

ALBIPOX® F 080 and F 081

ALBIPOX® F 080 and F 081 are high performance elastomer modified epoxy resins specially designed for composites with superior mechanical properties.

By the modification with SiO₂ nanoparticles and elastomer components a three phase system is formed in the cured resin. Embedded in the continuous resin matrix are elastic domains (µm size) and hard domains (nm size), thus superior performance can be achieved.

A cured resin compared with a similar unmodified resin exhibits various improved properties:

- Improved toughness (fracture energy, fracture toughness, impact resistance)
- Significant higher energy absorption at sudden mechanical impact
- Superior mechanical properties at low temperatures
- Improved adhesion to fabrics (glass, aramide or carbon fibres)
- No reduced thermodimensional stability

Using ALBIPOX® F 080 or F 081 toughened epoxy resin systems with excellent price/performance ratio can be formulated.

ALBIPOX® F 080 and F 081 are silicone-free, solvent-free and do not contain softeners. They are of medium viscosity, enabling their use in formulations for injection methods (e. g. RIM, RTM).

The products can be used as delivered; depending on the respective application they can be blended with up to 50 % standard epoxy resins. They are suitable for the combination with all epoxy resins, no restrictions or incompatibilities exist.

All conventional epoxy hardeners can be used.

Fields of Application

ALBIPOX® F 080 and F 081 are used whenever a drastic improvement in toughness over the whole temperature range is required but a high viscosity is not acceptable.

These products are especially suitable for composites made by using injection methods.

Application Recommendations

50 – 100 % of the epoxy resin used in the formulation to be improved is replaced by ALBIPOX® F 080 or F 081. The amount of hardener is reduced corresponding to the new epoxy equivalent weight of the resin blend. For some non stoichiometric hardeners like dicyandiamide a change of the hardener amount is unnecessary. Fillers and other ingredients of the formulation are used as usual.

If the product viscosity is too high for the formulating procedure, we recommend to preheat the product to 60 – 80 °C.

Technical data ALBIPOX® F 080 and F 081 (no specification)

Property	Unit	Typical Values F 080	Typical Values F 081
Appearance		Yellowish, viscous resin	Yellowish, viscous resin
Base resin		DGEBA/F	DGEBA/F
Density @ 20 °C	[kg/m ³]	1 149	1 161
Viscosity @ 25 °C	[mPas]	70 000	35 000
Epoxy equivalent weight		330	260
Shelf life	[months]	6*	6*
Packaging		180 kg steel drum, 25 kg can	180 kg steel drum, 25 kg can

*if stored in the original unopened container

Bulk resin data

Cured with stoichiometric amount of ALBIDUR® HE 600 (accelerated methyl hexahydrophthalic acid anhydride) for 1 hour at 90 °C and 2 hours at 160 °C.

	Control	ALBIPOX® F 080	ALBIPOX® F 081	ALBIPOX® F 081 : DGEBA 1 : 1 blend
Impact resistance (kJ/m ²)	57.8	176.2	170.2	140.2
Tensile strength (MPa)	75.5	55.1	65.0	75.7
Tensile modulus (GPa)	2.55	2.17	2.28	2.57
Elongation (%)	3.88	4.77	5.55	4.26
Flexural strength (MPa)	137.1	93.2	109.4	125.7
Flexural modulus (GPa)	3.01	2.29	2.68	3.0
Tg (°C)	137	116	117	129

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