



Polytec TC 451

Properties

Polytec TC 451 is a 100% solid, two component, thermally conductive, electrically insulating adhesive and potting system with high Glass Transition Temperature.

Polytec TC 451 is suggested for applications where heat dissipation and insulating properties are required. It is used in various applications for bonding, potting, coating and sealing in the automotive and electronics industry.

Polytec TC 451 shows an excellent resistance to chemicals and moisture and has a good adhesion on glass, metal, ceramics, ferrite and most plastics.

The material can be applied via dispensing or manual application.



Processing

- For two-component products the components A and B should be mixed carefully within the specified mixing ratio.
- For filled products both components should be homogenized carefully prior mixing, in order to prevent a possible settling of the filler.
- Processing should be carried out rapidly after mixing the components; as an indication the pot life can be used.
- Surfaces should be clean, thus free of dirt, grease, oil, dust or process chemicals.
- One-component products can be applied directly and are not subject to a pot life (except pre-mixed/frozen products).
- Please take notice of respective minimum curing temperature and time.
- For Safety information please refer to the respective Material Safety Data Sheet.

Polytec TC 451

Thermally Conductive Adhesive

Technical Data

Polytec TC 451

| Properties in uncured state | Method | Unit | Technical Data |
|---|----------|-------------------|---------------------|
| Chemical basis | - | - | Epoxy |
| No. of components | - | - | 2 |
| Mixing ratio (weight) | - | - | 100:6 |
| Mixing ratio (volume) | - | - | - |
| Pot life at 23°C | TM 702 | min | 30 |
| Storage Stability at 23°C | TM 701 | months | 12 |
| Consistency | TM 101 | - | Flowable soft paste |
| Density Mix | TM 201.2 | g/cm ³ | 2.00 |
| Density A-Part | TM 201.2 | g/cm ³ | 2.15 |
| Density B-Part | TM 201.2 | g/cm ³ | 0.95 |
| Type of filler | - | - | Aluminum oxide |
| Max. particle size | - | µm | <50 |
| Viscosity Mix 84 s ⁻¹ at 23°C | TM 202.1 | mPa·s | 18 000 |
| Viscosity A-Part 10 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 |
|---|-----------------|-------------------|-----------------------|
| Colour | TM 101 | - | Black |
| Hardness (Shore D) | DIN EN ISO 868 | - | 90 |
| Temperature resistance continuous | TM 302 | °C | -55 / +180 |
| Temperature resistance short term | TM 302 | °C | -55 / +280 |
| Degradation Temperature | TM 302 | °C | +330 |
| Glass Transition Temperature (T _g) | TM 501 | °C | 105 |
| Coefficient of thermal expansion (<T _g) | ISO 11359-2 | ppm | 27 |
| Coefficient of thermal expansion (>T _g) | ISO 11359-2 | ppm | 140 |
| Thermal conductivity | TM 502 | W/m·K | 0.8 ±0.1 |
| Specific volume resistivity | DIN EN ISO 3915 | Ω·cm | >1 · 10 ¹³ |
| Young modulus | TM 605 | N/mm ² | 10 000 |
| Tensile strength | TM 605 | N/mm ² | 71 |
| Lap shear strength (Al/Al) | TM 604 | N/mm ² | 14 |
| Elongation at break | TM 605 | % | 0.9 |
| Water absorption 24 h, 23°C | TM 301 | % | 0.1 |

*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 extend.

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| Curing* | Method | Unit | Technical Data |
|----------------------------|--------|------|----------------|
| Minimum curing temperature | | °C | 15 |
| Curing time at 23°C | | h | 24 |
| Curing time at 80°C | | min | 35 |
| Curing time at 100°C | | min | 25 |
| Curing time at 150°C | | min | 10 |
| Curing time at 180°C | | s | - |

*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:

250 g, 500 g,
1 kg, 25 kg

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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