

Wepesil casting resin

VT 3602 KK

Base: organo-poly-siloxane

- **crystal-clear, highly transparent**
- addition cross-linking, thus suitable for hermetically encapsulated environments
- highly transparent even in thick layers
- **thermal class 200 = 200 °C** in accordance with DIN IEC 60085
- **high optical temperature resistance**, thus particularly suitable for a use in optoelectronics, e.g. for high power LEDs

Index: **VT** = casting compound, transparent
KK = crystal-clear



Please read this technical report, the corresponding material safety data sheet and the Technical Information sheets TI 15/2, TI 15/3 and TI 15/10 (see item 3 and 6) carefully before using the product. These sheets are enclosed with the first shipment of product or sample.

1. Application

The Wepesil casting resin **VT 3602 KK** is an electrically insulating 2-pack silicone elastomer that protects against corrosion resulting from extreme environmental influences and aggressive media; it is temperature-resistant up to at least 200 °C (see also item 5.1 „General Properties“). It was developed for sealing, embedding or encapsulating electronic components, assemblies and electrical equipment.

On account of its high elasticity, the extremely high temperature resistance and the very low volume shrinkage or shrinkage pressure, the Wepesil casting resin **VT 3602 KK** is particularly suitable for high-quality temperature and shock-sensitive electronic components such as sensors, glass diodes or ferrit cores. Very little heat is generated when cured, and thanks to its high degree of elasticity, material tension by thermal shocks is kept low.

Given the high optical temperature resistance of 150 °C and the very high transparency, the Wepesil casting resin **VT 3602 KK** is ideally suited for the field of optoelectronics and in particular for the coating of high power LEDs. Even when applied in thick layers or when exposed to long-term thermal stress, it displays a very high transparency in the entire wavelength range of visible light and an excellent yellowing resistance.

2. Special notes

Since the Wepesil casting resin **VT 3602 KK** is an addition cross-linking system that does not separate low molecular substances, it can be used in hermetically encapsulated environments.

3. Safety recommendations

- Please read the corresponding material safety data sheet where you will find detailed specifications of safety precautions, environmental protection, waste disposal, storage, handling, transport as well as other characteristics.
- When using chemicals, the common precautions should be carefully noted.
- Please read our **Technical Information sheet TI 15/3 “Protective measures when using chemicals including lacquers, casting compounds, thinners, cleaning agents“**. On our website, the technical information sheets can be accessed in the section “Service – Technical publications“.

4. Characteristics

Colour/appearance		colourless, transparent
Viscosity* at 20 °C [68 °F] ISO 3219	Component A Component B Mixture	2100 ± 300 mPas 1900 ± 300 mPas 2000 ± 300 mPas
Density at 20 °C [68 °F] ISO 2811-1	Component A Component B Mixture	1.01 ± 0.02 g/cm ³ 1.01 ± 0.02 g/cm ³ 1.01 ± 0.02 g/cm ³
Pot life of mixture at 18-23 °C [64.4-73.4 °F] (start at 20 °C [68 °F], set-up quantity 500 g) Double viscosity Tenfold viscosity		approx. 4 h approx. 4.5 h

* measured with Haake RS 600, C 20/1°, D = 50 s⁻¹, viscosity measuring unit supplied by:
Thermo Fisher Scientific, Dieselstraße 4, 76227 Karlsruhe, Germany
Phone +49 721 4094-444, Fax +49 721 4094-300, www.thermo.com

5. Properties

5.1 General properties

- does not contain substances listed in the RoHS directive 2011/65/EU, EU End-Of-Life Vehicle directive 2000/53/EC and WEEE directive 2002/96/EC
- does not contain substances listed in the United States' EPA 33/50 program (EPA – Environmental Protection Agency)
- solvent-free, therefore practically no nuisance caused by smell and no attack of solvent-sensitive plastics
- easily processed thanks to the convenient mixing ratio of 1 : 1 and a long pot life
- good flowability, thus ideally suited for encapsulating components that are difficult to access
- sectile, i.e. components can be replaced for repair. Casting can be resumed after the replacement has been completed
- very high elasticity and tear resistance, very little tendency to embrittlement
- good protection from shock, impact and vibration
- can be used in a temperature range of -50 up to +200 °C [-49 up to 392 °F], a use down to -65 °C or short-term temperature loads up to approx. 250 °C [482 °F] are possible. Both at the lower and upper ends of this range the performance and reliability of the material can be negatively affected in some applications. In these cases additional pre-trials and tests are required
- excellent dielectric properties; the dielectric constant and the dissipation factor $\tan \delta$ are almost independent of temperature and frequency over a wide temperature range
- high weather and UV resistance

5.2 Physical and mechanical properties

These properties are reached after 14 days storage at room temperature (18–23 °C [64.4–73.4 °F]).

Property	Test method	Result
Shore-A hardness	DIN 53 505	35 ± 10
Water adsorption	DIN EN ISO 62, 24 h/23 °C 30 min 100 °C, 15 min 23 °C	0.01 % 0.1 %
Glass transition temperature Tg	TMA (thermo-mechanical analysis)	-50 °C
Coefficient of thermal expansion CTE > Tg	TMA (thermo-mechanical analysis)	310 ppm/K
Thermal class	in acc. with DIN IEC 60 085	200 = 200 °C

5.3 Electrical properties

These properties are reached after 14 days storage at room temperature (18–23 °C [64.4–73.4 °F]).

Property	Test method	Result
Dielectric strength	VDE 0303, part 21 DIN EN 60243-1	40 kV/mm
Surface resistance	VDE 0303, part 30 DIN IEC 60093	2 x 10 ¹⁴ Ohm
Specific volume resistivity	VDE 0303, part 30 DIN IEC 60093	5.7 x 10 ¹⁴ Ohm x cm
Tracking resistance	DIN EN 60112	CTI > 600*

* CTI = Comparative Tracking Index, Kriechstromfestigkeit

6. Processing

→ Please read our **Technical Information sheet TI 15/2 "Selection criteria and processing advice for casting compounds/resins"** for more detailed information on processing. On our website, you will find the technical information sheets in the section "Service – Technical publications".



Since the many different permutations make it impossible to evaluate the whole spectrum (parameters, reactions with materials used, chemical processes and machines) of processes and subsequent processes in all their variations, the parameters we recommend are to be viewed as guidelines only that were determined in laboratory conditions. We advise you to determine the exact process limitations within your production environment, in particular as regards compatibility with your specific follow-up processes, in order to ensure a stable fabrication process and products of the highest possible quality.

The specified product data is based upon standard processing conditions/test conditions of the mentioned norms and must be verified observing suitable test conditions on processed printed circuit boards.

Feel free to contact our application technology department (ATD) if you have any questions or for a consultation.

Stainless steel working tools and, if necessary, Teflon coated hoses are especially recommended for the processing of the Wepesil casting resin **VT 3602 KK**.



When silicone based and silicone-free inks are used at the same time problems, as for instance dewettings, may occur during the processing of the silicone-free lacquers. Therefore, keep workplaces/tools separate to avoid the different ink systems coming into contact with each other, as for instance through contaminated working tools.

→ Ensure that the surface to be coated is clean, grease-free and dry.

Grease, moisture and contamination of the surface, as for instance due to organic tin compounds, sulphur and sulphur compounds, amides, amines, azides, urethanes, may lead to problems during curing such as bubbles and voids. Characteristic for such kinds of contamination is liquid, noncured material at the interface between substrate and lacquer after thermal curing. Contaminations also have a negative effect on the adhesion so that water may deposit between the pcb and conformal coating and thus lead to corrosion/failure



Protect against humidity

6.1 Mixing



Component A : Component B = 1 : 1 (part by weight)

For mixing we recommend using mechanical stirring equipment. Our **Technical Information sheet TI 15/10: "Processing of 2-pack systems"** gives detailed advice on correct mixing.

6.2 Auxiliary products recommended

- **Grip coating G 4660**

The pre-treatment of the cleaned and degreased base on which a good adhesion is to be effected improves the adherence of addition cross-linking Wepesil silicone rubber casting compounds. We suggest using our grip coating **G 4660**, blue-transparent. A single application of the grip agent **G 4660** (brushing, spraying or dipping) results in a white, non-adhesive film after the drying phase; together with the casting compound, this film creates a highly adhesive connection during polymerisation.

- **Sealing mastic EH 13.271**

The solvent-free, self-adhesive, permelastatic, easily formed and temperature resistant sealing mastic **EH 13.271** is suitable for the sealing of casting moulds and cable outlets.

- **Cleaning agent R 13.780**

For the cleaning of work place and tools we recommend the cleaning agent **R 13.780**. Cleaning should be effected immediately after processing as cleaning becomes increasingly difficult the further the curing process progresses and is impossible after final curing.



Do not use cleaning agent as a thinner or for washing hands since solvents remove the natural grease from skin.

7. Drying/curing

Curing takes place at room temperature, but can be distinctly accelerated by the application of heat. The following information relates to a quantity of approx. 25 g and is made for reference:

	Room temperature (18-23 °C)	60 °C	80 °C	100 °C	125 °C	150 °C
Final hardness	24 h	2-3 h	45 min	30 min	15 min	< 10 min

The Wepesil casting resin **VT 3602 KK** can be cured when encapsulated and is thus protected against volatile contaminations from the oven that may have an inhibiting effect on the curing reaction (see also Item 7 "Processing.")

8. Standard packaging

Component A	Component B	Selling unit
4 cans of 1 kg	4 cans of 1 kg	8 kg
1 bucket of 20 kg	1 bucket of 20 kg	40 kg

Partial lots of the selling unit against surcharge.

9. Shelf life and storage conditions

Labels on containers show shelf life and storage conditions.



Shelf life: In sealed original containers at least 6 months



Storage conditions: +5 °C to +25 °C [+41 °F to +77 °F]



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For warehousing reasons, isolated cases may occur where the shelf life upon shipment is less than the shelf life indicated in this technical report. However, it is ensured that our products have **at least** two-thirds of their shelf life remaining when they leave our company

10. Disclaimer

All descriptions and images of our goods and products contained in our technical literature, catalogues, flyers, circular letters, advertisements, price lists, websites, data sheets and brochures, and in particular the information given in this literature are non-binding unless expressly stated otherwise in the Agreement. This shall also include the property rights of third parties if applicable.

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Any questions?

We would be pleased to offer you advice and assistance in solving your problems. Free samples and technical literature are available upon request

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