



APPLICATION METHOD

Laminating resin Letoxit® PR 227 Hardener Letoxit® EM 315, EM 316, EM 317

Description

The lamination compound without filling mediums, intended to be used for laminating of materials from glass, carbon or Kevlar fibres. The Letoxit PR 227 resin is produced on the basis of modified epoxy resin of bisphenol A type. The modification ingredient reduces viscosity and prevents the crystallization of the resin during its storing at low temperatures 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 power of lamination textiles and materials when combined in mixture with the Letoxit EM 315, EM 316, EM 317 hardening agent.

Application

The lamination compound is intended to be used for production of components stressed in extreme conditions, e.g. aircraft and sailplane components, components for construction of models, construction of sporting boats, transport vehicle bodies, wind power plant blades, forms etc. The lamination compound is suitable for all types of manufacturing, such as manual laminating, winding as well as when using pressure or vacuum.

The optimum temperature for processing of the mixed compound lies in the temperature range of 20 – 25 °C. A higher processing temperature is also possible, but it shortens the pot life of the compound. It can be said that an increase by 10°C shortens the pot life approximately to one half. 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 colour and until there are no unstirred hardener "clouds". Pay special attention to walls and bottom of the vessel. Do not mix large quantities. The exothermic hardening reaction generates large volume of heat, which could lead to an overheating of the compound

over 200°C, eventually to “burning” and thus its deterioration. In case you wish to combine the lamination compound with polyester gel coats, we recommend carrying out the adhesion and compatibility test in advance. An unsuitable combination could result in flaking of the gel coat, creation of bubbles or cracks.

Specification

	Standard	Resin Letoxit® PR 227	Hardener Letoxit® EM 315, EM 316, EM 317
Density at 25°C (g/cm ³)	PN-5M-11	1,16 ±0,01	0,94-097
Viscosity at 25°C (mPa.s)	PN-5M-01	300-700	80 – 140
Epoxy equivalent	PN-5M-20	0,59	-
Hydrogen equivalent		-	64
Amine value (mgKOH/g)	PN-5M-06	-	450-550
Colour /Gardner	DIN ISO 4630	max.6	Transparent colourless

Processing

	resin Letoxit® PR 227	hardener Letoxit® EM 315, EM 316, EM 317
Temperature processing	18 – 30 °C	
Viscosity of mixture	200-500 mPa.s by 25°C	
Storage at 15 – 25 °C	minimally 6 moons in original closed container	
Curing	24 hour at temperature 20-25 °C	
Post curing	15 hour at 50-60 °C	

Blending rate, lifetime mixture – pot-life

	resin Letoxit® PR 227 : hardener Letoxit®		
	EM 315	EM 316	EM 317
Mass ratio	100 : 38 ± 1		
Volume ratio	100 : 46 ± 1		
Lifetime for 200 g mixture at 25°C	50-60 min.	70-90 min.	100-120 min.

Mechanical data of unreinforced resin

Hardening: 24 h at 20-25 °C + 15 h at 50-55 °C	Standard	resin Letoxit® PR 227 hardener Letoxit® EM 315, EM 316, EM 317
Density at 25 °C (g/cm³)	PN-5M-11	1,14
Flexural strength (MPa)	ČSN EN ISO 178	120-126
Modulus of elasticity (GPa)	ČSN EN ISO 178	2,9-3,1
Tensile strength (MPa)	DIN 53 455	65-70

Glass transition temperature (T_g)

Curing at 20°C for time 24 hour with post curing:

Post curing	Standard	10 h 40°C	10 h 50°C	10 h 60°C	10 h 70°C	10 h 80°C
PR 227 EM 315	PN-5M-03	58°C	64°C	68°C	73°C	73°C

Mechanical data of reinforced resin

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

Hardening: 24 h at 20-25 °C + 15 h at 50-55 °C	Standard	resin Letoxit® PR 227 hardener Letoxit® EM 315
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

Resin and hardener comes in PE-can of 5, 10 and 20kg and in 200 kg tin barrel.