



TR TECHNICAL
REPORT

Wepox casting compound

VU 4085/51 SB

Base: epoxy resin (EP)

- best flame class according to UL 94 V-0
- very low heat generation while curing
- excellent mechanical strength
- high resistance to thermal ageing

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Index: **VU = casting compound, opaque**
51 = mixing ratio 5:1
SB = hardly flammable

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Please read this technical report, the material safety data sheet according to EEC 91/155 and the Technical Information T1 15/2 „Selection criteria and processing instructions for casting compounds/casting resins“ (see item 7) carefully before using the product.

1. General information

The Wepox casting compound **VU 4085/51 SB** is a brown, solvent-free 2-pack casting compound based on epoxy resin. It is a hardly flammable adjustment of the casting compounds of the series **VU 4085**. The casting compound **VU 4085/51 SB** meets the best flame class UL 94 V-0.

2. Application

The Wepox casting compound **VU 4085/51 SB** is particularly suited for the following applications

- **Electronics**
As non-transparent casting compound for electronic components, e. g. assembled printed circuit boards which are insensitive to the low shrinking pressure and slight heat generation during curing. The rigid casting compound has a high mechanical strength making damage to or a replacement of coated components practically impossible.
- **Electrical engineering industry**
As casting compound for all types of solenoids, for cavities and for spaces in bar windings; as cementing compound for the winding of coil shells in layers and as cementing compound for coil shells that are subjected to special conditions, for instance motors for chemical and metallurgical plants, mining operations, marine engines, railway motors, field coils, revolving field coils.
- **General electrical technology**
Sealing of casting moulds, joints, connecting wires and cables, as bolt locking compound in production and assembly and casting compound for transformers, ignition coils and cable connections.

3. Special notes

In comparison to other casting compounds based on epoxy resin the Wepox casting compound **VU 4085/51 SB** is distinguished by very low generation of heat while curing as well as by low volume shrinkage.

4. Safety recommendations

- Please read our material safety data sheet according to EWG 91/155 where you will find detailed specifications of safety precautions, environmental protection, waste disposal, storage, handling, exhaust air regulations as well as other characteristics.
- When using chemicals, the common precautions should be carefully noted.

5. Characteristics

Colour/appearance	brown	
Viscosity* at 20 °C EN ISO 3219/ISO 3219	Component A	4,000 ± 300 mPas
	Component B	5,800 ± 300 mPas
	mixture	4,500 ± 300 mPas
Density at 20°C DIN 53 217, part 2	Component A	1.60 ± 0.05 g/cm ³
	Component B	1.19 ± 0.05 g/cm ³
	mixture	1.52 ± 0.05 g/cm ³
Pot life of mixture (at 18 - 23 °C; set-up quantity 500 g)	approx. 2.5 – 3 h	

* measured with Haake RS 100, C 35/1°, D = 100 s⁻¹,
Viscosity measuring unit supplied by:
Haake Mess-Technik GmbH + Co
Dieselstraße 4, 76227 Karlsruhe, Germany
phone +49 7 21 40 94 – 0
fax +49 7 21 40 94 – 360

6. Properties

The Wepox casting compound **VU 4085/51 SB** is distinguished by the following properties:

6.1 General properties

- solvent-free,
- already cures at room temperature,
- very low heat generation and low volume shrinkage during curing,
- high mechanical strength and good resistance to numerous chemicals,
- excellent adhesion,
- high tracking resistance,
- excellent dielectric properties from -40 up to $+90$ °C,
- high resistance to thermal ageing,
- hardly flammable.

6.2 Physical and mechanical properties

Properties	Testing method	Result
Shore-D-hardness*	DIN 53 505	88 ± 5
Water absorption*	DIN 53 495, 24 h at 23°C	0.06 %
Insulation class	VDE 0530, part 1	B = 130 °C

* After 14 days storage at room temperature (18-23 °C)

6.3 Electrical properties

Properties	Testing method	Result
Dielectric strength*	VDE 0303, part 2	45 kV/mm
Specific volume resistivity*	VDE 0303, part 3	8.0×10^{14} Ohm x cm
Surface resistance*	VDE 0303, part 3	2.0×10^{14} Ohm
Tracking resistance*	IEC 112 in connection with VDE 0109, part 11	CTI > 600

* After 14 days storage at room temperature (18-23 °C)

7. Processing

→ Please read our **Technical Information TI 15/2 “Selection criteria and processing instructions for casting compounds/casting resins”** for more detailed information on processing. We would gladly send you this **TI 15/2** upon request. In our report manual, this Technical Information is filed under group 15.

7.1 Mixing

The components are mixed in the following ratio:

Component A : Component B = 5 : 1 (parts by weight).

The two components are already packed in the correct mixing ratio. The volume of the container of component A is sufficient to accommodate the total quantity of component B and to allow for perfect mixing.

→ Mix both components in the specified mixing ratio (see item 7.4 Manual Processing).

For stirring we recommend mechanical stirring equipment. For more detailed information on correct mixing please read our **Technical Information TI 15/10 "Processing of 2-pack systems"**. We would gladly send you this **TI 15/10** upon request. In our report manual, this Technical Information is filed under group 15.



ATTENTION:

In order to avoid penetration of moisture close opened containers carefully after use. Consume opened containers as soon as possible.

7.2 Adjustment of viscosity

The Wepox casting compound **VU 4085/51 SB** is processed in the condition supplied.



ATTENTION:

Do not add solvents or thinners to reduce the viscosity.

7.3 Auxiliary products

- **Sealing mastic EH 13.271**

For the sealing of casting moulds and for cable outlets, we recommend our sealing mastic **EH 13.271**, which is solvent-free, self-adhesive, permelastastic, easily deformable and highly temperature-resistant.

- **Mould release agent EH 13.650**

Epoxy resins adhere well to almost all substrates. In order to be able to remove the casting compound from the mould after curing, the surfaces of the components to be casted must be pretreated with the mould release agent **EH 13.650**. **EH 13.650** is solvent-, silicone- and grease-free.

- **Cleaning agent R 13.780**

For cleaning work place and tools, we recommend using our cleaning agent **R 13.780**. Cleaning should take place immediately after processing, as cleaning becomes increasingly difficult the further the curing process progresses.



ATTENTION:

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

Special technical reports for these products are available on request. In our report manual, these technical reports are filed under group 13.

7.4 Manual processing

- Choose compound quantity only as large as can be processed within pot life (approx. 2.5 to 3 h). Viscosity increases extremely in this time period so that after this time period casting compound can no longer be processed.
- While mixing ensure that no air is stirred in since air inclusions influence final properties of casting compound.
- Mix components A and B thoroughly.
- In order to remove possible air inclusions, evacuate casting compound, if possible, before or after potting.

7.5 Mechanical processing

When using mixing and dispensing equipment the pot life is irrelevant.

For volumetric mixing and dispensing equipment:

- Since the mixing ratio is indicated in parts by weight, the corresponding quantities to be dis-

pensed must be converted with the help of the specific gravities of component A and component B. Note that the values indicated in item 5 are valid for a temperature of 20 °C.

Reliable manufacturers of such equipment can be named upon request.

8. Drying/Curing

Curing time depends on the quantity of the casting compound applied per item. Smaller quantities require a longer period of time, larger quantities cure faster due to the higher heat generation.

Curing can be accelerated considerably by applying heat. However, when choosing the temperature, the heat-sensitivity of the item in question must be taken into account.

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

	Room Temperature (18 - 23°C)	80°C	125°C
Tack-free	24 h	20 min	10 min
Final hardness	14 days	2.5 h	30 min

9. Standard packaging

The Wepox casting compound **VU 4085/51 SB** is packed for delivery as follows:

Component A	Component B	Selling unit [kg]
4 buckets of 5 kg in one carton	4 tins of 1 kg in one carton	24
1 steel drum of 35 kg	1 bucket of 7 kg	42

Partial lots of the selling unit may be ordered, but will entail surcharges to cover repackaging costs.

10. Storage

In a cool, dry place, sealed original containers can be stored for at least 12 months.

In accordance with EN ISO 9001, labels on containers show expiry dates.



ATTENTION:

Moisture, temperatures in excess of +23 °C and repeated opening of containers reduce durability.

11. Further literature/ Technical publications

In addition to the recommendations given in this technical report, we can provide technical papers and information sheets written and compiled by members of our staff which give highly detailed information on the application and processing of our products:

Report 150: Protective lacquers and casting compounds as coating materials for electronic assemblies (application fields, application profile, processing)

Technical Information TI 15/2E: Selection criteria and processing advice for casting compounds/casting resins.

Technical Information TI 15/10E: Processing of 2-pack systems

A list of the technical publications available can be found in **TI 15/101 E** (technical papers) and **TI 15/100 E** (technical information sheets).

In our report manual all technical information sheets (TI's) are filed under group 15. Or visit our website at <http://www.peters.de>.

12. Further products for the production of pcbs

We offer a wide range of **etch resists (photoimageable, UV curing, conventional curing), plating resists, solder resists (photoimageable, UV curing, conventional curing) as well as peelable solder resists, marking inks (photoimageable, UV curing, conventional curing), carbon-conductive inks, via hole fillers (solely thermally curing), plugging pastes, heatsink pastes and further auxiliary products for screen printing (e. g. cleaning agents, thinners).**

Special technical reports on these products are available on request.

13. Further products for electronics/ electrical engineering industries

For the production and processing of assembled printed circuit boards and for electrical engineering we recommend the following products:

- **Conformal/permanent coatings**
Protective lacquers for assembled PCBs on the basis of polyurethane, polyacrylic and epoxy resins, water-thinnable and fluorescent adjustments available.
- **Casting compounds**
Cold and thermal curing casting compounds for potting assembled PCBs, print and mini transformers, transformers and solenoids on the basis of epoxy, polyurethane and silicone-rubber.
- **Casting resins**
For impregnating and insulating all kinds of coil shells, particularly for small anchors with a high number of revolutions.
- **Electro pastes**
Cementing compounds for coil shells and solenoids, also anchor and electro adhesives for the mechanical engineering industry.
- **Insulating varnishes**
In electro mechanical engineering for insulating impregnated coils and windings.
- **Impregnating varnishes**
Impregnating varnishes for all kinds of coil shells, particularly for transformer coils.
- **Adhesives and adhesive lacquers**
For numerous adhesion techniques in the electronics and electrical engineering industries.
- **Chip adhesives**
1-pack systems, thermal curing, for fixing SMD components before wave soldering.
- **Auxiliary products for electronics**
Chipping lacquers, sealing agents, mould-release agents, cleaning agents, etc.

Special technical reports on these products are available on request.

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.

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