

Description

The lamination systems without filling mediums, intended to be used for laminating of materials from glass, carbon, or Kevlar fibres. Letoxit PR 227 resin is produced on the basis of modified epoxy resin of Bisphenol A type. The modifying agent decreases viscosity and prevent from resin crystalization by storing at lower temperature up to +5°C.

The resin is considered to be physiologically well compatible. Due to the resin's low viscosity and thereby also lower interfacial tension it shows good wetting ability of lamination textiles and materials when combined in mixture with the Letoxit EM 305, EM 306, EM 307 hardening agents.

Application

Lamination compounds are intended to be used for production of components stressed in extreme conditions, e.g. aircraft and sail plane components, components for construction of models, construction of sporting boats, transport vehicle bodies, forms etc. Lamination compounds are suitable for all types of manufacturing, such as manual laminating, winding as well as when using pressure or vacuum.

The optimum processing temperature of mixture lies in temperature range between 20 – 25°C. A higher processing temperature is also possible, but it shortens the pot-life of the compounds. It is possible to say that you get twice lower pot-life when increasing temperature by 10°C approximately.

The mixture ratio must be followed as precisely as possible. Higher or lower dosage of the hardener does not result in acceleration or deceleration of the reaction, but leads to imperfect hardening and thereby also deterioration of mechanical properties. The immixture must be carried out properly. Mix it so long until the compound has no uniform transparent color and until there are no unstirred hardener „clouds“. Pay special attention to walls and bottom of the vessel. Do not mix big amounts of components. Significant heat amount is produced by exothermal curing reaction. This can cause mixture overheating (more than 200°C), eventually even burning and therefore destroying of the mixture. In case of combining this mixture with polyester gelcoats, adhesion and compatibility tests are recommended to be performed in advance.

In the appropriate combination could lead to gelcoat peeling, bubbles or cracks creation.

Resin specification

	Norm	Resin Letoxit® PR 227
Density at 25°C (g/cm³)	PN-5M-11	1,16 ± 0,01
Viscosity at 25°C (mPa.s)	PN-5M-01	300-700
Epoxy equivalent	PN-5M-20	0,59
Colour/Gardner	DIN ISO 4630	max. 6

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Letoxit® PR 227
Letoxit® EM 305, 306, 307

Hardeners specification

	Norm	Hardener Letoxit® EM 305	Hardener Letoxit® EM 306	Hardener Letoxit® EM 307
Density at 25°C (g/cm ³)	PN-5M-11	0,94-0,97	0,94-0,97	0,94-0,97
Viscosity at 25°C (mPa.s)	PN-5M-01	80-140	80-140	80-140
Hydrogen equivalent	-	64	64	64
Amine value (mg KOH/g)	PN-5M-06	450-550	450-550	450-550
Colour	-	transparent blue	transparent blue	transparent blue

Processing details

	Letoxit® PR 220 + Letoxit® EM 305, 306, or 307
Processing temperature	18 – 30 °C
Viscosity of mixture at 25°C	200-500
Storage at 15 – 25 °C	minimally 6 months in their carefully sealed original containers
Curing	24 hours at temperature 20-25 °C
Post curing	15 hours at 50-60°C

Mixture ratio, pot-life

	Resin Letoxit® PR 220 : hardener Letoxit® EM 305, 306, 307		
Parts by weight	100 : 38 ± 1		
Parts by volume	100 : 46 ± 1		
Pot-life for 200 g mixture at 25°C	EM 305 50-60 min.	EM 306 70-90 min.	EM 307 100-120 min.

Curing

Glass transition temperature (T_g)

Curing at 20°C after with postcuring:

Poscuring	Norm	Letoxit® PR 227 Letoxit® EM 306
10h 40°C	PN-5M-03	58°C

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Letoxit® PR 227
Letoxit® EM 305, 306, 307

10h 50°C		64°C
10h 60°C		68°C
10h 70°C		73°C
10h 80°C		73°C

Mechanical properties of unreinforced resin

Curing: 24 h 20-25°C + 15 h 50-55°C	Norm	Resin Letoxit PR 220 + hardener Letoxit EM 305, EM 306, EM 307
Density at 25 °C (g/cm³)	PN-5M-11	1,14
Flexural strength (MPa)	CSN EN ISO 178	120-126
Modulus of elasticity (GPa)	CSN EN ISO 178	2,9-3,1
Compressive strength (MPa)	ČSN EN ISO 572	65-70

Mechanical properties of reinforced resin

Example: GRC – with glass fibers toughened composite: 12 coatings of fabric Vertex 355 g/cm³, total thickness 3 mm

Curing: 24 h 20-25°C + 15 h 50-55°C	Norm	Resin Letoxit PR 220 + hardener Letoxit EM 305, EM 306, EM 307
Flexural strength (MPa)	ČSN EN ISO 178	458-482
Modulus of elasticity (GPa)	ČSN EN ISO 178	19-20
Tensile strength (MPa))	DIN 53 455	440-480

Packing

Resins and hardeners as well are supplied in PE containers in volume 5, 10 or 20 kg and also in 200 kg drums.



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