

Thermally conductive products

Thermicast® TA 25005

Description:

Thermicast® TA 25005 is a two-component, thermally conductive epoxy resin system for potting and protecting electronic assemblies. Thermicast® TA 25005 offers excellent protection against mechanical, thermal and environmental influences and is specifically designed for applications where efficient thermal management is required.

Thanks to its good thermal conductivity, Thermicast® TA 25005 reduces heat build-up in electronic assemblies, thereby increasing their reliability and service life. At the same time, the material offers excellent electrical insulation as well as protection against moisture, vibration, abrasion, thermal shock, fungal attack and numerous chemicals. The solvent-free epoxy resin system is also characterized by a low exothermic reaction during curing.

Properties:

Thermicast® TA 25005 has the following properties: two-component epoxy resin, thermally conductive potting material, low exothermic heat generation, very good electrical insulation, excellent adhesion to metals, ceramics, glass, composites and many plastics, high compressive and tensile strength, high moisture and water resistance, solvent-free, good resistance to numerous chemicals and easy processing due to a mixing ratio of 1:1 (volume).

Applications:

Thermicast® TA 25005 is particularly suitable for: Encapsulation of electronic assemblies, Encapsulation of electronic assemblies, Printed circuit boards (PCBs), power electronics, LED modules and LED drivers, power supplies, sensors, control units, telecommunications electronics, industrial electronics and applications with increased heat dissipation.

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Delivery forms: Thermicast® TA 25005 can be supplied in syringes, tubes, cartridges, cups and buckets.

Processing: Before processing, both components must be stirred thoroughly, especially if fillers have settled. The mixing ratio of 1:1 by volume must be adhered to exactly. Air ingress should be avoided during mixing. After mixing, it is recommended to vent for about 15 minutes or alternatively vacuum treatment. For larger mixing quantities (> 3 kg), the processing time is significantly shortened; these should only be processed with suitable dosing and mixing technology. If the material crystallizes, it can be completely liquefied again by heating it to 55 to 65 °C. Before mixing, it must then be cooled back to room temperature.

Note: The values given are typical guideline values and serve as technical orientation. They do not represent guaranteed product properties. A suitability test for the respective application is recommended. Technical changes in the course of product development are reserved.

Storage conditions: Thermicast® TA 25005 should be stored at room temperature in dry rooms.

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Material base

Feature	Description
Resin system	Epoxy resin
Color	Black
Components	Two-component system

Characteristics of the unhardened system

Feature	Test Method	Unit	Value
Dense mixture	ASTM D1475	g/cm ³	1,7
Density Component A	ASTM D1475	g/cm ³	1,7
Density Component B	ASTM D1475	g/cm ³	1,6
Viscosity mixture (25 °C)	-	mPa·s	27.000
Viscosity Component A	-	mPa·s	33.000
Viscosity Component B	-	mPa·s	12.000
Mixing ratio (volume)	-	-	1:1
Mixing ratio (weight)	-	-	1,1:1
Processing Time	-	Hours	2
Shrinkage	Calculates	%	1,4
Shelf life	-	years	2

Characteristics of the cured system

Feature	Test Method	Unit	Value
Thermal conductivity	ASTM E1461	W/m·K	0,74
Specific Heat Capacity	ASTM E1461	J/(g·K)	1,42
Thermal conductivity	ASTM E1461	mm ² /s	0,35
Density	Hydrostatic Weighing	g/cm ³	1,72
Continuous use temperature	-	°C	-30 to +175
Short-term peak temperature	-	°C	+ 200

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Feature	Test Method	Unit	Value
Glass transition temperature (T _g)	ASTM E1545	°C	50
Coefficient of thermal expansion before T _g	ASTM E831	ppm/°C	142
Coefficient of thermal expansion according to T _g	E831 ASTM	ppm/°C	114
Hardness	ASTM D2240	Shore D	81
Tensile strength	ASTM D638	MPa	23
Compressive strength	ASTM D695	MPa	87

Electrical properties

Feature	Unit	Value
Volume resistance	Ω·cm	8,2 × 10 ¹²
Breakdown voltage (3.175 mm)	V	48.300
Dielectric Strength	V/mil	386
Relative Permittivity (1 MHz)	-	3,7
Dissipation factor (1 MHz)	-	0,1

Mechanical adhesion:

Material	Unit	Value
Stainless Steel	MPa	13
Aluminium	MPa	16
ABS	MPa	1,8
Polycarbonate	MPa	1,8

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Chemical resistance

Weight gain after 30 days at 25°C:

Acetone	13%
Ethyl Acetate	9%
Isopropanol	0,5%
Sulfuric acid 3 %	1%
Sulfuric acid 30 %	1,4%
Acetic acid	0,2%
Caustic soda 10 %	0,1%
Sodium chloride 10%	0,1%
Water	0,2%
Transformer Oil	0%
Transmission oil	0%
Gasoline	1%

Weight loss after 600 hours at 155 °C: 5.8%

Trademark information: Thermicast® is a registered trademark of Dr Dietrich Müller GmbH, Germany.

Please note:

The information in this technical data sheet is based on our current knowledge and experience. Due to the wide range of possible influences during application, it does not exempt the processor and user from carrying out their own tests and trials. A legally binding guarantee of certain properties or suitability for a specific application cannot be derived from our information. Depending on the individual case, we recommend consulting us. The recipient of our products is responsible for observing any industrial property rights and existing laws.