

Epoxy resin Masterepoxy

Masterepoxy Hardener

Description

Masterepoxy system consists of one epoxy resin and one amine hardener. Especially designed for the vacuum assisted resin infusion molding, hand lamination, RTM processes. Masterepoxy system is designed for the manufacture of structural composites for the wind energy industry featuring high static and dynamic load ability with glass, Carbon and aramid fiber reinforcements. Due to the special curing properties this system is especially suitable for the production of large composite parts. This system features the latest "latent catalyst" technology.

Masterepoxy resin is a modified epoxy resin based on Bisphenol

A. It is solvent free and unfilled that contains a biobased carbon content of 35 %.

Masterepoxy hardener has a short pot life with moderate exothermal reaction. This system is suitable for infusion technologies including Carbon fibers and "one shot" production of thick composite parts

Typical properties of system components

Property	Test Method	Masterepoxy resin	Masterepoxy hardener
Viscosity @ 25 °C [mPas]	ISO 3219	680	8
Density @ 25 °C [g/cm ³]	ISO 1183-1	1.15 ± 0.05	0.94 ± 0.05
EEW [g/eq.]	DIN 16945	170 ± 10	—
Amine number [mgKOH/g]	DIN 16945	—	520 ± 25
Refractive Index @ 20 °C	DIN 51423-2	1.548	1.464
Shelf life [month]	Internal	24	24

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Mixing and Handling

Accurate proportioning and thorough mixing are essential to achieve full performance properties. Manually mix the resin and hardener components together for approximately 2 minutes while making sure to scrape the sides, bottom, and corners of the mixing container.

When automated meter mixing equipment is used, it should be tested for accuracy on a regular basis.

Resin and hardener are hygroscopic and any absorbed moisture will substantially shorten the pot life of the system. This can be minimized by keeping containers of amine hardeners and the mixed system covered while transferring and dispensing and infusing. For large applications, it is a good practice to mix and use several small batches rather than one large batch.

The epoxy resin and amine hardeners used in this system will readily react with each other at ambient temperatures. This reaction is exothermic and, depending on the mass, can result in a significant temperature rise or fire. The utmost care must be taken to avoid inadvertent mixing of the system components.

Mixing ratios

	Masterepoxy resin	Master epoxy hardener
Parts by weight	100	27 ± 1
Parts by volume	100	33 ± 1

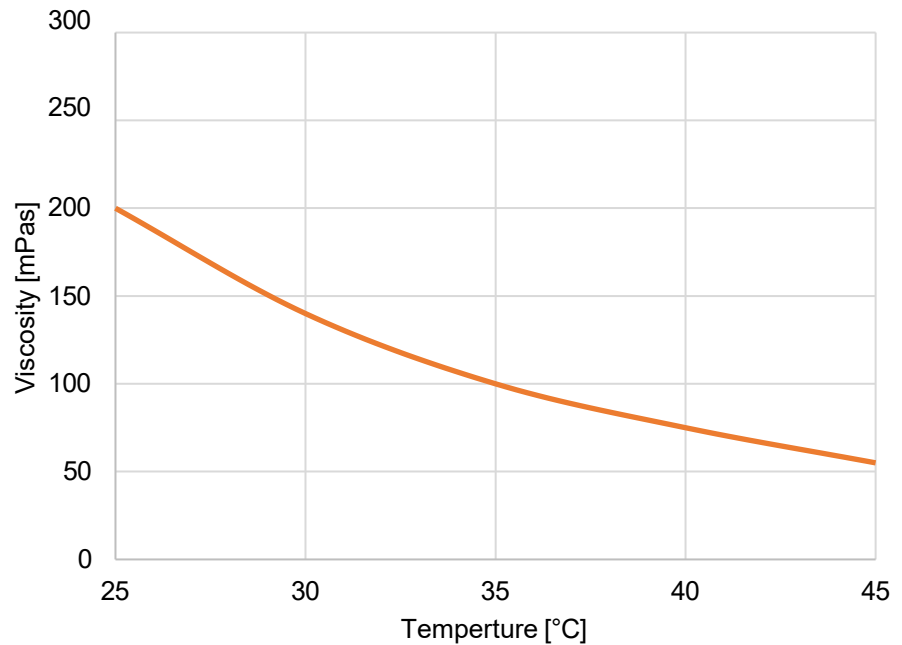
Recommendations

Curing and postcuring at temperatures > 65 °C is necessary to yield fully cured components.

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Viscosity of mixed system at different temperatures



Viscosity of mixed system

		Master epoxy resin with
Property	Test method	Master epoxy hardener
Viscosity of mixture @ 25 °C [mPas]	DIN 51423-2	~ 200

Viscosity increase

Time to reach a viscosity of 1000 mPas

		Master epoxy resin with
Property		Master epoxy hardener
Viscosity increase @ 30 °C		~ 215 min
Viscosity increase @ 40 °C		~ 140 min
Viscosity increase @ 50 °C		~ 90 min

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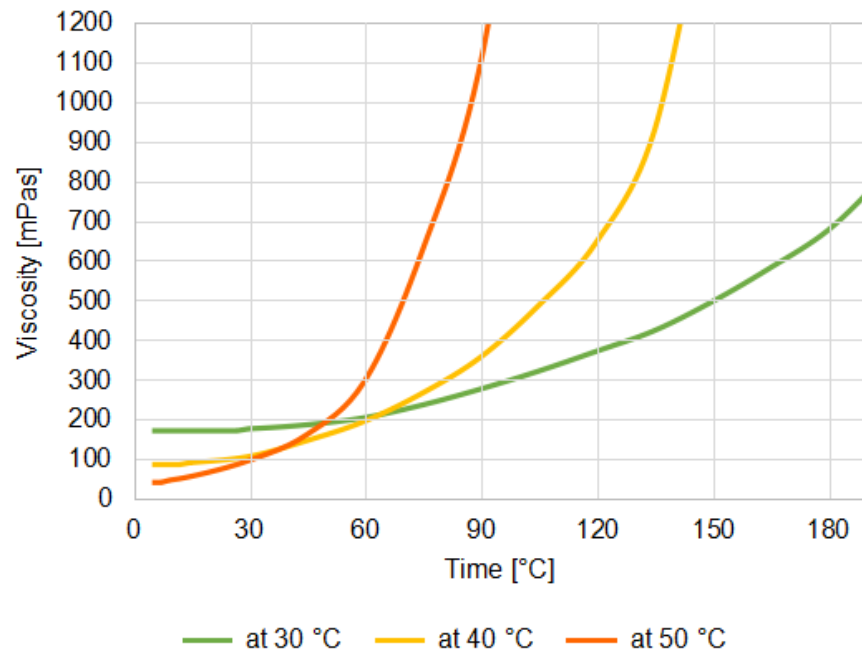
Application and Curing conditions

The recommended processing temperatures are approx. 25 – 40 °C. For the infusion process a vacuum of 10 mbar or even lower can be used.

The curing time, temperature and heating ramp rate is dependent on the thickness of the part, and must be verified before production. Curing at elevated temperatures (> 50 °C) is necessary to yield fully cured components

**Master epoxy
resin + hardener**

**Viscosity increase
at different
temperatures**

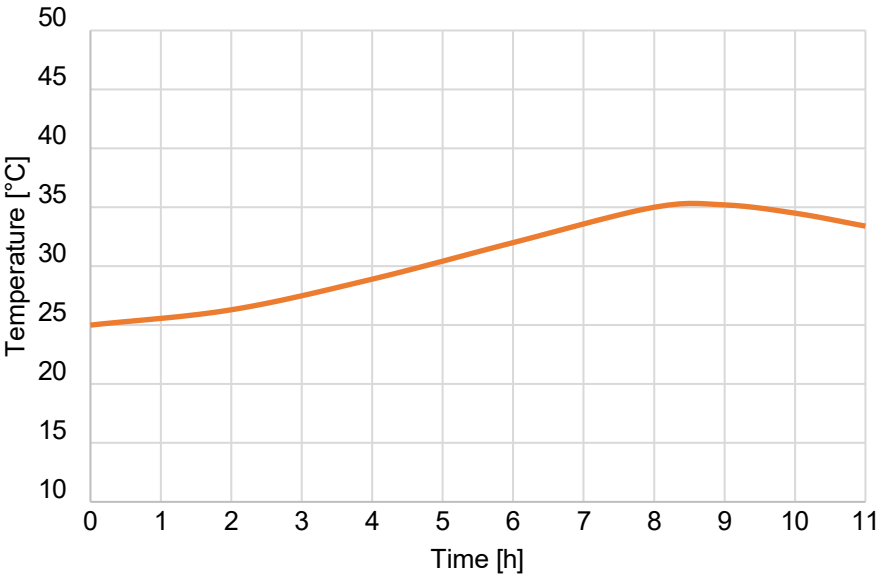


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Exothermic profile

Batch 100 g at 25 °C



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Mechanical data of unreinforced neat resin

Property	Test Method	Unit	Hardener
Tensile strength	ISO 527	MPa	73
Elongation at tensile strength	ISO 527	%	4.3
Elongation at break	ISO 527	%	5.13
Tensile-modulus	ISO 527	MPa	3030
Flexural strength	ISO 178	MPa	118
Elongation at flexural strength	ISO 178	%	5.9
Flexural modulus	ISO 1183-1	MPa	3200
HDT	ISO 75 (A)	°C	73
Curing: 8 h at 70 °C			

Storage and Shelf Life

Master epoxy resin systems

Master epoxy resins and hardeners are supplied in 1kg, 5kg, 20kg and 200kg drums with removable head and in special containers. The products should be stored in originally sealed containers at temperatures between 10 °C and 30 °C and protected from moisture.

Storage at lower temperatures could lead to crystallization of resin products visible as a clouding or solidification of the content of the container. Before processing, the crystallization must be removed by warming up. Slow warming up to approx. 60 °C and stirring or shaking will clarify the content of the container without any loss of quality. Before warming up, open containers slightly to permit equalization of pressure.

Caution during warm-up! Do not warm up over an open flame! Use only completely transparent products.

If the recommended storage conditions are observed the products will have a minimum shelf life of 24 months.