

## DEFINITION

Fast flow, fast cure capillary underfill. The rheology of **PROTAVIC<sup>®</sup> ANE 10932** in combination with its high glass transition temperature and its very low coefficient of thermal expansion make the product perfect for high reliability underfill applications.

Because of its particular filler, **PROTAVIC<sup>®</sup> ANE 10932** may be used in very small gap underfill.

It presents a good pot life at room temperature 20-22°C and a high reactivity at moderate temperature.

**PROTAVIC<sup>®</sup> ANE 10932** is CMR free and is compliant with RoHS regulation.

**PROTAVIC<sup>®</sup> ANE 10932** may be dispensed by using a needle or by jetting.

## PRODUCT DESCRIPTION

Appearance	Viscous liquid	
Odor	Faint	
Color	Cream	
<b>Guaranteed specification</b>	<b>Standard</b>	<b>Method</b>
Cone and plate viscosity (5 rpm - 25°C)	25 000 ± 5 000 mPa.s	NFT 51211
<b>Other informations</b>		
Pot life* at 20 ± 2°C	3 days	
Density	1.65 approx.	
Possible curing cycles	- 10 minutes at 150°C - 30 minutes at 130°C - 60 minutes at 110°C	
Storage stability	- 3 months at T < -20°C - 6 months at T < -40°C	
Viscosity increase after 24 hours at 20±2°C	No evolution measured	

\* : defined as 100% viscosity increase.

## APPLICATION PROPERTIES

**PROTAVIC<sup>®</sup> ANE 10932** adhesive combines excellent adhesive and thermal properties.

Its good latency enables it to be kept at 20±2°C for three days, so the viscosity remains practically unchanged throughout the working day.

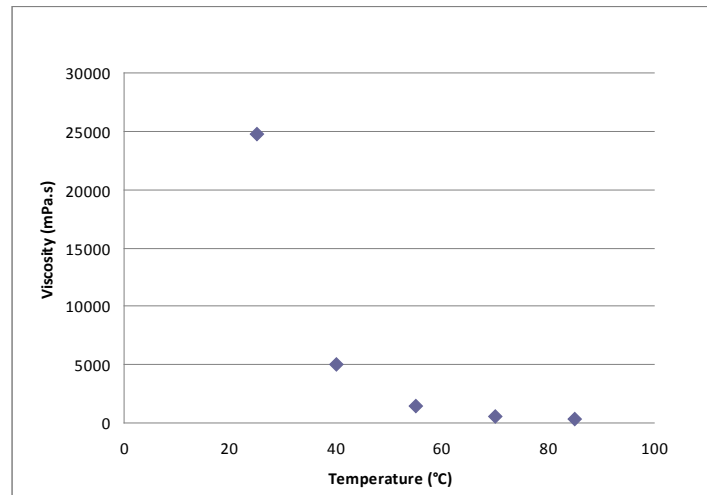
It possesses excellent properties in terms of adhesion and protection against harmful environmental factors, due to its high purity epoxy base.

It is 100% cross-linkable by heat at temperature of between 100 and 200°C. **PROTAVIC<sup>®</sup> ANE 10932** contains very fine filler compatible with gap size as fine as 25 microns.

## METHOD OF USE

- 1) Take the container out of the freezer not more than 30-45 minutes before use in order to prevent any re-absorption of moisture.
- 2) Work on clean surfaces or clean all surfaces in order to remove any dirt or grease. Do not deposit the adhesive on a substrate which has just been cleaned with chlorinated solvents.

- 3) Preheat flip chip assembly to between 90 and 120°C (higher temperatures are possible in the case of small components, as the underfill time is reduced).
- 4) Apply the adhesive by dispensing by using a syringe (very small diameter needles may be used) on one or two sides of the chip perimeter. Adjust the temperature dispense in order to find the right compromise between flow speed and reactivity. Viscosity of **PROTAVIC® ANE 10932** versus temperature is as follows:



- 5) Cure using one of the curing cycles compatible with the components, the substrate and the manufacturing conditions.

**FIELDS OF USE :**

**PROTAVIC® ANE 10932** adhesive excellent properties make it especially suitable for use in the microelectronics fields.

**PHYSICO-CHEMICAL PROPERTIES**

**Before curing**

PROPERTIES	METHODS	UNITS	RESULTS
Color			Off white
Density at 20°C	NFT 51201 ISO 1675	None	about 1.65
viscosity at 25°C	NFT 51211	mPa.s	about 25 000
viscosity at 70°C	NFT 51211	mPa.s	about 580
Shear Thinning Index (0.5 / 5 rpm) at 25°C	NFT 51211	None	about 1.0
Filler content	TGA 1	%	about 65 %
Grinding fineness	ISO 1524	microns	About 8

**During curing**

PROPERTIES	METHODS	UNITS	RESULTS
Weight loss during curing at 150°C / 15 minutes	TGA 1	%	< 0.15

**After curing – 15 minutes at 150°C**

PROPERTIES	METHODS	UNITS	RESULTS
Shear strength		daN/cm <sup>2</sup>	> 300
Coefficient of thermal expansion - from -50°C to + 120°C - from 160°C to 260°C	TMA 1	ppm/°C ppm/°C	25 120
Glass transition temperature	TMA 1	°C	140 - 150
Decomposition temperature in air	TGA 1	°C	about 440
SHORE D hardness	NFT 51109	none	90
Young Modulus - at 25°C - at 50°C - at 90°C	Tension mode – 1 Hz frequency	GPa	9.9 9.1 5.4

**PRECAUTION IN USE**

Refer to the attached material safety data sheet.

**PACKAGING**

**PROTAVIC® ANE 10932** adhesive is supplied in syringes.

*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.*