

# Polytec EC 151-L-frozen

## Properties

Polytec EC 151-L-frozen is a one-component, solvent free, pre-mixed frozen epoxy resin optimized for stamping application, with a long pot life, high temperature stability and excellent electrical conductivity.

It can be used for high volume chip and substrate bonding, in micro-electronic, hybrid and optoelectronic application.

Polytec EC 151-L-frozen can be cured at 95°C or allows rapid cure cycles at higher temperatures and will withstand reflow and wire bond processes.

The material can be applied by stamping, (jet-) dispensing or manually.



## Processing

- The cooling during transport is assured by dry ice (-78 °C) and a temperature indicator.
- Use insulated gloves when touching any component of the packaging.
- The storage temperature of frozen adhesives should not exceed -40 °C.
- The cartridges should be opened only when they have been brought to room temperature (thawing curve see page 3).
- Store cartridges in vertical position while thawing (top down).
- Do not accelerate the thawing by hand heat or warm water (risk of air inclusions)
- Please remove condensed water before opening.
- Surfaces should be clean, thus free of dirt, grease, oil, dust or process chemicals.
- Please notice respective minimum curing temperature and time.
- For Safety information please refer to the respective Material Safety Data Sheet.

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## Electrically Conductive Adhesive

### Technical Data

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Properties in uncured state	Method	Unit	Technical Data
Chemical basis	-	-	Epoxy
No. of components	-	-	1
Mixing ratio (weight)	-	-	-
Mixing ratio (volume)			-
Pot life at 23°C	TM 702	h	48
Storage Stability at -40°C	TM 701	months	12
Consistency	TM 101	-	Creamy Paste
Density Mix	TM 201.2	g/cm <sup>3</sup>	2.81
Density A-Part	TM 201.2	g/cm <sup>3</sup>	-
Density B-Part	TM 201.2	g/cm <sup>3</sup>	-
Type of filler	-	-	Silver
Max. particle size	-	µm	<40
Viscosity Mix 84 s <sup>-1</sup> at 23°C	TM 202.1	mPa·s	5 000
Viscosity A-Part 84 s <sup>-1</sup> at 23°C	TM 202.1	mPa·s	-
Viscosity B-Part 84 s <sup>-1</sup> at 23°C	TM 202.1	mPa·s	-

Properties in cured* state	Method	Unit	Technical Data
Color	TM 101	-	Silver
Hardness (Shore D)	DIN EN ISO 868	-	85
Temperature resistance continuous	TM 302	°C	-55 / +200
Temperature resistance short term	TM 302	°C	-55 / +300
Degradation Temperature	TM 302	°C	+400
Glass Transition Temperature (T <sub>g</sub> )	TM 501	°C	75
Coefficient of thermal expansion (<T <sub>g</sub> )	ISO 11359-2	ppm	40
Coefficient of thermal expansion (>T <sub>g</sub> )	ISO 11359-2	ppm	114
Thermal conductivity		W/m·K	-
Specific volume resistivity	DIN EN ISO 3915	Ω·cm	3 – 6 · 10 <sup>-4</sup>
Electrical conductivity	DIN EN ISO 3915	S/m	-
Elasticity modulus	TM 605	N/mm <sup>2</sup>	7 000
Tensile Strength	TM 605	N/mm <sup>2</sup>	32
Lap shear strength (Al/Al)	TM 604	N/mm <sup>2</sup>	-
Elongation at break	TM 605	%	0.5
Water absorption 24 h, 23°C	TM 301	%	0.4

\*The above data has been determined with samples cured at 150°C. Please notice, by varying the curing temperature these properties can be influenced to some extent.

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Curing*	Method	Unit	Technical Data
Minimum curing temperature		°C	95
Curing time at 100°C		min	60
Curing time at 120°C		min	15
Curing time at 150°C		min	5
Curing time at 180°C		s	60

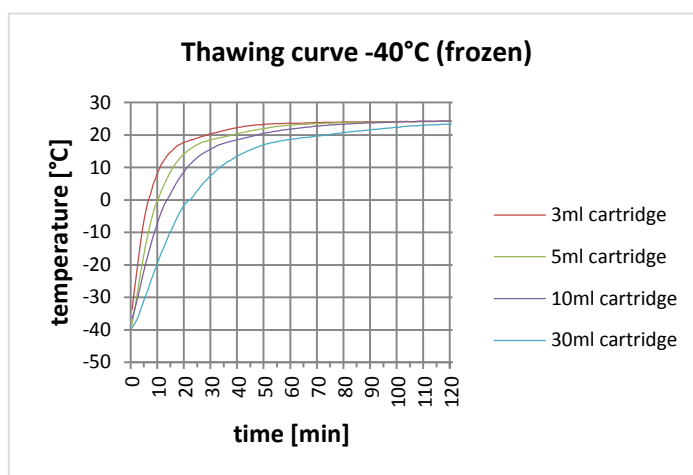
\*Curing temperatures refer to the temperature in the respective bond line. When choosing the respective curing conditions, the time needed to heat the substrate has to be considered. Depending on the type of heat source (convection oven, hot stamp, heating plate) the heat input may vary.

## Standard pack size:

3 cc\*/ 8 g, 5 cc\*/ 13 g,  
10 cc\*/ 26 g, 30 cc\*/ 78 g

## Customized Packaging

\*:EFD-Cartridges



## 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 curing 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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