

# PROTAVIC® L 127-11

A 27920-08-02 A

## DEFINITION

Single component resin with very low linear expansion of 10 ppm per degree and high ionic purity for protecting semi-conductor silicon crystals, in particularly BGA.

## PRODUCT DESCRIPTION

Appearance	liquid	
Odour	faint	
Colour	black	
<b>Guaranteed specification</b>	<b>Standard</b>	<b>Method</b>
Plane cone viscosity (mPa.s)	15 000 ± 5 000	NFT51211
<b>Significant value (for guidance)</b>		
Density	1.8 approx.	
<b>Other information</b>		
Possible curing	15-20 min. at 125°C 5-10 min. at 150°C 1-2 min. at 175°C Post-curing for 1 h at 150°C is recommended in all cases.	
Storage stability	1 year below -20°C	

## APPLICATION PROPERTIES

The consistency of **PROTAVIC® L 127-11** coating resin has been designed for application by micro-dispenser.

The rheology allows good wetting of surfaces in contact with the resin and also good adhesion. It is possible to fill cavities less than 1 millimetre in size.

Adjusting the automatic dispensers is made easier

by the fact that the viscosity of the product remains stable for 5-6 days at 15-25°C.

One must take care however not to leave the product, after dispense, in contact with moist air for longer than 1 to 2 h. Although not strongly hygroscopic, **PROTAVIC® L 127-11** resin shows a slight drop in glass transition in the presence of moisture. It is therefore preferable to cure as quickly as possible after applying the product.

We recommend removing **PROTAVIC® L 127-11** resin from the freezer 15 to 30 min. before it is due to be used in order for it to reach a temperature of between 18 and 22°C.

## METHOD OF USE

**PROTAVIC® L 127-11** resin is supplied frozen and ready for use. It can be supplied in syringes designed to fit on the microdispenser, which has the advantage of avoiding handling operations which encourage the entrainment of air bubbles.

When the product is supplied in pots, the resin should preferably be degassed for 15 min. under a vacuum of less than 1 mm of mercury. In the absence of stirring, during the vacuum treatment, provide a container which is at least six times higher than the initial height of resin.

Optimum application is provided by means of a pneumatic dispenser and needles with an internal diameter of between 0.5 and 1.5 mm.

The product can be cured at temperatures from 125°C for a period of at least 15 min., but post-curing for 1-2 h at 150-175°C is recommended in order to achieve optimum protection of a silicon crystal.

## TYPICAL PROPERTIES OF THE CURED SYSTEM

The properties set out below were obtained after curing for 1 h at 175°C.

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 his/her own tests to determine whether **PROTAVIC® L 127-11** resin can be used for the particular application which he/she has in mind.

## 1 - PHYSICO-CHEMICAL PROPERTIES

Properties	Methods	Units	Typical values
Density at 20°C	ISO 1675	g/cm <sup>3</sup>	1.8
Shear strength at 20°C	ISO 4587	MPa daN/cm <sup>2</sup>	> 5.0 > 50
Flexing resistance at 20°C	ISO 178	MPa daN/cm <sup>2</sup>	60 - 80 600 - 800
Flexing modulus at 20°C	ISO 178	MPa daN/cm <sup>2</sup>	9 000 - 11 000 90 000 - 110 000
Shore D hardness	ISO 868	--	90 - 95
Chlorine content	MIL-STD 883	µg/g	< 10
Sodium content	MIL-STD 883	µg/g	< 20
Ionic chlorine content	S 86005	µg/g	< 5

## 2 - ELECTRICAL PROPERTIES

Properties	Methods	Units	Typical values
Dielectric rigidity	CEI 243	kV/mm	> 15
Dielectric constant at 100 HZ and 20°C	CEI 250	--	5.0 ± 0.5
Electrical dissipation factor at 100 HZ and 20°C	CEI 250	--	< 0.01
Transverse resistivity	CEI 93	Ω.cm	> 10 <sup>+13</sup>

## 3 - THERMAL PROPERTIES

Properties	Methods	Units	Typical values
Glass transition temperature Tg	DSC 1*	°C	80 - 110
Coefficient of linear expansion from -50 to +50°C	TMA 1*	10 <sup>-6</sup>	10 - 12
Coefficient of linear expansion at 300°C	TMA 1*	10 <sup>-6</sup>	25 - 30
Thermal conductivity	CTH 2	W/(m.K)	> 0.70
Decomposition temperature	TGA 1*	°C	> 350
Linear shrinking	ISO 2575	%	< 0.15

\* Thermo-analysis chain Mettler TA 3000.

### FIELD OF USE

**PROTAVIC® L 127-11** single-component, high purity insulating resin has been developed for protecting semi-conductors in the field of MCM, chip carriers, hybrid circuits and chip on board applications, and BGA.

It is generally recommended for large-sized semi-conductors due to its coefficient of linear expansion of 10 ppm/°C.

The high ionic purity guarantees good reliability of the semi-conductor. The same is true of the adhesion

on different substrates which offers optimum protection against external agents (moisture, dust, etc.).

### PRECAUTIONS IN USE

Refer to the attached safety data sheet.

### PACKAGING

The **PROTAVIC® L 127-11** resin is supplied in 500 g cartridges.

*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.*