Technical Datasheet Elecolit® 3653



Product Description

Modified epoxy | 1 C | solvent-free | thermal-curing | thermally conductive | electrically conductive

- Semiconductor technology
- LED bonding
- Electrically conductive bonding
- Very high filling density
- Good thermal conductivity
- Low halogen content <50ppm</p>
- Silver filled

Curing Properties

This adhesive can be cured with heat. Typical curing temperatures are listed in the table below.

Temperatures	Time
80°C	4 h
110°C	20 min
120°C	10 min
150°C	5 min

The heat cure times are only provided as a guideline. Actual cure times can vary based on part size, configuration, adhesive volume, temperature control, and the time required for the component substrates to attain oven temperature.

The final bond strength of the adhesive is achieved no sooner than 24 h after the bonded components are removed from the oven.

Technical Datasheet





Resin	Technical Data	
Appearance Grey Silver Filler Silver Filler Silver Filler Silver S		
Filler Silver Filler - weight [%] 80 Particle size D90 [µm] 22 Uncured Material Viscosity [mPas] (Brookfield LVT, 25 °C, Sp. 4/30 rpm) 8,000 – 13,000 PE-Norm 061 4,000 – 8,000 Viscosity [mPas] (Kinexus Rheometer, 25 °C, 10s²) 4,000 – 8,000 PE-Norm 064 2 – 3 Density [g/cm³] 3.5 – 3.7 PE-Norm 064 5100 Density [g/cm³] >100 PE-Norm 064 5100 Cured Material 5100 Hardness shore D 60 – 78 PE-Norm 050 60 – 78 Temperature resistance [°C] -40 – 180 Shrinkage [%] <2	Resin	Ероху
Filler - weight [%] 80 Particle size D90 [µm] 22 Uncured Material Viscosity [mPas] (Brookfield LVT, 25 °C, Sp. 4/30 rpm) 8,000 – 13,000 Viscosity [mPas] (Kinexus Rheometer, 25 °C, 10s¹) 4,000 – 8,000 PE-Norm 064 2 – 3 Thixotropic index [1/10] 2 – 3 Density [g/cm³] 3.5 – 3.7 Flash point [°C] >100 PE-Norm 004 60 – 78 Flash point [°C] >100 PE-Norm 050 60 – 78 Cured Material 4 Hardness shore D 60 – 78 PE-Norm 066 -40 – 180 Shrinkage [%] <	Appearance	Grey
Particle size D90 [µm] 22	Filler	Silver
Uncured Material Viscosity [mPas] (Brookfield LVT, 25 °C, Sp. 4/30 rpm) 8,000 − 13,000 Viscosity [mPas] (Kinexus Rheometer, 25 °C, 10s¹) 4,000 − 8,000 PE-Norm 064 2 − 3 Density [g/cm³] 3.5 − 3.7 PE-Norm 064 3.5 − 3.7 Flash point [°C] >100 PE-Norm 050 60 − 78 Cured Material 40 − 180 Hardness shore D 60 − 78 PE-Norm 006 60 − 78 Shrinkage [%] <2	Filler - weight [%]	80
Viscosity [mPas] (Brookfield LVT, 25 °C, Sp. 4/30 rpm) 8,000 – 13,000 PE-Norm 001 4,000 – 8,000 Viscosity [mPas] (Kinexus Rheometer, 25 °C, 10s¹) 4,000 – 8,000 PE-Norm 064 2 – 3 Density [g/cm³] 3.5 – 3.7 PE-Norm 004 3.5 – 3.7 Flash point [°C] >100 PE-Norm 050 60 – 78 Cured Material Hardness shore D PE-Norm 006 60 – 78 Temperature resistance [°C] -40 – 180 Shrinkage [%] <2	Particle size D90 [μm]	22
PE-Norm 001 \$,000 = 13,000 Viscosity [mPas] (Kinexus Rheometer, 25 °C, 10s¹) 4,000 = 8,000 PE-Norm 064 2 - 3 Density (g/cm³) 3.5 - 3.7 Flash point [°C] >100 PE-Norm 050 >100 Cured Material 40 - 180 Hardness shore D 60 - 78 PE-Norm 006 -40 - 180 Shrinkage [%] <2 PE-Norm 031 <1 Water absorption [%] <1 PE-Norm 016 50 - 60 Glass transition temperature - DSC [°C] 50 - 60 PE-Norm 017 50 - 90 Coefficient of thermal expansion [ppm/K] above Tg 100 - 300 PE-Norm 017 1.8 - 2.2 Thermal conductivity [W/m*K] 1.8 - 2.2 PE-Norm 052 1.8 - 2.2 Thermal conductivity [W/m*K] 4.7 - 5.7 PE-Norm 054 1 - 5E-3 Young's modulus - Tensile test [MPa] 2,100 - 2,400	Uncured Material	
PE-Norm 001 8,000 = 13,000 Viscosity [mPas] (Kinexus Rheometer, 25 °C, 10s¹) 4,000 - 8,000 PE-Norm 064 2 - 3 Density (g/cm³) 3.5 - 3.7 Flash point [°C] >100 PE-Norm 050 >100 Cured Material 4 Hardness shore D 60 - 78 PE-Norm 006 -40 - 180 Shrinkage [%] <2	Viscosity [mPas] (Brookfield LVT, 25 °C, Sp. 4/30 rpm)	8,000, 13,000
### ##################################		8,000 – 13,000
Thixotropic index [1/10] 2 - 3	Viscosity [mPas] (Kinexus Rheometer, 25 °C, 10s ⁻¹)	4 000 – 8 000
PE-Norm 064 2-3 Density [g/cm³] 3.5 - 3.7 PE-Norm 004 >100 PE-Norm 050 >100 Cured Material *** Hardness shore D 60 - 78 PE-Norm 006 -40 - 180 Shrinkage [%] <2	PE-Norm 064	4,000 - 8,000
### PE-Norm 064 Density [g/cm³] PE-Norm 004 Flash point [°C] PE-Norm 050 Cured Material Hardness shore D PE-Norm 006 Feen of the person of the perso		2-3
### PE-Norm 004 Flash point [°C]		
Flash point [°C] PE-Norm 050 Cured Material Hardness shore D PE-Norm 006 Temperature resistance [°C] Shrinkage [%] PE-Norm 031 Water absorption [%] PE-Norm 016 Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus - Tensile test [MPa] 140°C, 2h 200 60 - 78 60 -	, 	3.5 – 3.7
Value Cured Material Hardness shore D 60 – 78 PE-Norm 006 -40 – 180 Shrinkage [%] <2		
Cured Material Hardness shore D PE-Norm 006 Temperature resistance [°C] Shrinkage [%] PE-Norm 031 Water absorption [%] PE-Norm 016 Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus - Tensile test [MPa] 140°C, 2th 60 - 78 60 -	·	>100
Hardness shore D PE-Norm 006 Temperature resistance [°C] Shrinkage [%] PE-Norm 031 Water absorption [%] PE-Norm 016 Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 052 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400	PE-Norm U5U	
Temperature resistance [°C] -40 – 180 Shrinkage [%] -2 PE-Norm 031 Water absorption [%] -1 Glass transition temperature - DSC [°C] -2 PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg -2 PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg -2 PE-Norm 017 Thermal conductivity [W/m*K] -2 Thermal conductivity [W/m*K] -3.7 PE-Norm 054 Volume resistivity [Ohm*cm] -5.7 Volume resistivity [Ohm*cm] -5.3 Young's modulus – Tensile test [MPa] -40°C, 2h -400		
Temperature resistance [°C] -40 – 180 Shrinkage [%] PE-Norm 031 Water absorption [%] PE-Norm 016 Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 22		60 – 78
Shrinkage [%] PE-Norm 031 Water absorption [%] PE-Norm 016 Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400	PE-Norm 006	
Water absorption [%] PE-Norm 016 Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400	Temperature resistance [°C]	-40 – 180
Water absorption [%] PE-Norm 016 Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400	Shrinkage [%]	<2
Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 250 – 60 50 – 60 50 – 60 50 – 60 50 – 90 100 – 300 10	PE-Norm 031	\Z
Glass transition temperature - DSC [°C] PE-Norm 009 Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 250 – 60 50 – 60 50 – 60 50 – 60 50 – 60 50 – 60 50 – 60 50 – 60 60 50 – 60 60 60 60 60 60 60 60 60 60		<1
Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400	PE-Norm 016	12
Coefficient of thermal expansion [ppm/K] below Tg PE-Norm 017 Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 200 — 2,400	Glass transition temperature - DSC [°C]	50 – 60
Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 200 – 2,400		30 00
Coefficient of thermal expansion [ppm/K] above Tg PE-Norm 017 Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 100 – 300 1.8 – 2.2 4.7 – 5.7 4.7 – 5.7		50 – 90
## Thermal conductivity [W/m*K] ## PE-Norm 062 Thermal conductivity [W/m*K] ## PE-Norm 054 Volume resistivity [Ohm*cm] ## PE-Norm 040 Young's modulus – Tensile test [MPa] ## 1.8 – 2.2 ## 1.8 – 2.2 ## 1.8 – 2.2 ## 2.7 – 5.7 ## 2.7 – 5.7 ## 2.7 – 5.7 ## 2.7 – 2.7 ## 2.7		
Thermal conductivity [W/m*K] PE-Norm 062 Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 1.8 – 2.2 4.7 – 5.7 4.7 – 5.7 2,100 – 2,400	,	100 – 300
Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400	PE-Norm 017	
Thermal conductivity [W/m*K] PE-Norm 054 Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400	Thermal conductivity [W/m*K]	10 22
Volume resistivity [Ohm*cm] PE-Norm 040 1 – 5E-3 Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400		1.8 – 2.2
Volume resistivity [Ohm*cm] PE-Norm 040 Young's modulus – Tensile test [MPa] 1 – 5E-3 2,100 – 2,400	Thermal conductivity [W/m*K]	17_57
Young's modulus – Tensile test [MPa] 1 – 5E-3 Young's modulus – Tensile test [MPa] 2,100 – 2,400		4.7 - 3.7
Young's modulus – Tensile test [MPa] 140°C, 2h 2,100 – 2,400		1 – 5F-3
2,100 – 2,400	PE-Norm 040	1 32 3
2,100 – 2,400	Young's modulus – Tensile test [MPa]	
		2.100 – 2.400
PE-Norm 056		, , , , , , , , , , , , , , , , , , , ,

Technical Datasheet Elecolit® 3653



Transport/Storage/Shelf Life

Package type	Transport	Storage	Shelf life*
Syringe/Cartridge	-20°C	-20°C	At delivery
Other packages	0°C – 10°C	0°C – 10°C	min. 6 months max. 12 months

^{*}Store in original, unopened containers!

Instructions for use

After storing the container at 0°C - 10°C, Elecolit® 3653 must be homogenized because of possible sedimentation of silver.

Surface preparation

The surfaces to be bonded should be free of dust, oil, grease, mold release, or other contaminants in order to obtain an optimal and reproducible bond. For cleaning we recommend the cleaner IP® from Panacol, or a solution of Isopropyl Alcohol at 90% or higher concentration. Substrates with low surface energy (e.g. polyethylene, polypropylene) must be pretreated in order to achieve sufficient adhesion.

Application

Our products are supplied ready to use. Depending on the packaging, our adhesives may be dispensed by hand directly from the package, or they can be applied using dispensing systems and automation. Many commercially available valve and controller options are available to ensure accurate and consistent adhesive dispensing. For assistance with dispensing and curing questions, please contact our Applications Engineering department. Adhesive and substrate should not be cold for proper bonding. They must be allowed to warm to room temperature prior to processing. After curing, the adhesive must be allowed to cool to ambient temperature before testing the product's performance. For safety information refer to our Material Safety Data Sheet (MSDS).

Storage

Store uncured product in its original, closed container in a dry location. Any material removed from the original container must not be returned to the container as it could be contaminated. Panacol cannot assume responsibility for products that were improperly stored, contaminated, or repackaged into other containers.

Handling and Clean-up

For safe handling information, consult this product's Material Safety Data Sheet (MSDS) prior to use. Uncured material may be wiped away from surfaces with organic solvents. Do not use solvents to remove material from eyes or skin!

Technical Datasheet Elecolit® 3653



Disclaimer

The product is free of heavy metals, PFOS and Phthalates and is conform to the current EU-Directive RoHS.

THE VALUES NOTED IN THIS TECHNICAL DATA SHEET ARE TYPICAL PROPERTIES AND ARE NOT MEANT TO BE USED AS PRODUCT SPECIFICATIONS.

The information contained in this data sheet is believed to be accurate and is provided for information only. Panacol makes no representation or warranties of any kind concerning this information. It is the user's responsibility to determine the suitability of this product for any intended use. Panacol does not assume responsibility for test or performance results obtained by the user. The user assumes all risk and liability connected with the use of this product.

The user should adopt such precautions and use guidelines as may be advisable for the protection of property and persons against any hazards that may be involved in this product's handling or use. Panacol specifically disclaims any liability for consequential or incidental damages of any kind arising from the handling or use of this product. The information contained in this Technical Data Sheet offers no assurance that the product use, application, or process will not infringe on existing patents or licenses of others. Nothing in this Technical Data Sheet transfers or grants license for the use of any patents, trade secrets, intellectual property, or confidential information that is the property of Panacol.

Except as otherwise noted, all trademarks in this document (identified as *) are the property of Panacol.

Contact

Panacol-Elosol GmbH Stierstädter Straße 4 61449 Steinbach Germany Phone: +49 6171 6202-0 Mail: info@panacol.de www.panacol.com Panacol-USA, Inc. 142 Industrial Lane Torrington CT 06790 USA Phone: +1 860-738-7449 Mail: info@panacol-usa.com www.panacol-usa.com Panacol-Korea Co., Ltd. #707, Kranz Techno, 388 Dunchon-daero Junwon-gu, Seongnam Gyeonggi-do, 13403 KOREA Phone: +82 31 749 1701 Mail: info@panacol-korea.com www.panacol-korea.com Eleco Panacol – EFD 125, av Louis Roche Z.A. des Basses Noëls 92238 Gennevilliers Cdx FRANCE Tél.: +33 (0)1 47 92 41 80 Mail: eleco@eleco-panacol.fr www.eleco-panacol.fr