

EPIKOTE™ Resin MGS LR285
EPIKURE™ Curing Agent MGS LH285 – 287

CHARACTERISTICS

Approval	German Federal Aviation Authority
Application	Production of gliders, motor gliders and motor planes, boat and shipbuilding, sports equipment, model airplanes, molds and tools
Operational temperature	-40 °C up to +100 °C after appropriate cure
Processing	At temperatures between 15 °C and 50 °C
Features	Very good wetting capability of fibers Pot life of approx. 30 min to approx. 3.5 hours at 25°C
Storage	Shelf life of 24 months in originally sealed containers

APPLICATION

Laminating resin EPIKOTE™ MGS LR 285 is an epoxy-based laminating resin system with a wide range of applications. It contains neither solvents nor fillers and is used for processing of glass, carbon, and aramid fibers.

The available curing agents cover a wide reactivity range from very fast to very slow. Additionally, mixing of curing agents (e.g. fast and slow one) is possible to adjust reactivity to individual needs. After precuring at room temperature, the components manufactured are workable and demoldable. The final properties will only be reached after postcure at elevated temperatures.

Due to the chemical characteristics of this system, we do not expect any problems concerning compatibility (e. g. blistering, tearing or changes in color), when it is processed with gelcoats. However, comprehensive tests are indispensable.

For epoxy resins crystallization is immanently possible. In an early stage, crystallization is visible as a clouding, and can progress to a stage, where the resin becomes a wax- like solid. Crystallization can be reversed by slow heating of the product to approx. 40 - 60 °C without restriction to quality after removal, in fact a high purity of material will increase a tendency for crystallization. Although LR285 is very unlikely to crystallize at low temperatures, storage conditions of 15-30 °C are recommended. LH287 however is known to have a very high tendency to crystallize, and crystallization might occur even at temperatures above 15°C. But also in this case heating of the product will revert the crystallization.

After dispensing material, the containers must again be closed carefully, to avoid contamination or absorption of water. All amine hardeners show a chemical reaction when exposed to air, known as „blushing“. This reaction is visible as white carbamide crystals, which could make the materials unusable.

Curing agents are colored to facilitate an easier identification of a homogenous mixture. The color is only a visual aid and is therefore not exactly specified. Therefore, variations from batch to batch are possible. Furthermore, the color is not stable and can change over time. This can be especially observed for high reactive curing agents like LH285 and in addition for all curing agents due to UV radiation. Accordingly, the color can change over time depending on reactivity of curing agent and storage conditions (like exposure to sunlight), but this has no known effect on the overall performance and does not constitute a quality complaint.

The materials have a shelf life of minimum 2 years, when stored in their originally sealed containers.

The relevant industrial safety regulations for the handling of epoxy resins and hardeners are to be observed.

TYPICAL PROPERTIES

Property	Unit	Resin	Curing agent		
		LR285	LH285	LH286	LH287
Density ¹⁾	g/cm ³	1,19	0,96	0,95	0,94
Viscosity ¹⁾	mPa·s	750	85	85	100
Pot life ²⁾	min		15	50	140
Ultimate T _G ³⁾	°C		125	125	130

These are typical values and should not be construed as specifications.

Measuring conditions:

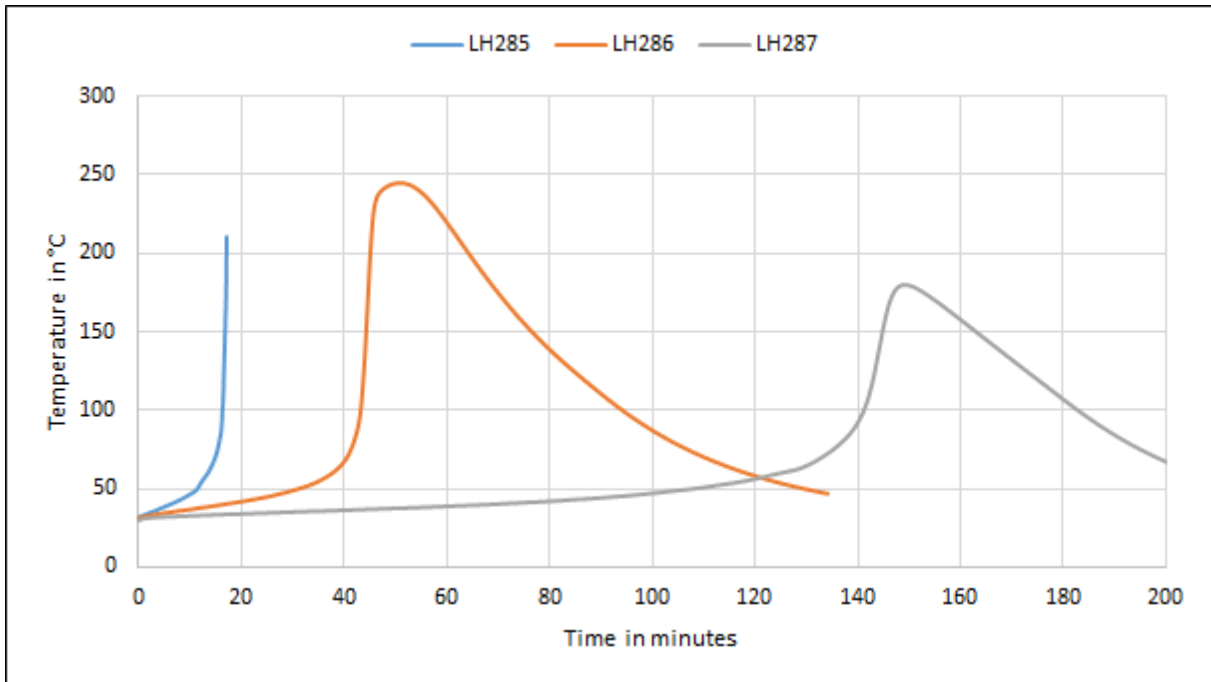
- 1) measured at 25°C
- 2) 100g mixture in water bath at 30°C
 Pot life is a standardized lab test under fixed conditions which does not necessarily reflect real process conditions. The usage or working time varies depending on real processing conditions (environmental temperature, lay-up thickness)
- 3) After full cure, DSC 20K/min, midpoint

MIXING RATIO

	Parts curing agent per 100 parts resin LR285		
	LH285	LH286	LH287
Parts by weight	40 ± 2		
Parts by volume	51 ± 2		

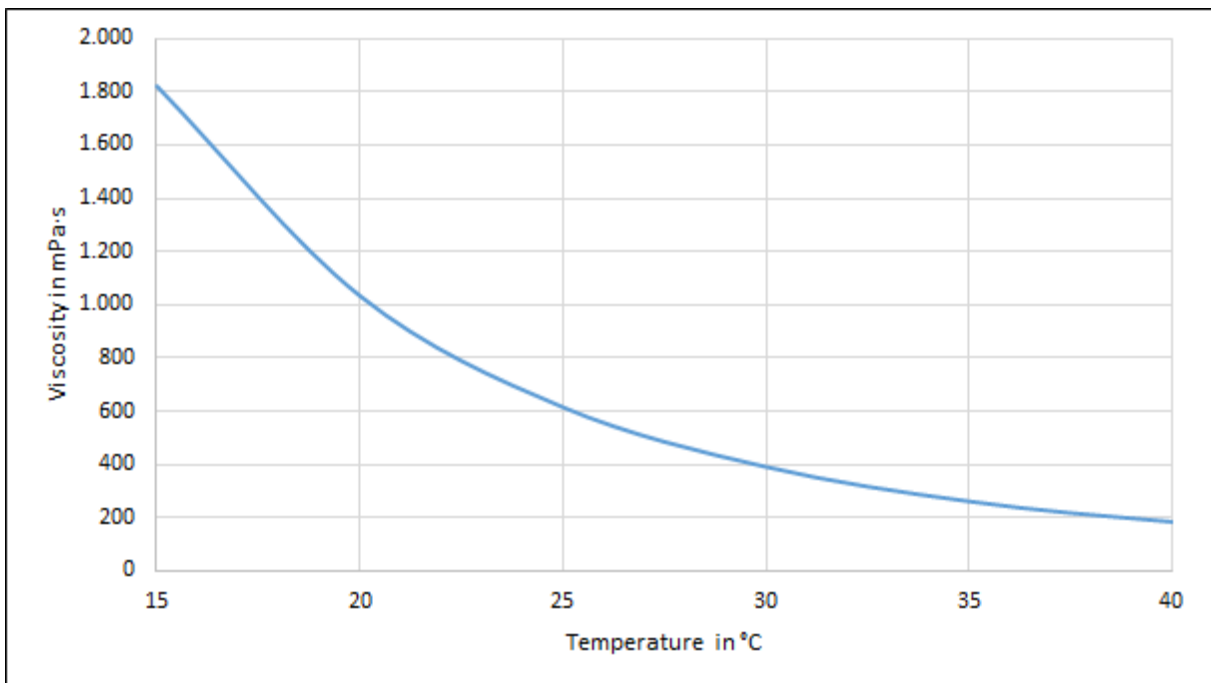
The mixing ratio stated must be observed very carefully. Adding more or less curing agent will not result in a faster or slower reaction, but in incomplete curing which can't be corrected in any way. Resin and curing agent must be mixed very thoroughly. Pay special attention to the walls and bottom of the mixing container.

TEMPERATURE DEVELOPMENT



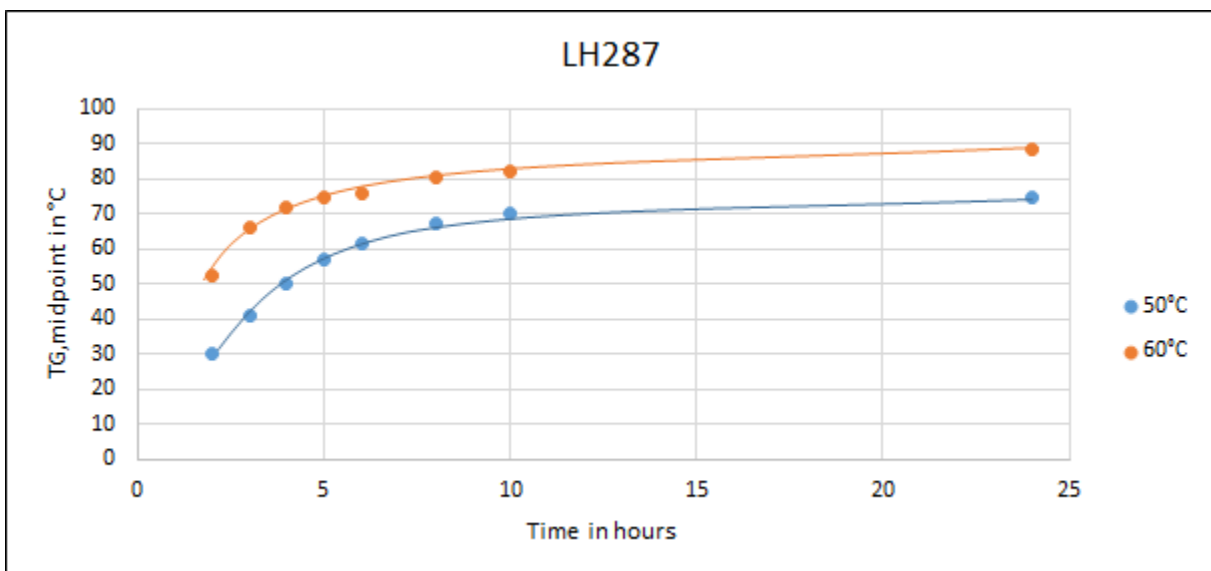
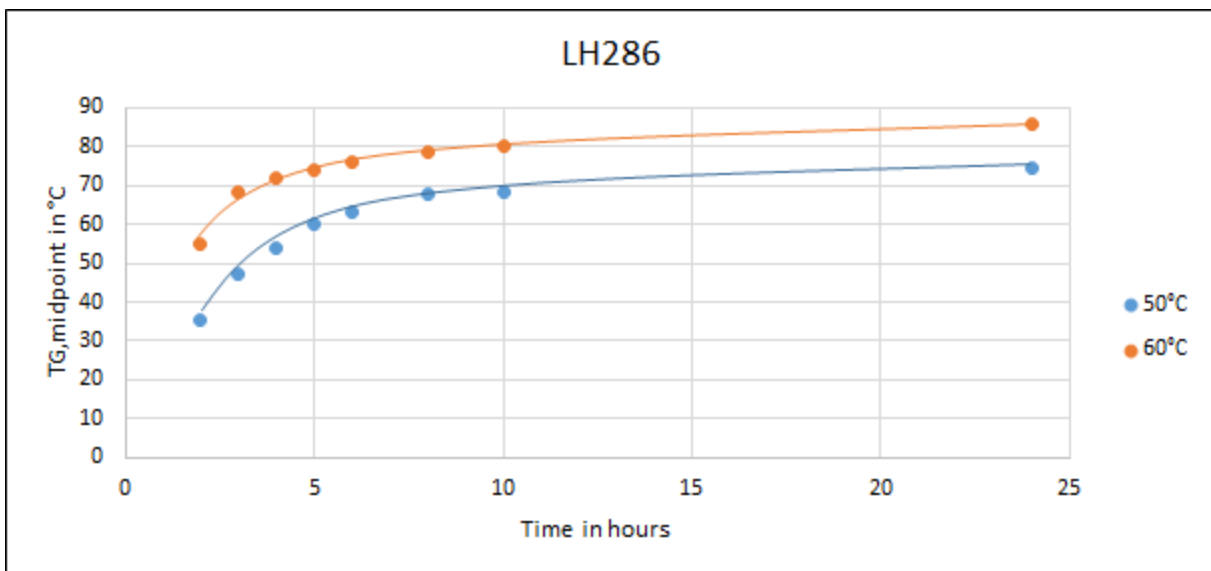
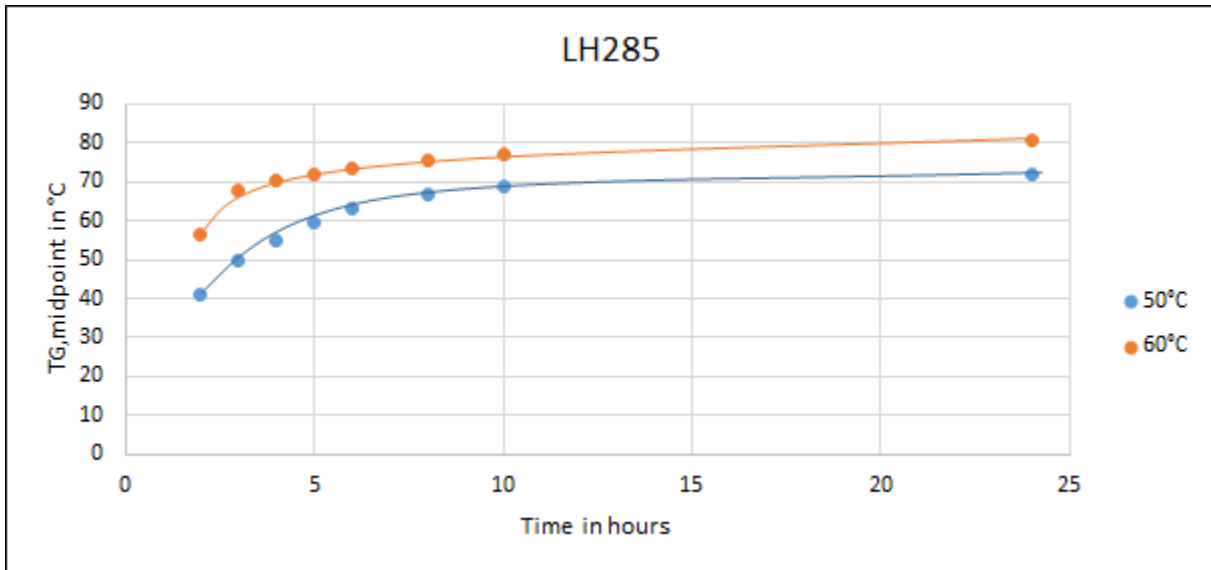
Measuring conditions: measured 100g in a paper cup isolated in a water bath at 30°C

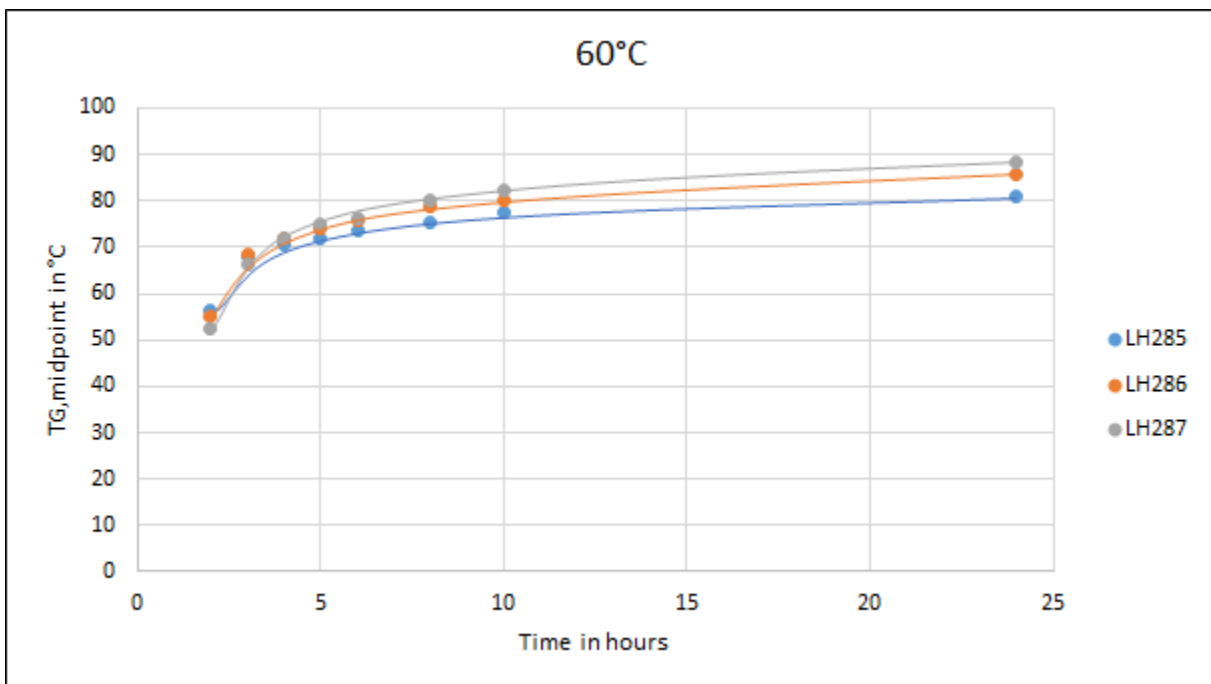
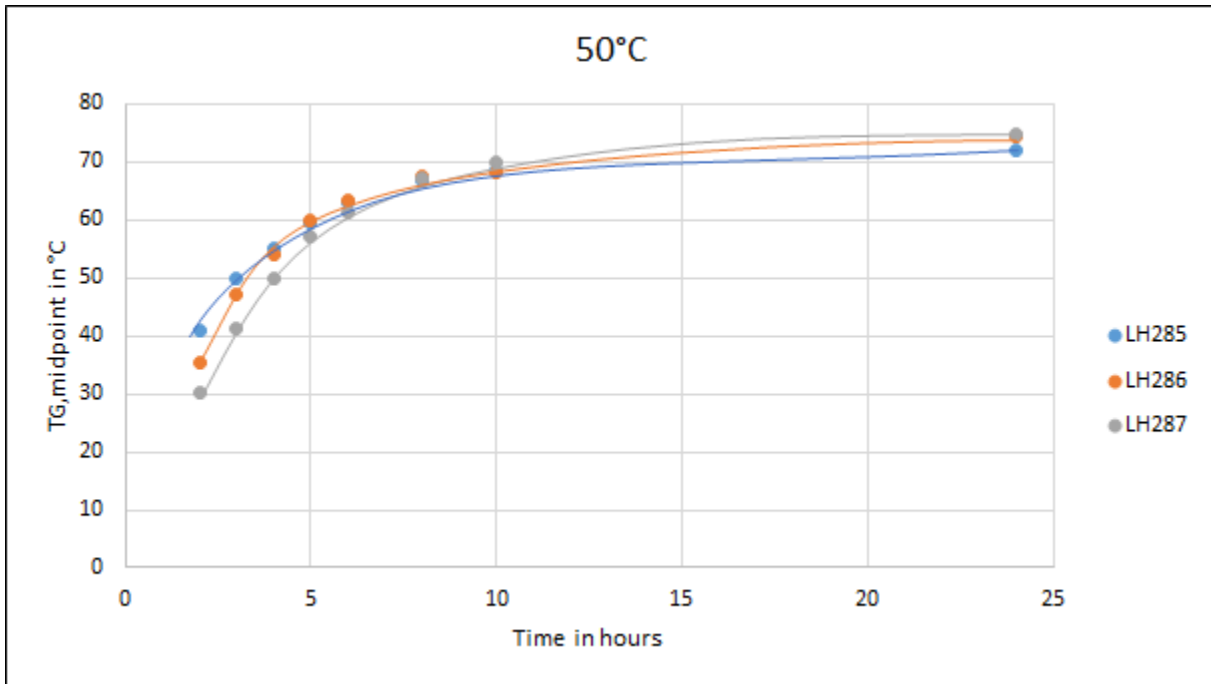
VISCOSITY OF MIXTURE



Measuring conditions: Viscometer, cone-plate configuration, diameter 50 mm, gap 0.1 mm

T_g DEVELOPMENT





Measuring conditions: DSC, heat rate: 20°C/min, sample mass 10-20 mg

PHYSICAL AND MECHANICAL DATA

Test	Property	Typical
Cured density DIN EN ISO 1183-1	Density [g/cm³]	1,19
Tensile test DIN EN ISO 527-2	Tensile strength [MPa]	75
	Tensile modulus [GPa]	3,0
	Tensile strain at break¹⁾ [%]	> 5
Flexural test DIN EN ISO 178	Flexural strength [MPa]	110
	Flexural modulus [GPa]	3,1

¹⁾ Tensile strain at break results strongly depends on specimen quality, especially void content.
All tests accomplished at standard climate

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