinary precautions against water contamination are necessary. Neither **PNU-46203™ Part A** nor **Part B** should be exposed to ambient air for prolonged periods of time. The containers should be covered when not in use. If **PNU-46203™ Part A and B** is used in a continuous mixer, the feed tanks should be vented through a desiccated air vent.
- Components to be encapsulated by **PNU-46203™** should be clean, dry, and not contaminated with solder flux, silicone grease, or other uncured materials.
- For evaluation and small production runs, in a metal or plastic container no more than ½ full, warm 100 g of **PNU-46203™ Part A** to 35°C (95°F) then, add 25.0 g of **PNU-46203™ Part B**. Mix thoroughly using a plastic or metal spatula. Degas the mixture for 10-15 minutes at 0.5 mm Hg or less to remove all entrained air.
- For high volume applications Protavic recommends that either **Mixpac™** or meter-mix machines be used. Contact your Protavic representative for recommendations of suppliers of meter mixing equipment.

TYPICAL PROPERTIES OF CURED PNU-46203™

The properties set out below were obtained after curing for 2 hours at 100°C (212°F). They were determined following measurements carried out in the laboratory over a small number of tests. They are values given by way of guidance, and do not constitute a guarantee. It will be for the user, in all cases, to carry out their own tests to determine whether the **PNU-46203™** resin can be used for the particular application the user has in mind.

Properties	Methods	Units	Typical values
Shore D hardness	ASTM D2240	-----	A/45/1, A45/10
Glass Transition Temperature, Tg	DSC1	°C	-40
Linear shrinkage on cure		%	1.4
Heat Resistance (aged one week at 250°F (121°C))			
Weight loss	--	%	1.0
Properties (cont.)	Methods	Units	Typical values
Steam Resistance (aged one week at 5 psi sat. steam)			
Weight Change	--	%	+1.3

ELECTRICAL PROPERTIES

Properties	Methods	Units	Typical values
Volume Resistivity • 500 V	ASTM D257	Ω-cm	• 8.6 x 10 ¹¹
Dielectric Constant • 120 Hz • 1 kHz	ASTM D150	--	• 7.01 • 6.89
Dissipation Factor • 1 kHz • 100 kHz	ASTM D150	--	• 0.008 • 0.008

PRECAUTIONS IN USE

Refer to the attached material safety data sheet.

PACKAGING

PNU-46203™ is available in two-part **Mixpac®**. Part numbers for quotation and ordering purposes are:

For larger kits, please contact Protavic America, Inc.

The information contained in this data sheet corresponds to the present state of our knowledge; it is intended for your guidance but we are not bound by it since we are not in a position to exercise control over the manner in which our products are used. Moreover; the attention of the user is drawn to the risks that could possibly occur should a product be used for an application other than that for which it is intended.