



**Epoxy Resin Adhesives and Potting Compounds**  
for Applications in Electronics, Electrical Engineering,  
Optics and Medical Technology  
Product Brochure

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# Epoxy Resin Adhesives and Potting Compounds for Applications in Electronics, Electrical Engineering, Optics and Medical Technology



Epoxy resin adhesives and potting compounds are widely used in many industrial applications. Generally speaking, the materials are characterized by the fact that they are internally very rigid, adhere well to a multitude of surfaces and are highly resistant to temperature loads and chemical influences. The material properties with respect to flow behavior, curing speed and flexibility can be adjusted across a relatively wide spectrum.

## Extremely Diverse Usage and Processing Conditions

Epoxy resin adhesives and potting compounds are generally optimized for specific areas of use and applications. In addition it is often required that they can be used in a wide range of production processing. When deciding the ideal product for a specific application certain issues will be important to consider. The number of components desired, curing temperature, curing time as well as usage conditions are all part of selecting the best product.

## Applications for Epoxy Resin Adhesives and Potting Compounds

Whether products are used in electronics, electrical engineering, optics or medical technology, epoxy resin adhesives and potting compounds help to

permanently bond a wide range of materials and to protect sensitive units from environmental influences.

Polytec is well positioned to provide products in the following fields, among others:

- Microelectronics:  
SMD assembly, covering units, potting assemblies
- Optics:  
Positioning lenses and prisms, securing optical sensors, bonding fiber-optic cables
- Medical technology:  
Autoclavable, biocompatible bonding of medical devices such as endoscopes
- Electrical engineering:  
Bonding magnets, potting micro switches

## Benefits of Bonding

Epoxy resin adhesives enable bonding of almost any material combination – even difficult ones such as metals, plastics, glass or ceramic. As they have a low viscosity, potting compounds even penetrate fine cracks and openings and thereby protect sensitive units against mechanical loads and the influence of most process media such as water, oil or gases.

## The Perfect Product for Your Application

The adhesives and potting compounds presented here are unfilled resin and hardener systems. They are available in the form of two-component products that can be cured at room temperature or as one-component, hot-curing formulations wherein the hardener is already “incorporated” in solid form. You achieve by far the highest resistance to temperature loads and chemical influences with two-component, hot-curing products.



The following table provides an overview of the various processing and material properties.

| Processing                                  | Cold-curing | Hot-curing |                              |
|---|-------------|------------|------------------------------|
|   |             | 1C         | 2C                           |
| Components                                  | 2C          | 1C         | 2C                           |
| Optically transparent, high-strength        | EP 601      | EP 501     | –                            |
| Optically transparent, flexible             | EP 610      | –          | –                            |
| Highest temperature and chemical resistance | EP 660      | –          | EP 642                       |
| Biocompatible                               | EP 601      | –          | EP 630<br>EP 653<br>EP 655-T |
| Biocompatible and autoclavable              | –           | –          | EP 630<br>EP 653<br>EP 655-T |

## Variants and Customized Developments

Are you looking for a product with particular properties? Most of these adhesives and potting compounds also come as thinner, thixotropic, colored or pre-mixed and frozen variants. One of the strengths of Polytec is the ability to partner with you to develop customized products according to your specifications. Please don't hesitate to contact us.



# Epoxy Resin Adhesives and Potting Compounds

| Product code | Processing properties |                   |            |                  |                | Thermal properties       |                        | Mechanical properties |                    |                  |                 |                     |
|--------------|-----------------------|-------------------|------------|------------------|----------------|--------------------------|------------------------|-----------------------|--------------------|------------------|-----------------|---------------------|
| Parameter    | Mix                   | Specific gravity  | Viscosity  | Pot life @ 23 °C | Cure schedule  | Max. cont. service temp. | Glass transition temp. | Shore-hardness        | Lap shear strength | Tensile strength | Young's modulus | Elongation at break |
| Method       | –                     | PT TM 201         | PT TM 202* | PT TM 702        | –              | PT TM 302                | PT TM 501              | PT TM 601             | PT TM 604          | PT TM 605        | PT TM 605       | PT TM 605           |
| Unit         | by weight             | g/cm <sup>3</sup> | mPa s      | –                | examples       | °C                       | °C                     | –                     | MPa (Al/Al)        | MPa              | GPa             | %                   |
| EP 501       | –                     | 1.2               | 16.000     | 1 mon            | 150 °C, 10 min | 180                      | 80                     | D85                   | 31                 | 76               | 3.6             | 4.0                 |
| EP 601       | 100:35                | 1.2               | 460        | 4 h              | 23 °C, 16 h    | 200                      | 65                     | D80                   | 37                 | 65               | 3.5             | 2.9                 |
| EP 601-T     | 100:35                | 1.2               | 3.000      | 4 h              | 23 °C, 16 h    | 200                      | 65                     | D80                   | 37                 | 65               | 3.5             | 2.9                 |
| EP 610       | 100:50                | 1.1               | 780        | 6 h              | 23 °C, 24 h    | 150                      | <23                    | A65                   | 12                 | 6                | 0.003           | 60                  |
| EP 610-T     | 100:50                | 1.1               | 3.000      | 6 h              | 23 °C, 24 h    | 150                      | <23                    | A65                   | 12                 | 6                | 0.003           | 60                  |
| EP 630       | 100:10                | 1.1               | 3.000      | 24 h             | 150 °C, 5 min  | 230                      | 90                     | D85                   | 19                 | 63               | 3.2             | 2.9                 |
| EP 630-LV    | 100:10                | 1.1               | 1.000      | 24 h             | 150 °C, 5 min  | 230                      | 90                     | D85                   | 13                 | 63               | 3.4             | 2.9                 |
| EP 642       | 100:5                 | 1.1               | 10.000     | 24 h             | 180 °C, 15 min | 250                      | 150                    | D85                   | 14                 | 51               | 1.6             | 1.9                 |
| EP 653       | 100:10                | 1.1               | 6.000      | 24 h             | 150 °C, 5 min  | 230                      | 80                     | D85                   | 16                 | 62               | 3.2             | 2.8                 |
| EP 653-T     | 100:10                | 1.1               | 23.000     | 24 h             | 150 °C, 5 min  | 230                      | 80                     | D85                   | 17                 | 65               | 3.6             | 2.4                 |
| EP 655       | 100:10                | 1.2               | 5.600      | 24 h             | 150 °C, 5 min  | 220                      | 100                    | D80                   | 16                 | 55               | 2.9             | 2.8                 |
| EP 655-T     | 100:10                | 1.2               | 11.000     | 24 h             | 150 °C, 5 min  | 220                      | 100                    | D80                   | 16                 | 55               | 2.9             | 2.8                 |
| EP 660       | 100:17                | 1.1               | 1.000      | 45 min           | 23 °C, 16 h    | 240                      | 120                    | D80                   | 19                 | 87               | 3.8             | 5.6                 |

\* Dynamic viscosity at 23 °C, plate – plate, gap: 0.5 mm, shear velocity: 84 s<sup>-1</sup>

With the exception of EP 660, all of the two-component adhesives also come as pre-mixed, frozen variants.

The above listed information are typical data and do not constitute specifications.

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