



# TECHNICAL DATA SHEET

## VILEPOX® NP-11 and NP-11LV casting and laminating systems

### Application:

Production of glass- or carbonfiber reinforced laminates, castings of small electrical part and impregnation of coils.

They harden at elevated temperature. It gives the advantage of F-H class, wide range of application, very high Martens value and good wetting properties of glass or carbon fibers and fillers.

### Benefits:

- excellent thermal resistance and Martens heat distortion temperature
- excellent dielectric properties
- excellent mechanical properties
- very good chemical resistance
- excellent wetting of glass- or carbon-fibers at 40-60 °C
- solvent free system

### Specification of the components

#### Vilepox NP-11 and NP-11LV component „A”

**Characteristics:** Modified epoxy resin of medium viscosity

-Appearance:	lightly yellowish, transparent liquid
-Density, g/cm <sup>3</sup> (at 25 °C):	1,14-1,18
-Viscosity, mPas (at 25°C):	
NP-11	10 000 – 14 000
NP-11LV	5 000 – 7 500
-Flash point, °C:	>200
-Non-volatile content, % :	min. 99,6
-Epoxy equivalent weight, g/mol:	182-192

**Packaging:** ; In 220 kg drums or 20 kg cans. Other packaging is also available on request.

**Storage:** one year (in tightly sealed original drums/cans at 5-20°C )

**Flammability:** grade III.

#### Vilepox NP-11 and NP-11LV component „B”

**Characteristics:** modified compound of aromatic polyamins..

-Appearance:	brownish liquid
-Density at 25 °C, g/cm <sup>3</sup> :	1,00-1,04
-Viscosity, mPas (at 25°C)	160 - 240
-Non-volatile content, % :	min. 99,8
-Flash point, °C:	>130

**Packaging:** In 200 kg drums or 4,6 kg cans. Other packaging is also available on request.

**Storage:** one year ( in tightly sealed original drums/cans at 5-25°C ).

**Flammability:** grade III.



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## Specification of the mixture

### Mixing ratio:

VILEPOX NP-11 and NP-11LV component „A”	100,0 parts of mass (kg)
VILEPOX NP-11 and NP-11LV component „B”	24,0 parts of mass (kg)

### Properties of the mixture:

-Initial viscosity, mPas (at 25 °C) :	
NP-11 „A”+”B”	5800 – 7400
NP-11LV „A”+”B”	4000 - 5000
-Pot life, hour (at 25°C):	> 16
-Gel time, 100g, minutes (at 120°C):	54 –78
-Curing conditions:	2 hours at 120 °C + 4 hours at 160 °C *

### Properties of the hardened material:

-Bending strength, N/mm <sup>2</sup> :	min. 100
- Compression strength, N/mm <sup>2</sup> :	min. 120
-Tensile strength , N/mm <sup>2</sup> :	min. 80
-Martens value** NP-11 , °C:	min.170
-Martens value** NP-11LV , °C:	>150
-Dielectric strength at 25°C, kV/mm:	min. 12
-Water absorption, at 25°C, %:	max. 0,2
- Specific surface resistivity, Ohm:	min. 10 <sup>15</sup>
- Specific volume resistivity, Ohmxcmm:	min. 10 <sup>14</sup>
-Dielectric strength, at 25°C , kV/mm:	min.12

\* The above-specified curing times are calculated from the moment, when the total volume of impregnated element reaches the curing temperature. Thus the actually needed curing time elongates by the time needed for warming up the pieces. The curing time should be determined individually for each impregnated element, depending on its size, shape, specific weight and dryer type.

The curing time and temperature may be different, then the technical properties may be also vary accordingly. However curing temperature always should be above 100 °C.

\*\*Martens value slightly depends on the baking temperature, thus higher baking temperature causes a few degrees higher Martens-value as well.

## Labour safety information

**During work:** Closed working-clothes, safety-goggles and gloves have to be worn.

**Skin protection:** A skin-protective cream has to be applied on hands before starting work.

**Removing the material from the skin:** The material has to be absorbed with a dry clothe or paper and the skin has to be washed with soapy warm water and dried, then a protective cream should be applied.

**Ventilation:** The working place has to be ventilated 3-5 times an hour. Workers should avoid breathing in the vapours.

**First-aid:** In case the material gets to the eyes, they should be rinsed thoroughly with water for 15 minutes and the injured person should see a doctor as soon as possible. From skin the material should be removed as above. Contaminated clothes should be taken off immediately.

In case somebody feels unwell after breathing in vapours he has to be taken on open air and see a doctor as soon as possible.

For detailed safety and environmental information see the „Safety data sheets” of the products.



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## Information on application

- Temperature of the components should stay between 15-25 °C during mixing.
- Recommended mixing ratio must be kept.
- Components have to be mixed thoroughly to get absolute homogeneity. The mixture can only be used within the potlife.
- In case of production of glass- or carbonfiber reinforced composites the best results can be obtained at elevated temperature, e.g. at 40-60 °C. It provides low viscosity necessary for perfect wetting.
- The composite must be baked after impregnation. The suggested curing cycle: 2 hours at 120 °C + 4 hours at 160 °C.
- Heat distortion temperature of the resin is appr. 170 °C, while with glassfiber it is 10-30 °C higher. The higher the glassfiber content the higher the heat distortion temperature.
- In case of production of castings, the parts should be prepared in an amount, that can be casted within the potlife.
- For cleaning the tools and brushes Vilepox H-1 should be used.

The information contained in this data sheet has been collected on the basis of our best engineering knowledge, however, it is not intended to provide any legal commitment.

Januar 2010.

Vilepox NP-11 and NP-11LV ENG 1.



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