

Casting compounds of the series Wepox VU 4085

The casting compounds of the series Wepox **VU 4085** protect and insulate electronic components and assembled pcbs against extreme climatic influences, aggressive media and mechanical attack.

- Base: epoxy resin (ER)
- solids content $\geq 99.9\%$
- low heat generation while curing
- high mechanical strength
- excellent protection against impact, shock and vibration
- temperature range from -65 to at least +130 °C [-85 °F to at least 266 °F]
- excellent resistance against water, humidity and aggressive media
- outstanding adhesion
- good thermal conductivity
- **VU 4085/51 SB** corresponds to the best flame class V-0 acc. to UL 94

Characteristics

| | Colour/ appearance | Viscosity* at 20 °C DIN EN ISO 3219 Component A Hardener (Comp. B) Mixture | Density at 20 °C DIN EN ISO 2811-1 Component A Hardener (Comp. B) Mixture | Pot life of mixture at 18-23 °C (initial temp. 20 °C set-up quantity 500 g) tenfold viscosity |
|---------------|-------------------------------|---|---|--|
| VU 4045 NV | black | 1100 ± 150 mPas 7000 ± 1000 mPas 1800 ± 250 mPas | 1.87 ± 0.05 g/cm ³ 1.19 ± 0.05 g/cm ³ 1.66 ± 0.05 g/cm ³ | approx. 3,5 h temperature increase of approx. 9 °C |
| VU 4085 NV | brown | 1100 ± 150 mPas 5000 ± 500 mPas 1600 ± 250 mPas | 1.87 ± 0.05 g/cm ³ 1.19 ± 0.05 g/cm ³ 1.66 ± 0.05 g/cm ³ | approx. 3,5 h temperature increase of approx. 9 °C |
| VU 4085 HV | brown | 7000 ± 1000 mPas 5000 ± 500 mPas 6500 ± 1000 mPas | 1.92 ± 0.05 g/cm ³ 1.19 ± 0.05 g/cm ³ 1.77 ± 0.05 g/cm ³ | approx. 2,5 h temperature increase of approx. 12 °C |
| VU 4085/51 SB | brown | 3500 ± 500 mPas 5000 ± 500 mPas 3500 ± 500 mPas | 1.60 ± 0.05 g/cm ³ 1.19 ± 0.05 g/cm ³ 1.52 ± 0.05 g/cm ³ | approx. 3,5 h temperature increase of approx. 9 °C |

* measured with Haake RS 600, C 35/1°, D = 100 s⁻¹,
viscosity measuring unit supplied by Thermo Fisher Scientific, www.thermofisher.com

Indices: VU = casting compound, opaque, NV = low viscosity (good flowability), HV = high viscosity, /51 = mixing ratio 5:1, SB = hardly flammable

Physical and mechanical properties

These values are reached after 14 days' storage at room temperature (18-23 °C [64.4-73.4 °F])

| Property | Test method | VU 4045 NV VU 4085 NV | VU 4085 HV | VU 4085/51 SB |
|---|--|---------------------------------------|---------------------------------------|---------------------------------------|
| Shore-D-hardness | DIN 53 505 | 80-90 | | |
| | DIN ISO 7619-1 | 80-90 | | |
| Water absorption | DIN EN ISO 62 (24 h/23 °C [73.4 °F]) | ≈ 0.06 % | | |
| Glass transition temperature Tg | TMA | ≈ 55 °C [131 °F] | ≈ 70 °C [158 °F] | ≈ 50 °C [122 °F] |
| Coefficient of thermal expansion (CTE) | TMA | ≈ 55 ppm/°C < Tg ≈ 160 ppm/°C > Tg | ≈ 55 ppm/°C < Tg ≈ 150 ppm/°C > Tg | ≈ 40 ppm/°C < Tg ≈ 125 ppm/°C > Tg |
| Thermal shock* | based on IPC-TM-650, 2.6.7.1, -65 to + 125 °C [-85 to +266 °F] | passed | passed | passed |
| Thermal class* | based on DIN IEC 60 085 | B = 130 °C [266 °F] | | |
| Temperature index (TI)* based on DIN EN 60216 (IEC 60216) issue 2001 | mass loss after 5 000 h | | | |
| | 5 % | ≈ 135 °C [275 °F] | ≈ 145 °C [293 °F] | ≈ 140 °C [284 °F] |
| | 10 % | ≈ 150 °C [302 °F] | ≈ 155 °C [311 °F] | ≈ 150 °C [302 °F] |
| | 20 % | ≈ 165 °C [329 °F] | ≈ 165 °C [329 °F] | ≈ 160 °C [320 °F] |
| | 50 % | ≈ 180 °C [356 °F] | ≈ 180 °C [356 °F] | ≈ 170 °C [338 °F] |
| | mass loss after 20 000 h | | | |
| | 5 % | ≈ 110 °C [230 °F] | ≈ 125 °C [257 °F] | ≈ 125 °C [257 °F] |
| | 10 % | ≈ 120 °C [248 °F] | ≈ 135 °C [275 °F] | ≈ 135 °C [275 °F] |
| 20 % | ≈ 135 °C [275 °F] | ≈ 145 °C [293 °F] | ≈ 140 °C [284 °F] | |
| 50 % | ≈ 155 °C [311 °F] | ≈ 160 °C [320 °F] | ≈ 150 °C [302 °F] | |


* can be used in a temperature range of **-65 up to at least + 130 °C [-85 up to at least 266 °F]**. 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.

Electrical properties

These values 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 | ≥ 45 kV/mm |
| Surface resistance | VDE 0303, part 30 DIN IEC 60093 | ≥ 2,0 x 10 ¹⁴ Ohm |
| Specific volume resistivity | VDE 0303, part 30 DIN IEC 60093 | ≥ 1,0 x 10 ¹⁵ Ohm x cm |
| Comparative tracking index (CTI, tracking resistance) | DIN EN 60112 | CTI > 600 |

Processing

| | |
|---|--|
|  | Please read this technical report and the publications listed below carefully before using the product. These sheets are enclosed with the first shipment of product or sample. |
| MSDS | The corresponding material safety data sheet contains detailed information and characteristics on safety precautions, environmental protection, transport, storage, handling and waste disposal. |
| TI | Technical information TI 15/2 "Selection criteria and processing instructions for casting compounds" |
| TI | Technical information TI 15/3 "Protective measures when using chemicals including lacquers, casting compounds, thinners, cleaning agents" |
| TI | Technical information TI 15/10 "Processing of 2-pack systems" |

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 if necessary while observing suitable test conditions on processed products.

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

Safety instruction

→ When using chemicals, the common precautions should be carefully noted.

Mixing



Stir before use



Parts by weight
Component A : hardener (comp. B)

| | |
|---------------|-------|
| VU 4045 NV | |
| VU 4085 NV | 4 : 1 |
| VU 4085 HV | |
| VU 4085/51 SB | 5 : 1 |

CAUTION: The labels on our containers indicate both the volume [L] and weight [kg]. The mixing ratio applies to the weight.
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Auxiliary products recommended

- [ELPESPEC® sealing mastic EH 13.271](#)
solvent-free paste for sealing jobs in electronics and electrical engineering, self-adhesive and permelastc
- [ELPESPEC® adhesion promoters EH 13.950/EH 13.951](#)
for improving the adhesion; **EH 13.950** is applied thinly to the parts that will come into contact with the casting compound while **EH 13.951** is mixed thoroughly with the casting compound prior to potting

- [ELPESPEC® mould release agent EH 13.650](#)
solvent-, silicone- and grease-free, for pre-treating the surfaces of parts to be potted; after curing, the potting can be easily removed from the mould without residue
- [ELPESPEC® cleaning agent R 13.780](#)
for the cleaning of work place and tools; cleaning should be effected immediately after processing as cleaning becomes increasingly difficult the further the curing process progresses and is impossible after final curing

Drying/curing

The following specifications for a quantity of 25 g serve as a guideline:

| | Room temperature (18-23°C [64.4 to 73.4 °F]) | 80°C [176 °F] | 100 °C [212 °F] | 125°C [257 °F] |
|----------------|---|------------------|--------------------|-------------------|
| Tack-free | 24 h | 30 min | 15 min | 10 min |
| Final hardness | 14 days | 2.5 h | 60 min | 30 min |

Packaging

The packing units available are indicated in our offer which we will send you upon request.

Shelf life and storage conditions



Shelf life: In sealed original containers at least 9 months,
for **VU 4085/51 SB**: 12 months



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



Protect against humidity

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. Labels on containers show shelf life and storage conditions.

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.

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 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.

Any questions? We would be pleased to offer you advice and assistance in solving your problems. Samples and technical literature are available upon request.