

Casting compounds of the series Wepuran VU 4457

The casting compounds of the series **Wepuran VU 4457** protect and insulate electronic components and assembled pcbs against extreme climatic influences, aggressive media and mechanical attack.

- Base: Polyurethane resin (UR)
- Solids content > 98.8 %
- "allround" casting compounds for many different application fields
- low viscosity (good flowability)
- temperature range from -65 to at least +90 °C [-85 to 194 °F]
- good resistance to water, moisture, lyes, acids and numerous chemicals
- high mechanical strength
- good thermal conductivity
- good adhesion on almost all materials
- **VU 4457/61 SB** corresponds to the best flame class V-0 per UL 94

Characteristics

	Colour/ appear- ance	Viscosity* at 20 °C [68 °F] ISO 3219 Component A Hardener (Comp. B) Mixture	Density at 20 °C [68 °F] ISO 2811-1 Component A Hardener (Comp. B) Mixture	Pot life of mixture at 19-21 °C [66.2-69.8 °F] based on DIN EN 14022, approx 200 mL double/tenfold viscosity
VU 4447/31	black	1400 ± 200 mPas 130 ± 30 mPas 1100 ± 200 mPas	1.25 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.23 ± 0.05 g/cm ³	approx. 45 / 100 min
VU 4457/31	blue	1400 ± 200 mPas 130 ± 30 mPas 1100 ± 200 mPas	1.25 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.23 ± 0.05 g/cm ³	approx. 50 / 105 min
VU 4477/31	grey	1350 ± 200 mPas 130 ± 30 mPas 1050 ± 200 mPas	1.25 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.24 ± 0.05 g/cm ³	approx. 50 / 100 min
VU 4447/41	black	2700 ± 400 mPas 130 ± 30 mPas 1700 ± 400 mPas	1.46 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.42 ± 0.05 g/cm ³	approx. 45 / 100 min
VU 4457/41	blue	2700 ± 400 mPas 130 ± 30 mPas 1700 ± 400 mPas	1.46 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.42 ± 0.05 g/cm ³	approx. 50 / 100 min
VU 4447/51	black	3300 ± 500 mPas 130 ± 30 mPas 2000 ± 400 mPas	1.59 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.53 ± 0.05 g/cm ³	approx. 40 / 95 min
VU 4457/51	blue	2800 ± 400 mPas 130 ± 30 mPas 2000 ± 400 mPas	1.55 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.50 ± 0.05 g/cm ³	approx. 50 / 105 min
VU 4457/51 K	blue	2400 ± 400 mPas 130 ± 30 mPas not possible to measure	1.56 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.51 ± 0.05 g/cm ³	— / < 15 min
VU 4477/51	grey	3400 ± 400 mPas 130 ± 30 mPas 2000 ± 400 mPas	1.60 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.53 ± 0.05 g/cm ³	approx. 50 / 100 min
VU 4447/61	black	5200 ± 700 mPas 130 ± 30 mPas 2500 ± 600 mPas	1.69 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.62 ± 0.05 g/cm ³	approx. 55 / 120 min
VU 4457/61	blue	5200 ± 700 mPas 130 ± 30 mPas 2500 ± 600 mPas	1.70 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.62 ± 0.05 g/cm ³	approx. 45 / 100 min
VU 4457/61 SB	blue	3000 ± 400 mPas 130 ± 30 mPas 2100 ± 400 mPas	1.49 ± 0.05 g/cm ³ 1.21 ± 0.05 g/cm ³ 1.45 ± 0.05 g/cm ³	approx. 30 / 70 min

* 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, /31 = mixing ratio 3 : 1, K = catalysed, SB = hardly flammable

List of possible physical and mechanical properties

Lackwerke Peters largely verifies its own production range with regard to the products' physical and mechanical properties. Please note that the values may slightly vary depending on the adjustment. These properties are reached after 14 days storage at room temperature (18–23 °C [64.4–73.4 °F]).

Property	Test method	VU 4457/31	VU 4457/41	VU 4457/51	VU 4457/61	VU 4457/61 SB
Shore-D hardness	DIN ISO 7619-1 after 28 days	50-65	50-65	50-65	50-65	35-45
Water absorption	DIN EN ISO 62 (24 h/23 °C [73.4 °F])	≈ 0.25 %	≈ 0.20 %	≈ 0.18 %	≈ 0.18 %	≈ 0.19 %
Glass transition temperature Tg	TMA	≈ 20 °C [68 °F]				≈ -15 °C [5 °F]
Coefficient of thermal expansion CTE		≈ 80 ppm/°C < Tg ≈ 150 ppm/°C > Tg				≈ 65 ppm/°C < Tg ≈ 150 ppm/°C > Tg
Thermal shock*	acc. to IPC-TM-650, 2.6.7.1, -65 to +125 °C [-85 to 257 °F]	passed				
Thermal class	based on DIN IEC 60085	Y = 90 °C [194 °F]				
Temperature index (TI) based on DIN EN 60216 (IEC 60216), issue 2001	Mass loss after 5000 h:	5 % ≈ 120 °C [248 °F]	10 % ≈ 130 °C [266 °F]	20 % ≈ 140 °C [284 °F]	50 % ≈ 155 °C [311 °F]	≈ 110 °C [230 °F] ≈ 125 °C [257 °F] ≈ 145 °C [293 °F] ≈ 165 °C [329 °F]
	Mass loss after 20,000 h:	5 % ≈ 100 °C [212 °F]	10 % ≈ 110 °C [230 °F]	20 % ≈ 120 °C [248 °F]	50 % ≈ 135 °C [275 °F]	≈ 80 °C [176 °F] ≈ 95 °C [203 °F] ≈ 110 °C [230 °F] ≈ 130 °C [266 °F]

* can be used in a temperature range **from -65 up to at least +90 °C** [-85 up to at least 194 °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.

List of possible electrical properties

Lackwerke Peters largely verifies its own production range with regard to the products' electrical properties. Please note that the values may slightly vary depending on the adjustment. These properties are reached after 14 days storage at room temperature (18–23 °C [64.4–73.4 °F]).

Property	Test method	VU 4457/31	VU 4457/41	VU 4457/51	VU 4457/61	VU 4457/61 SB
Dielectric strength	VDE 0303, part 21 DIN EN 60243-1	≥ 34 kV/mm	≥ 28 kV/mm	≥ 28 kV/mm	≥ 27 kV/mm	≥ 28 kV/mm
Surface resistance	VDE 0303, part 30 DIN IEC 60093	≥ 2 x 10 ¹² Ohm				
Specific volume resistivity	VDE 0303, part 30 DIN IEC 60093	≥ 3 x 10 ¹⁴ Ohm x cm	≥ 2 x 10 ¹⁴ Ohm x cm	≥ 2 x 10 ¹⁴ Ohm x cm	≥ 1 x 10 ¹⁴ Ohm x cm	≥ 1 x 10 ¹² Ohm x cm
Tracking resistance	DIN EN 60112	CTI > 600*				
Permittivity ϵ_r	MIL-S-13949, 4.8.3.13 at 1MHz	≈ 4.16	≈ 4.61	≈ 4.96	≈ 5.50	≈ 5.53
Dielectric loss factor $\tan \delta$		≈ 0.03	≈ 0.03	≈ 0.03	≈ 0.03	≈ 0.03

* CTI = Comparative Tracking Index

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 recommendations

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

Mixing



Stir before use

CAUTION: The labels on our containers indicate both the volume [L] and weight [kg]. The mixing ratio applies to the weight.
Version 07/2021



Parts by weight
Component A : Hardener (Comp. B)

VU 4447/31 VU 4457/31 VU 4477/31	3 : 1
VU 4447/41 VU 4457/41	4 : 1
VU 4447/51 VU 4457/51 VU 4457/51 K VU 4477/51	5 : 1
VU 4447/61 VU 4457/61 VU 4457/61 SB	6 : 1

Auxiliary products recommended

- [ELPESPEC® sealing mastic EH 13.271](#)
solvent-free paste for sealing jobs in electronics and electrical engineering, self-adhesive and permelastatic
- [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® accelerator B 4400](#)
reduces the curing time and the processing time, thus to be applied preferably with mixing and dosing units; stirred into component A prior to processing the casting compound
- [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 [64.4–73.4 °F])	80°C [176 °F]	125°C [257 °F]
Tack-free	24 h	30 min	15 min
Cured	14 days	2.5 h	30 min

Even after application of temperature, the casting compounds of the series **Wepuran VU 4457** need up to 14 days, or 28 days respectively, of storage at room temperature in order to reach the final hardness (see Shore hardness, page 3).

Due to the catalyst formulated in the casting compound Wepuran **VU 4457/51 K**, this adjustment cures much faster. The curing time strongly depends on the amount of casting compound used. Large quantities generate more heat and therefore cure faster than small quantities.

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



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



Protect against humidity



Protect hardener (comp. B) from frost

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.

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