

Wepuran casting resin

VT 3405

Base: Polyurethane resin (PUR)

- **colourless, clear, highly transparent**
- good weather resistance and UV light stability
- for encapsulation of assemblies that need to be permanently visible
- highly elastic
- easily removed for repair purposes

Index: VT = casting compound, transparent

Contents

1. Application.....	2	6. Processing	4
2. Special notes.....	2	6.1 Mixing.....	4
3. Safety recommendations	2	6.2 Auxiliary products.....	4
4. Characteristics.....	2	7. Drying/Curing	5
5. Properties	3	8. Standard packaging	5
5.1 General properties	3	9. Shelf life and storage conditions	5
5.2 Physical and mechanical properties....	3		
5.3 Electrical properties.....	4		



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.

1. Application

The 2-pack Wepuran casting resin **VT 3405** electrically insulates, protects from corrosion caused by weather and moisture and from mechanical attack and is resistant to temperatures up to at least 90 °C [194 °F] (see also item 5.2 “Physical and mechanical properties”). It was developed for the electronics/electrical engineering industries where it is applied for sealing, embedding and casting electronic components and assemblies or electrical installations.

Given the high elasticity and the low volume shrinkage or shrinkage pressure respectively, the Wepuran casting resin **VT 3405** is particularly suited for high-grade, temperature or shock-sensitive electronic components (e.g. sensors, glass diodes, ferrite kernels), as only little heat is produced when they are cured and material tensions are minimised in case of thermal shocks due to their elasticity.

Owing to its good weather resistance and UV light stability the highly transparent Wepuran casting resin **VT 3405** is used in optoelectronics for applications which place a moderate demand on optical properties, e.g. to encapsulate assemblies that must remain permanently visible.

2. Special notes

The Wepuran casting resin **VT 3405** is distinguished by its high flexibility and elasticity along with low volume shrinkage, and is therefore suited for replacing the costly silicone-rubber casting compounds in many applications (e.g. sensor technology) whenever a high elasticity but no high temperature resistance is required.

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 DIN EN ISO 3219	Component A Component B Mixture	900 ± 100 mPas 400 ± 100 mPas 1,000 ± 200 mPas
Density at 20 °C DIN EN ISO 2811-1	Component A Component B Mixture	1.01 ± 0.05 g/cm ³ 1.08 ± 0.05 g/cm ³ 1.03 ± 0.05 g/cm ³
Pot life of mixture at 18–23 °C [64.4 - 73.4 °F] (initial temperature 20 °C; mixing quantity 500 g) Double viscosity 10times viscosity		approx. 20 min approx. 45 min

* measured with Haake RS 600, C 35/1°, D = 100 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 (Environmental Protection Agency) that aims for a reduction in the use of certain substances that are hazardous to the environment and health
- good flow characteristics; thus easy to process, even in case of component geometries that are difficult to access
- already cures at room temperature
- solvent-free, thus no risk of attacking solvent-sensitive plastics such as polystyrene or risk of solving lacquer wires, no odours due to solvents
- low volume shrinkage, thus low shrinkage pressure on components encapsulated
- high elasticity to reduce material tensions in case of thermal shocks
- can be used in a temperature range of -40 up to at least 90 °C [-49 to 194 °F] (see also item 6.2), a use down to -65 °C is 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.
- good resistance to water, moisture, alkaline solutions, acids and numerous chemicals
- excellent dielectric properties
- easily removed for repair purposes.

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 ± 5
Water absorption	DIN EN ISO 62 (30 min 100 °C, 15 min RT)	approx. 1.3 %
Glass transition temperature Tg	TMA (Thermo mechanical analysis)	-45 °C
Coefficient of thermal expansion CTE > Tg	TMA (Thermo mechanical analysis)	270 ppm/K
Thermal conductivity	DIN EN 821	0.23 W/mK
Thermal class	based on DIN IEC 60 085	Y = 90 °C
Temperature index (TI)*	based on DIN EN 60216 (IEC 60216), issue 2001 mass loss: 5 % 10 % 20 % 50 %	after 5,000 / 20,000 h 108 °C / 82 °C 120 °C / 95 °C 133 °C / 107 °C 150 °C / 124 °C

* Modified optical properties

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	15 kV/mm
Surface resistance	VDE 0303, part 30 DIN IEC 60093	2×10^{14} Ohm
Spezific volume resistivity	VDE 0303, part 30 DIN IEC 60093	2.2×10^{10} Ohm x cm
Comparative tracking index (CTI, Tracking resistance)	DIN EN 60112	CTI > 600*

6. Processing

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



Protect against humidity

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.

6.1 Mixing



Component A : Componente B = 3 : 1 (parts by weight)

6.2 Auxiliary products

- **Accelerator B 4400/ B 4402**

The accelerator reduces the curing time but also the processing time. Therefore, it should only be used in mixing and dispensing units. The accelerator is stirred into component A and the mixed with component B.

- **Sealing mastic EH 13.271**

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

- **Mould release agent EH 13.650**

Polyurethane resins show an excellent adhesion to nearly all substrates. To ensure easy, residue-free removal of the potting after curing, even from complicated moulds, the surfaces of the parts to be potted should be treated with the mould release agent **EH 13.650** prior to potting. **EH 13.650** is solvent-, silicone- and grease-free.

- **Adhesion promoters EH 13.950/EH 13.951**

Adhesion promoters to improve the adhesion of casting compounds and casting resins based on polyurethane or epoxy resin. **EH 13.950** is applied thinly to the parts that will come into contact with the casting compound. After the solvent has evaporated potting can be immediately effected. **EH 13.951** is mixed thoroughly with the casting compound prior to potting. Concentration: 1–3%.

- **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.

7. Drying/Curing

After approx. 24 hours at room temperature the casting resin is cured to such an extent that it is no longer liquid or sticky and the item can be processed. However, the final hardness is only attained after 14 days.

Curing can be accelerated considerably by applying heat. The following specifications for a quantity of 25 g serve as a guideline:

	Room temperature (18–23 °C) [64.4–73.4 °F]	80 °C [176 °F]
Tack-free	24 h	30 min
Final hardness	48 h	90 min

Curing at higher temperatures may lead to yellowing of the casting resin.

8. Standard packaging

Component A	Component B	Selling unit
4 buckets of 3 kg	4 tins of 1 kg	16 kg
1 hobcock of 15 kg	1 tin of 5 kg	20 kg

Partial lots of the selling unit are subject to a 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]



Protect against humidity



Protect against frost (component B)

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.

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.

The above information as well as advice given by our Application Technology Department whether in verbal or written form or during product evaluations is provided to the best of our knowledge, but must be regarded as non-binding recommendations, also with respect to possible third-party proprietary rights.

The products are exclusively intended for the applications indicated in the corresponding technical data sheets.

The advisory service does not exempt you from performing your own assessments, in particular of our material safety data sheets and technical information sheets, and of our products as regards their suitability for the applications intended. The application, use and processing of our products and of the products manufactured by you based on the advice given by our Application Technology Department are beyond our control and thus entirely your responsibility. The sale of our products is effected in accordance with our current terms of sale and delivery.

Lackwerke Peters GmbH & Co. KG
Hooghe Weg 13, 47906 Kempen, Germany

Internet: www.peters.de
E-Mail: peters@peters.de

Phone +49 2152 2009-0
Fax +49 2152 2009-70

peters

**Coating Innovations
for Electronics**