

Technical Data Sheet

Most recent revision date: April 2023

EPIKOTE™ Resin 04434 - EPIKURE™ Curing Agent 04434

Features

- laminates with high thermoforming stability
- high strength
- good hot-wet stability
- low exothermic loss
- outstanding chemical resistance

Application

Low viscous, warm curing lamination resin on an epoxy resin basis designed for filament winding Applications with high thermoforming stability and a good hot wet stability.

Product Physical Properties: (at time of Manufacturing)			
Property	Unit	EPIKOTE™ Resin 04434	EPIKURE™ Curing Agent 04434
Viscosity at 25°C	mPa·s	800 ± 150	85 ± 10
Epoxy equivalent weight	g/equiv.	132	
Amine equivalent weight	g/equiv.		60
Density at 20°C	g/cm ³	1.14 ± 0.02	0.95 ± 0.02
Mixing viscosity at 25°C	mPa·s	520	
Mixing density at 20°C	g/cm ³	~ 1.09	
Pot life at 25°C	minutes	240 ± 30	
T _G (TMA)	°C	Up to 200	

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Processing Details

Mixing ratio

EPIKOTE™ Resin 04434	100	parts by weight
EPIKURE™ Curing Agent 04434	45	parts by weight

Mixing tolerance

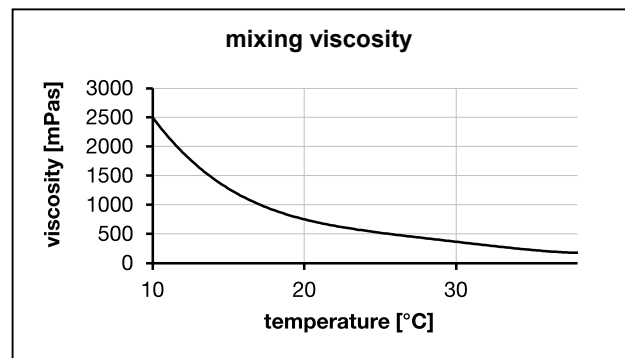
The maximum allowable mixing tolerance is ± 2 pbw, but it is particularly important to observe the recommend mixing ratio as exactly as possible. Adding more or less Hardener will not effect a faster or slower reaction - but an incomplete curing which cannot correct in any way.

Resin and Hardener must be mixed very thoroughly. Mix until no clouding is visible in the mixing container. Pay special attention to the walls and the bottom of the mixing container.

Processing Temperature

A good processing temperature is in the range between 25°C and 35°C. Higher processing temperatures are possible but will shorten the pot life. A rise in temperature of 10°C reduces the pot life by approx. 50%. Different temperatures during processing have no significant effect on the strength of the hardened product.

Do not mix large quantities at elevated processing temperatures. The mixture will heat up fast because of the dissipating reaction heat (exothermic reaction). This can result in temperatures of more than 200°C in the mixing container.



Attention!

The hardener can crystallise. Should this occur, the hardener must be warmed (water bath) at 60 - 80°C; once the crystals have been fully dissolved, let the hardener cool down before using it.

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Exemplify Curing Cycles:		
Conditions		T _g [°C]
2 h 60 °C	+ 3 h 120 °C	130 °C
2 h 60 °C	+ 2 h 150 °C	140 °C
2 h 60 °C	+ 1 h 170 °C	170 °C
2 h 60 °C	+ 1 h 200 °C	200 °C

Properties of the cured, reinforced Resin System (Curing: 2h at 60°C + 3h at 130°C)				
Property	Units	RT	70 °C	120 °C
Flexural Strength	MPa	465	407	369
Deflection	mm	2.7	2.5	2.3
ILSS	MPa	40	35	29
T _g (DMTA)	°C	150		

The values are measured on 2mm laminates made with glass fabric 181/Interglas 91745.

Properties of the cured, reinforced Resin System (Curing: 2h at 60°C + 3h at 130°C) After storage 14 days at 70°C distilled water				
Property	Units	RT	70 °C	120 °C
Flexural Strength	MPa	411	360	269
ILSS	MPa	32	28	17

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Properties of the cured, reinforced Resin System (Curing: 2h at 60°C + 1h at 170°C)				
Property	Units	RT	70 °C	120 °C
Flexural Strength	MPa	490	420	357
Deflection	mm	2.5	2.3	2.3
ILSS	MPa	39	32	24
T _G (DMTA)	°C	170		

The values are measured on 2mm laminates made with glass fabric 181/Interglas 91745.

Properties of the cured, reinforced Resin System (Curing: 2h at 60°C + 1h at 170°C) After storage 14 days at 70°C distilled water				
Property	Units	RT	70 °C	120 °C
Flexural Strength	MPa	457	383	292
ILSS	MPa	38	30	18

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Shelf Life

The Resin EPIKOTE™ Resin 04434 can be stored at 4- 8°C for at least 12 months in the carefully sealed original containers. Storing above this temperature affects product quality (viscosity increase). When warming up larger quantities, never exceed 80 °C (176 °F), refer to the safety advice/precautions.

The hardener EPIKOTE™ Curing Agent 04434 can be stored at 20- 25°C for at least 12 months in the carefully sealed original containers. It is rarely possible that the resin or the hardener crystallize at temperatures below 15°C. The crystallisation is visible as a clouding or solidification of the content of the container. Before processing, the crystallisation must be removed by warming up. Slow warming up to 50- 60°C in a water bath or oven and stirring or shaking will clarify the contents in the container without any loss of quality. Use only completely clarify products. Before warming up, open containers slightly to permit equalization of pressure. Caution during warm up! Do not warm up over open flame!

Precautions

For information about safe handling of EPIKOTE epoxy resins and EPIKURE Curing Agents, please note the corresponding Safety Data Sheet.

Always take care when handling and/or working with polyfunctional epoxy systems like EPIKOTE™ Resin, EPIKURE™ Curing Agent 04434. Heat can induce spontaneous homopolyaddition in which course the exothermic reaction can become uncontrollable.

Heating larger quantities of EPIKOTE™ Resin, EPIKURE™ Curing Agent 04434 and its formulations with other epoxy resins above 80 °C (176 °F) has to be strictly avoided.

Extreme care should be taken when working with accelerators.

For decreasing the viscosity prior to use, product temperatures of about 60 - 80 °C (140 - 176 °F) are high enough to ensure an easy handling.

When warming up EPIKOTE™ Resin, EPIKURE™ Curing Agent 04434, strictly avoid any local overheating, e.g. by use of improper heating equipment, like drum band heaters, immersion heaters, heating plates, hot air blowers, flames or electromagnetic radiation.