

Tooling Materials

EPMOLD 140LS

Low Shrinkage Epoxy Laminating Resin by Infusion

APPLICATIONS

EPMOLD 140 LS is a tooling resin designed for infusion laminating process, which is made up of special epoxy resin and hardener. It cures at room temperature, and can reach high heat resistance level after proper post-cure process. It is developed for the making of large size of molds like wind blade mold, etc.

FEATURES

- Low exothermic during curing
- Low shrinkage, low distortion of the mold
- Low viscosity of the mixed resin, faster infusion process, easy to use
- High temperature resistance, suitable for water heating and electrical heating mold system
- Long pot life, suitable for large mold making and applications at high temperature

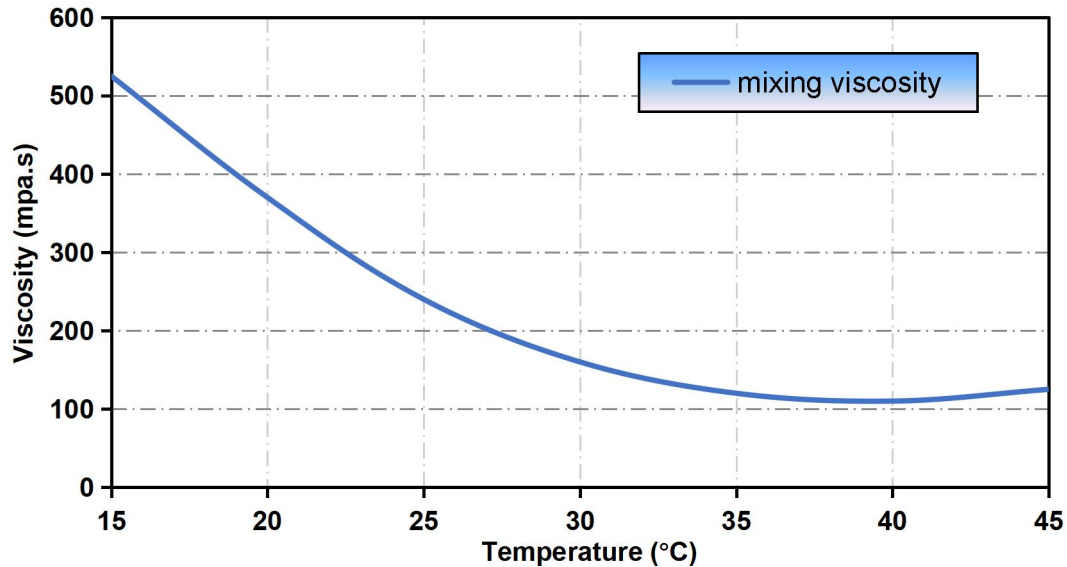
PHYSICAL PROPERTIES

Test Item	Test method	EPMOLD 140LS Resin	EPMOLD 140LS Hardener
Mixing ratio by weight		100	20
Aspect	visual	liquid	liquid
Color	visual	light yellow	Blue
viscosity at 25°C (mPa.s)	ISO 2555:2018	900-1,300	5-30
Mixed viscosity at 25°C (mPa.s)	ISO 2555:2018	250-300	
Density before mixing at 25°C (g/cm ³)	ISO 1675:1985	1.12-1.18	0.90-0.95
Density after curing at 25°C (g/cm ³)	ISO 2781:1996	1.16	
Gel time (500g) at 25°C (min)	Gel Timer	100-140	
Peak temperature(Ambient temp 25°C test) (mixing 100g in 200ml in paper cup at 25°C)	Thermoelectric Thermometer	205°C	
Time to reach peak temperature (mixing 100g in 200ml paper cup at 25°C)	Thermoelectric Thermometer	210 min	

Mixing Viscosity

EPMOLD 140LS Mixing Viscosity VS Temperature

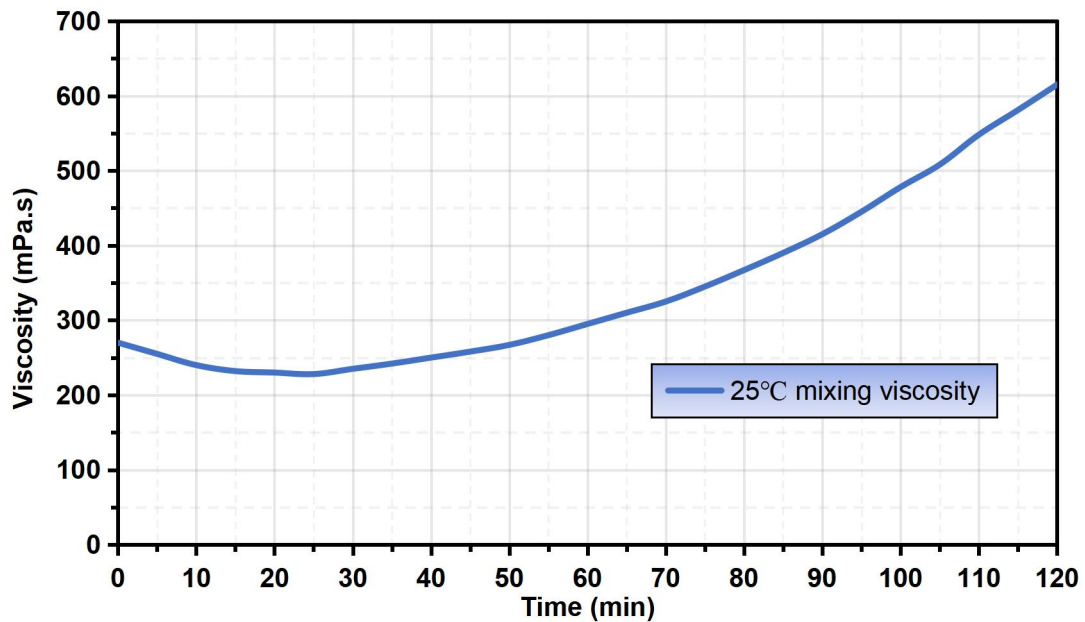
Brookfield viscosity at different temperature conditio.Quantity of mixing :500g



EPMOLD 140 LS Mixing viscosity VS Time at 25°C

Brookfield viscosity at different time, Bathing temperature : 25°C

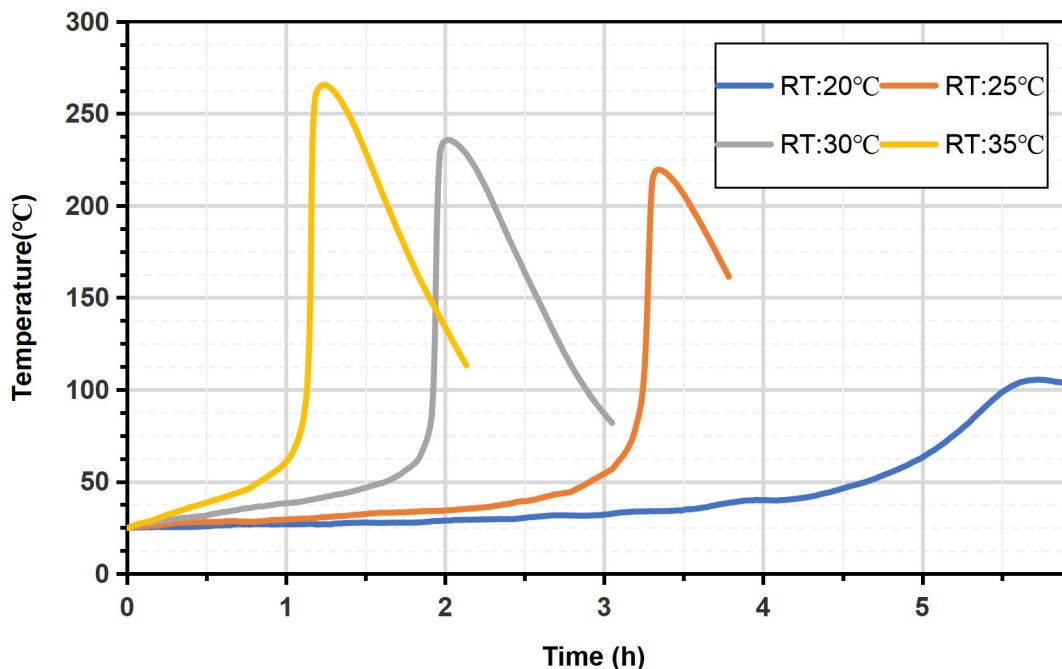
Quantity of mixing :500g



EPMOLD 140 LS Mixing viscosity VS Time at 25°C		
Initial viscosity at 25°C	(mPa.s)	270
Two times the initial viscosity of time	(min)	108
Time to 600 mPa.s	(min)	117

Exothermic Profile

EPMOLD 140LS Mixed 150g /200ml cup at 20/25/30/35°C ambient temp exotherm



Ambient temp	20°C	25°C	30°C	35°C
Time to T _{max} (min)	344 min	200 min	120 min	75 min
T _{max} (°C)	105°C	219°C	235°C	265°C

MECHANICAL PROPERTIES

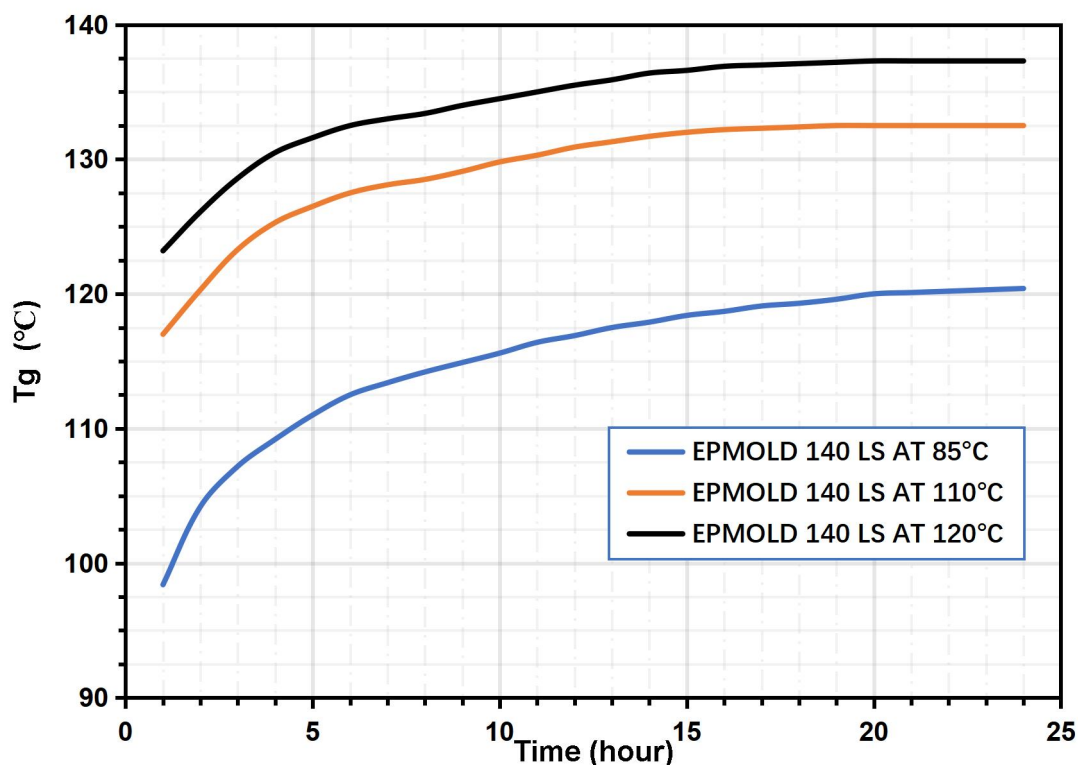
Property	Test method	EPMOLD 140LS
Shore Hardness	ISO 868:2003	88 D
Flexural modulus	ISO 178:2001	2.5-3.5 GPa
Flexural strength	ISO 178:2001	125-135 MPa
Tensile modulus	ISO 527:1993	2.5-3.5 GPa
Tensile strength	ISO 527:1993	75-85 MPa
Elongation at break	ISO 527:1993	4% approx..
Compression strength	ISO 604:2002	>110 MPa
CTE (30°C to 110°C)	ISO 11359-2:1999	61*10 ⁻⁶ K ⁻¹

Curing condition: values above are obtained on standard specimens : 24 hours at 23°C, 10 hours at 130°C.

Glass transition temperature

T _g (105°C/36h post curing)	ISO 11357 :2002(DSC)	135°C
T _g (120°C/36h post curing)	ISO 11357 :2002(DSC)	143°C

After curing 24h at 25°C and 4hrs at 60°C, at 85°C/110°C /120°C different time test results. Test instrument DSC



PROCESSING

Resin and hardener are weighed at given mixing ratio, and then mixed homogeneously before use. To avoid slow infusion and poor penetration to the glass fiber because of increased viscosity, it is recommended to consume the mixed material within 2/3 of the pot life. Pot life varies based on different material quantity and ambient temperature.

Demolding could be carried out after curing at room temperature for 8 hours and then followed by heating at 40°C for 12 hours.

To avoid any risk of distortion or tooling shrinkage, and to improve the high temperature resistance, a precise curing cycle is to be observed. A conformer is recommended for complex shapes.

The following thermal treatment can be carried out: 4 hours at 60°C, 2 hours at 80°C, 2 hours at 100°C and 4 hours at 120°C, and observe an increase and a decrease in temperature of maximum 20°C per hour between stages.

PACKAGING

EPMOLD140 LS RESIN	EPMOLD 140 LSHARDENER
1000 kg	900 kg
220 kg	180 kg
20 kg	4 kg

USABLE LIFE AND STORAGE

While stored in dry place and in original unopened containers at temperature between 15°C and 25°C, the shelf of resin is 24 months and the shelf life of hardener is 12 months. Exposure to low temperature for longer time might cause crystallization. In case crystallization occurs, heat it up to 50-60°C until it becomes to transparent liquid. Heating the product will not have any defective effect on the property of the product.

Any open can must be tightly closed under dry air or nitrogen blanket. The remaining product should be used up as soon as possible.

HANDLING PRECAUTIONS

Avoid contact with skin while in application, wear mask, gloves and protection close when necessary; used in well ventilated area.

For further information, please consult product safety data sheet.

WARRANTY INFORMATION-PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective and fully satisfactory for the intended end use.