



## Technical data

### Epoxy resin L 20

Laminating resin for aircraft construction

#### Description

- Low viscosity, free of solvents and fillers
- Approved for the construction of gliders and powered aircraft
- Highest static and dynamic strength



#### Application

Applications include the fields of satellite design, aerospace, automobile manufacture and shipbuilding, and the extremely exacting field of high-performance sports equipment as well as model construction. One particular field is the production of gliders.

#### Processing

The resin is suitable for all processing methods, e.g. hand lay-up operations, winding, and press moulding (also in vacuum). Metal, wood, plastics, ceramics, etc., can be joined with high-strength bonds without the application of contact pressure. Curing takes place virtually free of shrinkage.

Single components: 500 g - 200 kg order no. 112 11X-X, sets of two components: (look at hardeners)

#### Hardeners

The resin systems L 20 / EPH 161 and L 20 / EPH 573 delivered by R&G have been approved by the federal aviation authority LBA.

Härter EPH 573	Härter EPH 161
<p><b>Low-viscosity, cold-curing</b>, exhibits very good wetting properties with respect to glass, aramid, and carbon fibres as well as a superior adhesion to fibres.</p> <p><b>Curing temperatures starting from 18 °C</b></p>	<p>For <b>heat resistant components</b> up to 120 °C and groutings to approx. 10 mm thickness in one workstep.</p> <p>Cold curing, annealing is necessary for the application in aircraft construction.</p> <p><b>Curing temperatures starting from 18 °C</b></p>

Edition 06/2010, subject to change

All information, recommendations, and advice on the part of R&G Faserverbundwerkstoffe GmbH are published to the best of our knowledge and belief. They are noncommittal and contain neither explicit nor tacit assurance or warranty of particular properties. The values specified for properties are typical figures. Recommendations or advice serve to describe our products and possible applications in a general or exemplary, but not specifically individual manner. In the course of the constant technical advancement and improvement of our products there may be changes to the characteristic values, copy, and diagrams; no specific reference is made to any such change. Owing to our products' wide and highly diverse range of potential applications far beyond any of our attempts to analyse, the customer alone is responsible for examining our products' suitability for the respective processes and purposes and their respective processibility. All and any protective rights and the applicable laws, terms, and conditions must be observed by the buyer or user of our products at their own responsibility. Publication is not a licence and does not intend the violation of any patents.





Epoxy resin L 20	Unit	Value
Delivered state	-	liquid
Colour	-	yellowish
Density	g/cm <sup>3</sup> /20 °C	1,15
Viscosity	mPa*s/25 °C	900
Epoxy value	100/equivalent	0,56
Epoxy equivalent	g/equivalent	179
Chlorine content hydrolysable	ppm	< 0,3
Vapour pressure	mbar/ 25 °C	< 10 <sup>4</sup>
Flash point (DIN 51584)	°C	>120
Storage (sealed, at 15 °C)	months	12

## Hardener EPH 573

### Description

- Hardener for epoxy resin L 20
- Approved for the construction of gliders and powered aircraft
- Processing time 15 minutes

### Application

#### Low-viscosity, cold-curing.

EPH 573 exhibits very good wetting properties with respect to glass, aramid, and carbon fibres as well as a superior adhesion to fibres.

Repairs and smaller components in **aircraft** and **model construction**.



Single components: 920 g - 23 kg order no. 112 120-X, set of to components: 615 g package order no. 112 100-1, 1,23 kg package order no. 112 100-2

All information, recommendations, and advice on the part of R&G Faserverbundwerkstoffe GmbH are published to the best of our knowledge and belief. They are noncommittal and contain neither explicit nor tacit assurance or warranty of particular properties. The values specified for properties are typical figures. Recommendations or advice serve to describe our products and possible applications in a general or exemplary, but not specifically individual manner. In the course of the constant technical advancement and improvement of our products there may be changes to the characteristic values, copy, and diagrams; no specific reference is made to any such change. Owing to our products' wide and highly diverse range of potential applications far beyond any of our attempts to analyse, the customer alone is responsible for examining our products' suitability for the respective processes and purposes and their respective processibility. All and any protective rights and the applicable laws, terms, and conditions must be observed by the buyer or user of our products at their own responsibility. Publication is not a licence and does not intend the violation of any patents.



## Hardener EPH 161

### Description

- Hardener for epoxy resin L 20
- Approved for the construction of gliders and powered aircraft
- Processing time 90 minutes

### Application

The combination of L 20 and hardener EPH 161 yields a low-viscosity laminating resin that exhibits superior impregnating and wetting properties with respect to glass, aramid, and carbon fibres.



Before they can obtain the specified mechanical properties, the **laminates must be annealed for about fifteen hours at 60 °C after their initial cold-curing period.**

Single components: 1 kg - 10 kg order no. 112 125-X, sets of to components: 625 g package order no. 112 104-1, 1,25 kg package order no 112 104-2

General specifications of hardeners for epoxy resin L 20	Unit	Hardener EPH 573	Hardener EPH 161
Processing time for 100 g mixture	minutes /20 °C	15	90
Mixing ratio on 100 parts by weight of epoxy resin L 20	weight (g)	23	25
Density	g/cm <sup>3</sup> /20 °C	1,07	1,0
Storage (sealed, at 15 °C)	months	12	12

Specifications of unreinforced, cured resin L 20 (curing 6 days at RT)	Unit	Hardener EPH 573	Hardener EPH 161
Flexural strength	MPa	140	130
Compressive strength	MPa	125	125
Impact strength	kJ/m <sup>2</sup>	40	40
Flexural modulus	MPa	3500	3600



**Supplementary specifications on L 20 + hardener EPH 161**

Epoxy resin L20 + EPH 161, unreinforced	Unit	Value
Density	g/m <sup>3</sup>	1,158
Tensile strength	MPa	70,2
Elongation at break	%	9,5
Tensile modulus	MPa	3400
Shear modulus at 54 °C	MPa	1019
Bend fatigue strength	load cycles	1.500.000

Specifications of reinforced, cured resin L 20 (GRP)	Unit	Hardener EPH 573	Hardener EPH 161
Flexural strength	MPa	400	488
Tensile strength	MPa	340	-
Compressive strength	MPa	305	360
Impact strength	kJ/m <sup>2</sup>	225	205
Flexural modulus	MPa	25000	23500
Interlaminar shear strength at RT	MPa	38	36

The values were obtained on 4 mm panels (16-ply Interglas 91745/style 181, 286 g/m<sup>2</sup>, atlas weave). Curing 7 days at room temperature. \* Curing 24 hours at RT + 15 hr at 60 °C.

Specifications of reinforced, cured resin L 20 (CRP)	Unit	Hardener EPH 573	Hardener EPH 161
Flexural strength	MPa	520	730
Compressive strength	MPa	395	444
Flexural modulus	MPa	41000	46000
Interlaminar shear strength at RT	MPa	45	54

The values were obtained on test specimens of 8-ply carbon fabric, 200 g/cm<sup>2</sup>. \* Curing 24 hr at RT + 15 hr at 60 °C.

All information, recommendations, and advice on the part of R&G Faserverbundwerkstoffe GmbH are published to the best of our knowledge and belief. They are noncommittal and contain neither explicit nor tacit assurance or warranty of particular properties. The values specified for properties are typical figures. Recommendations or advice serve to describe our products and possible applications in a general or exemplary, but not specifically individual manner. In the course of the constant technical advancement and improvement of our products there may be changes to the characteristic values, copy, and diagrams; no specific reference is made to any such change. Owing to our products' wide and highly diverse range of potential applications far beyond any of our attempts to analyse, the customer alone is responsible for examining our products' suitability for the respective processes and purposes and their respective processibility. All and any protective rights and the applicable laws, terms, and conditions must be observed by the buyer or user of our products at their own responsibility. Publication is not a licence and does not intend the violation of any patents.

Edition 06/2010, subject to change

