Polytec TC 411

Properties

Polytec TC 411 is a pasty, two component epoxy with curing at room temperature, used for thermal management in electronics, hybrid technology, sensor technology and power engineering.

Polytec TC 411 has a great thermal conductivity and an excellent adhesion to ceramic, glass, semiconductor materials, metals and most plastics.

The application can be performed directly from the side-by-side cartridge with a static mixing nozzle, using a dispensing gun.

Processing

- The processing of two-component products from side-by-side artridges is very simple.
- The cartridge is inserted into a suitable dispensing gun. The closing cap of the cartridge is then removed and replaced by an according static mixing nozzle.
- By activating the trigger of the dispensing gun, the two components are pressed out and automatically mixed in the static mixer.
- In order to prevent mixing errors, dispose the first half of the content in the mixing nozzle prior to application.
- Processing should be carried out rapidly after mixing the components; as an indication, the pot life can be used.
- When the pot life is exceeded, the mixing tube should be replaced with a new one.
- Close the cartridge with the cap after use.
- Surfaces should be clean, thus free of dirt, grease, oil, dust or process chemicals.
- Please take care of respective minimum curing temperature and time.
- For Safety information please refer to the respective Material Safety Data Sheet.

Polytec TC 411
Thermally Conductive Adhesive
Technical Data

Version 1/2019

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Properties in uncured state	Method	Unit	Technical Data
Chemcical basis	-	-	Epoxy
No. of components	-	-	2
Mixing ratio by weight	-	-	100:47
Mixing ratio by volume	-	-	2:1
Pot life at 23°C	TM 702	min	12
Shelf life at 23°C	TM 701	months	12
Consistency	TM 101	-	Creamy paste
Density Mix	TM 201.2	g/cm³	1.5
Density A-Part	TM 201.2	g/cm³	1.5
Density B-Part	TM 201.2	g/cm³	1.3
Type of filler	-	-	Boron nitride
Max. particle size	-	µm	-
Viscosity Mix 84 s^{-1} at 23°C	TM 202.1	mPa·s	140 000
Viscosity A-Part 84 s^{-1} at 23°C	TM 202.1	mPa·s	-
Viscosity B-Part 84 s^{-1} at 23°C	TM 202.1	mPa·s	-

Properties in cured* state	Method	Unit	Technical Data
Color	TM 101	-	white
Hardness (Shore D)	DIN EN ISO 868	-	38
Max. service temperature (continuous)	TM 302	°C	-55 / +120
Max. service temperature (short-term)	TM 302	°C	-55 / +220
Degradation temperature	TM 302	°C	280
Glass transition temperature (T_g)	TM 501	°C	<20
Coefficient of thermal expansion ($<T_g$)	ISO 11359-2	ppm	-
Coefficient of thermal expansion ($>T_g$)	ISO 11359-2	ppm	-
Thermal conductivity	TM 502	W/m·K	1.4 ±0.1
Specific volume resistivity	DIN EN ISO 3915	Ω·cm	-
Young's modulus	TM 605	N/mm²	n.b.
Tensile strength	TM 605	N/mm²	3
Lap shear strength (Al/Al)	TM 604	N/mm²	7
Elongation at break	TM 605	%	11
Water absorption 24 h, 23°C	TM 301	%	-

*The above data has been determined with samples cured at room temperature. Please notice, by varying the curing temperature these properties can be influenced to some extend.

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Curing*	Method	Unit	Technical Data
Minimum curing temperature		°C	15
Curing time at 23°C		h	48
Curing time at 80°C		min	90

*Curing temperatures refer to the temperature in the respective bond line. When choosing the respective curing conditions, the time needed to heat the substrate has to be considered. Depending on the type of heat source (convection oven, hot stamp, heating plate) the heat input may vary.

Standard pack sizes:

50 mL 2K-cartridges
Customized packaging

Please note:

The above listed information are typical data based on tests and are believed to be accurate. Polytec PT makes no warranties (expressed or implied) as to their accuracy. The above listed data do not constitute specifications. The processing (in particular the cure conditions) of the material, the process control and the variety of different applications at various customers are not under Polytec PT's control. Therefore Polytec PT will not be liable for concrete results in any specific application or in any connection with the use of this product. In particular the cure conditions do have a major effect on the properties of the cured material. Therefore it is highly recommended to keep the cure schedule – once established - under tight control. With the release of this data sheet all former data sheets will be null and void.

Subject to alteration.

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