

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

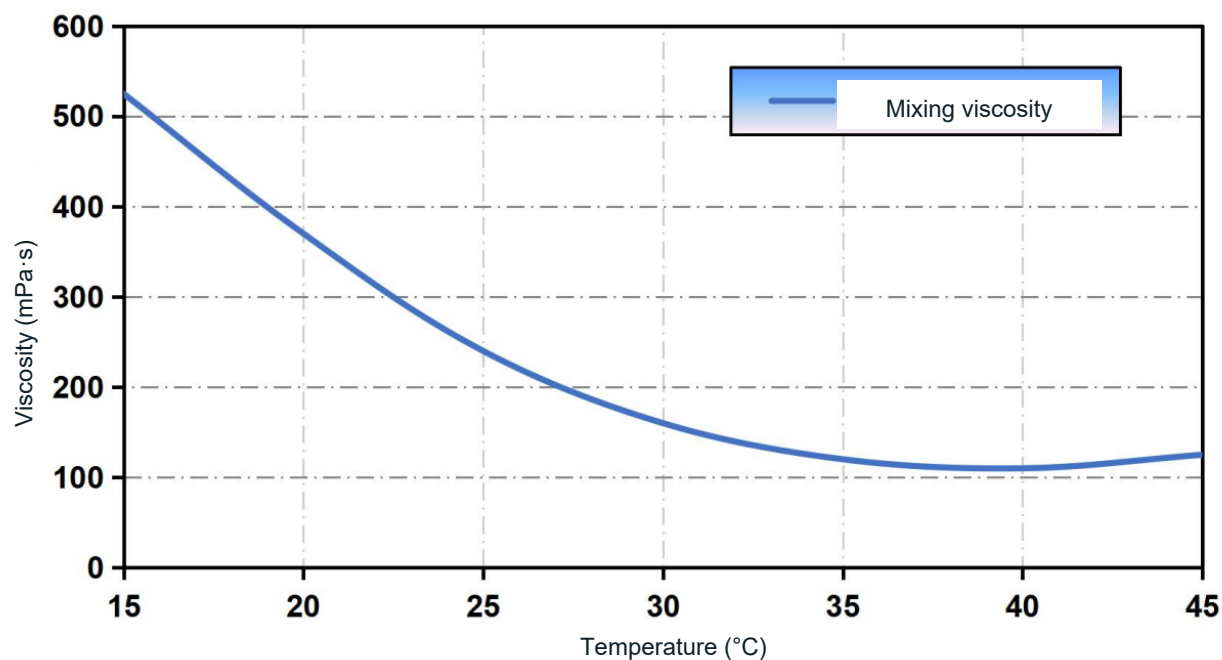
PHYSICAL PROPERTIES

Test item	Test method	EPMOLD 140LSResin	EPMOLD 140LSHardener
Mixing ratio by weight		100	20
Aspect	visual	liquid	liquid
Color	visual	Light yellow	Blue
Viscosity at 25°C (mPa.s)	ISO2555:2018	900-1,300	5-30
Mixed viscosity at 25°C (mPa.s)	ISO2555:2018	250-300	
Density before mixing at 25°C (g/cm ³)	ISO1675:1985	1.12-1.18	0.90-0.95
Density after curing at 25°C (g/cm ³)	ISO2781:1996	1.16	
Gel time (500 g) at 25°C (min)	Gel timer	100-140	
Peak temperature (ambient temperature 25°C test) (mixing 100 g in a 200 ml paper cup at 25°C)	Thermoelectric Thermometer	205°C	
Time to reach peak temperature (mixing 100 g in a 200 ml paper cup at 25°C)	Thermoelectric Thermometer	210min	

Mixing Viscosity

EPMOLD 140LS Mixing Viscosity VS Temperature

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



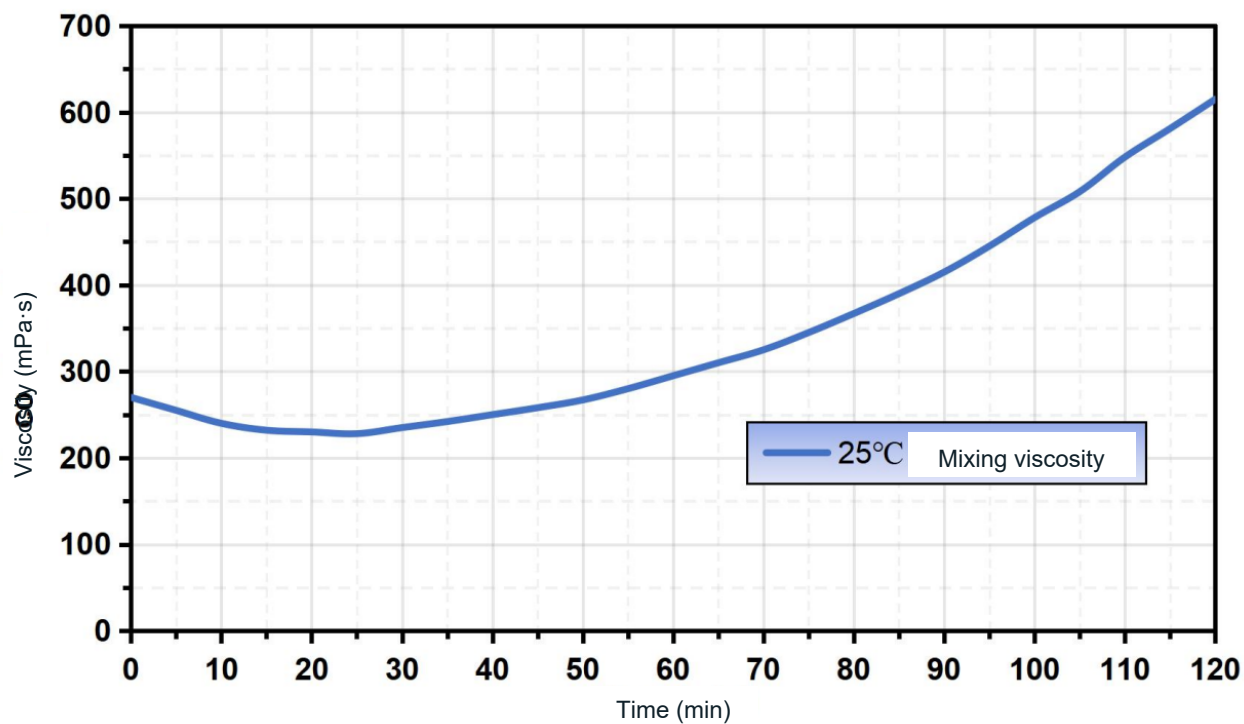
Viscosity (mPa·s)

Temperature (°C)

Mixing viscosity

EPMOLD 140 LS Mixing viscosity VS Time at 25°C

Brookfield viscosity at different time, Bathing temperature : 25°C Quantity of mixing :500g



Viscosity (mPa·s)

Time (min)

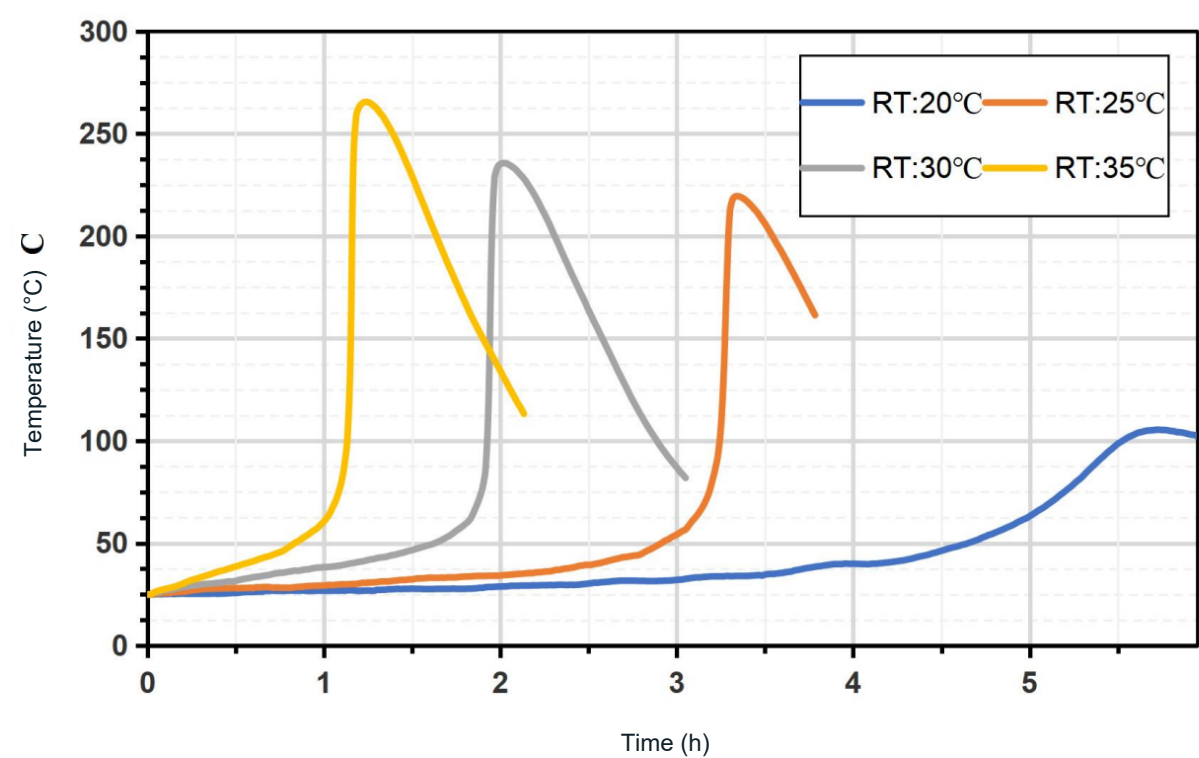
Mixing viscosity at 25°C

EPMOLD140LSMixingviscosityVSTimeat25°C	
InitialViscosity at 25°C (mPa.s)	270
Twotimestheinitialviscosityof time (min)	108
Timeto600mPa.s (min)	117

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Exothermic Profile

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



Temperature (°C)

Time (h)

Ambienttemp	20°C	25°C	30°C	35°C
TimetoTmax(min)	344min	200min	120min	75min
Tmax(°C)	105°C	219°C	235°C	265°C

MECHANICAL PROPERTIES

Property	Test method	EPMOLD140LS
Shore hardness	ISO868:2003	88D
Flexural modulus	ISO178:2001	2.5-3.5GPa
Flexural strength	ISO178:2001	125-135MPa
Tensile modulus	ISO527:1993	2.5-3.5GPa
Tensile strength	ISO527:1993	75-85MPa
Elongation at break	ISO527:1993	4%approx..
Compressive strength	ISO604:2002	>110MPa
CTE (30°C to110°C)	ISO11359-2:1999	$61 \times 10^{-6} \text{ K}^{-1}$

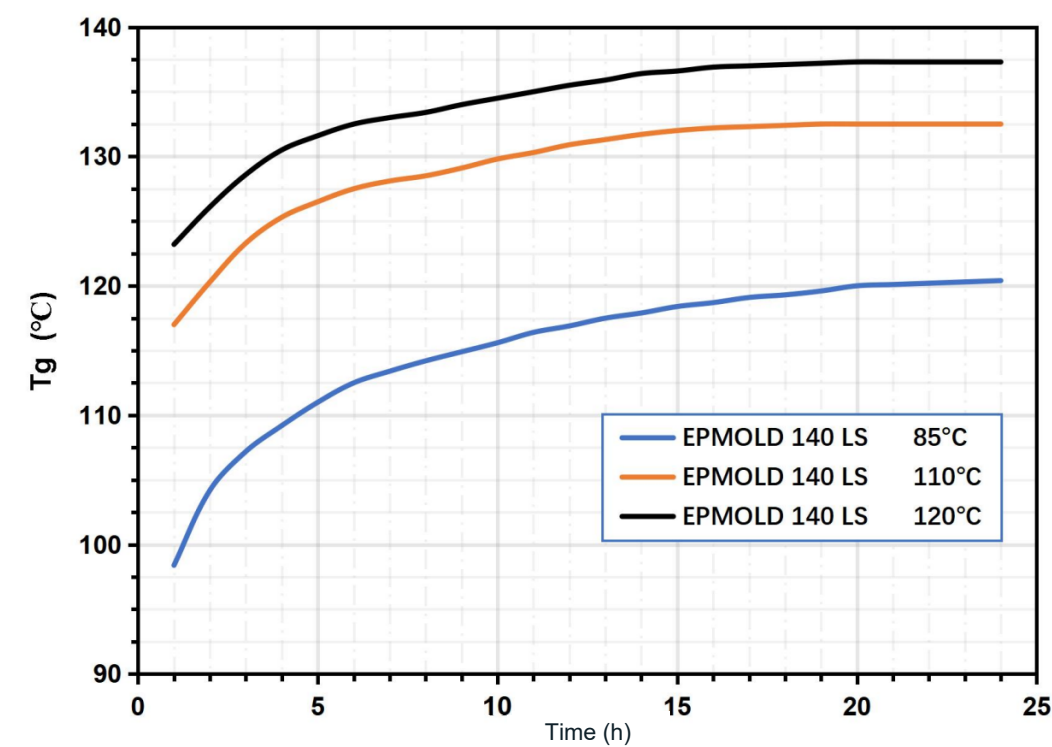
Curingcondition:valuesaboveareobtainedonstandardspecimens:24hoursat23 °C ,10hoursat130 °C .

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Glass transition temperature

Tg(105°C/36hpostcuring)	ISO11357:2002(DSC)	135°C
Tg(120°C36hpostcuring)	ISO11357:2002(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



Time (h)

EPMOLD 140 LS | 85°C

EPMOLD 140 LS | 110°C

EPMOLD 140 LS | 120°C

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.

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PACKAGING

EPMOLD140LSRESIN	EPMOLD140LSHARDENER
1000kg	900kg
220kg	180kg
20kg	4kg

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 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.

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US customary-unit equivalents

US customary-unit equivalents are provided for convenience alongside the original SI test data. The original source values and test methods remain the controlling reference. Converted values are rounded.

Source value	US equivalent
25 °C	77 °F
500 g	1.102 lb
100 g	0.2205 lb
205 °C	401 °F
25 °C	77 °F
150 g	0.3307 lb
35 °C	95 °F
20 °C	68 °F
30 °C	86 °F
105 °C	221 °F
219 °C	426.2 °F
235 °C	455 °F
265 °C	509 °F
2.5-3.5 GPa	362.6 to 507.6 ksi
125-135 MPa	18130 to 19580 psi
75-85 MPa	10878 to 12328 psi
>110 MPa	>15954 psi
30 °C	86 °F
105 °C	221 °F
135 °C	275 °F
120 °C	248 °F
143 °C	289.4 °F
60 °C	140 °F
85 °C	185 °F
110 °C	230 °F
120 °C	248 °F
85 °C	185 °F
110 °C	230 °F
120 °C	248 °F
40 °C	104 °F
80 °C	176 °F

Source value	US equivalent
100 °C	212 °F
1000 kg	2205 lb
900 kg	1984 lb
220 kg	485 lb
180 kg	396.8 lb
20 kg	44.1 lb
4 kg	8.818 lb
15 °C	59 °F
50-60 °C	122 to 140 °F