

Tooling Materials

EPMOLD 170LV

High Thermal Resistance Tooling Resin

Introduction

EPMOLD 170LV is an epoxy tooling resin designed for infusion process of glass or carbon parts. EPMOLD 170LV is an ambient cured and then capable for demolding after mid-cure at elevated temperature (60°C for 12 hours recommended). It behaves good thermal resistance after post cure. EPMOLD 170LV is a long pot life system that suitable for large size or complex part making.

Features

- Low initial mixed viscosity for easier infusion
- Ambient curing
- Low shrinkage for accurate part manufacture
- High thermal resistance
- Long pot-life and gel time, capable of infusing large or complex parts

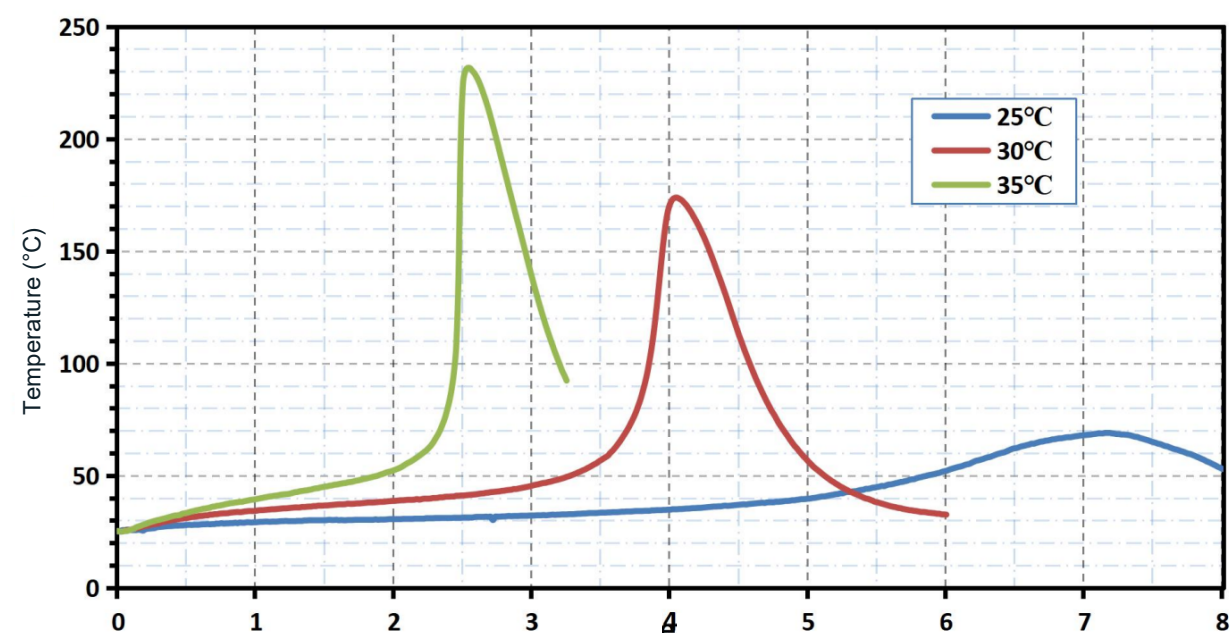
System information

Component Properties		
	EPMOLD 170LV Resin	EPMOLD 170LV Hardener
Aspect	Liquid	Liquid
Color	Lightyellow	Clear
Densityat25°C	1.15 ~1.25 g/cm3	0.92 ~0.98 g/cm3
Viscosityat 25°C	1,200~1,600 mPa.s	10~ 30mPa.s
Mixratio byweight	100	26
Initialmixed viscosity at25°C	250~ 300mPa.s	
Cureddensity at25°C	1.12 ~1.20 g/cm3	
Geltime(500ginair at25°C)	200 ~250min	

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Working properties

Temperature vs Time at Center of 100g/200ml Pot Life Test



Temperature (°C)

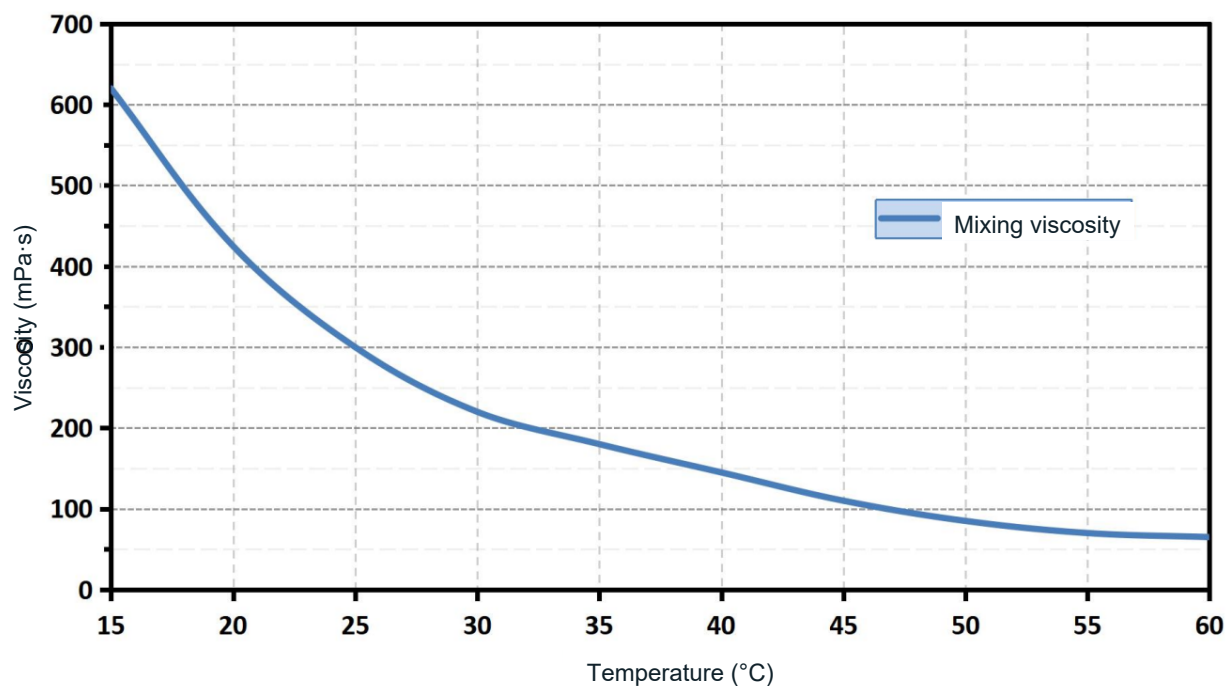
Time (h)

Exothermpfiles			
Temperature	25°C	30°C	35°C
TimetoPeakExotherm	430minutes	243minutes	153minutes
PeakExotherm	69°C	174°C	232°C

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Mixing Viscosity

Mixing viscosity VS Temperature (Mixing quantity: 500g)

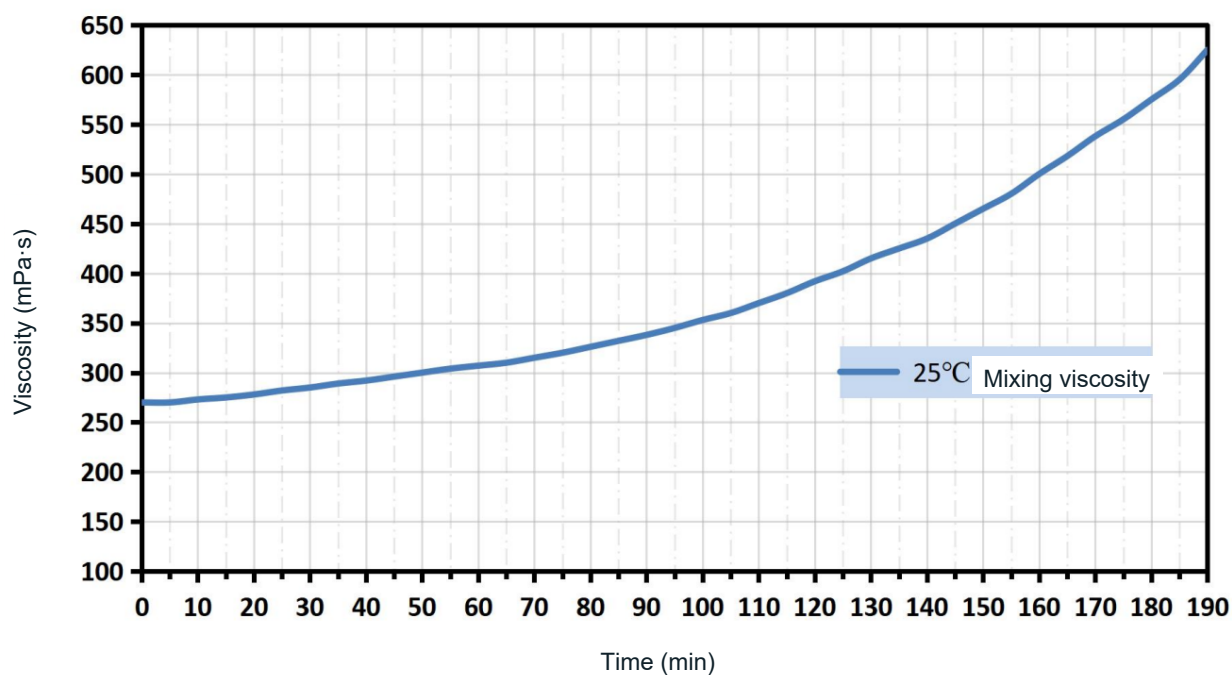


Viscosity (mPa·s)

Temperature (°C)

Mixing viscosity

Mixing viscosity VS Time at 25°C (Bathing temperature: 25°C, Mixing quantity: 500g)



Viscosity (mPa·s)

Time (min)

Mixing viscosity at 25°C

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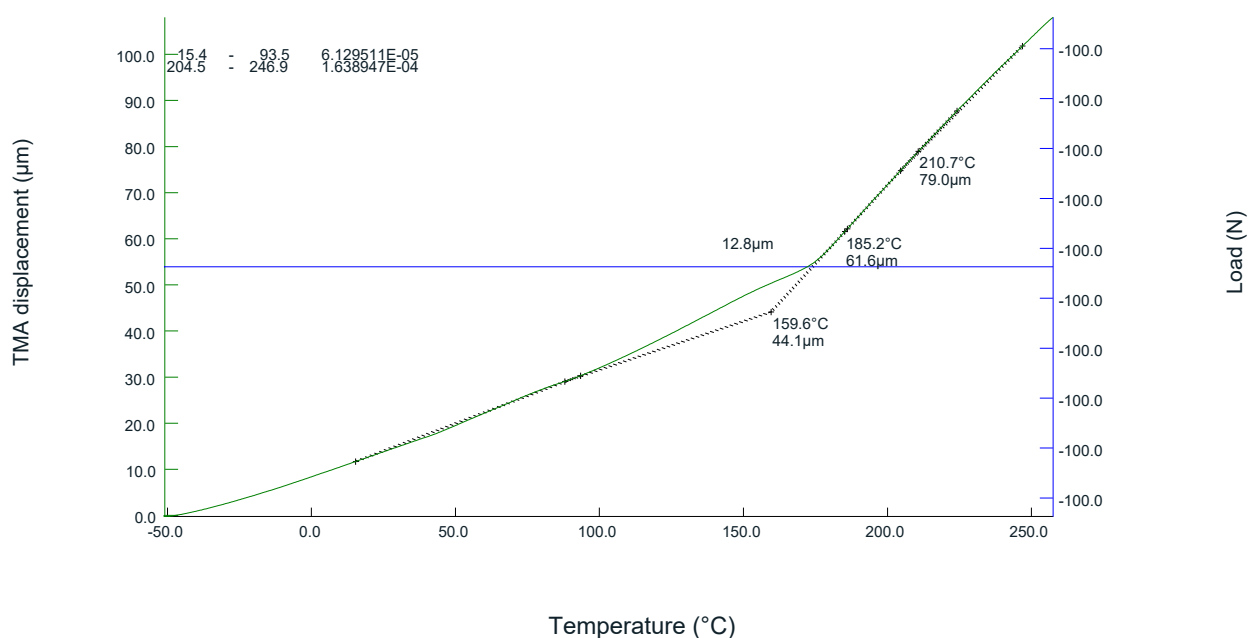
Mixing viscosity VS Time at 25°C	
Initial viscosity at 25°C	270 mPa.s
Time to 600 mPa.s	185 min

Cured system properties

To postcure the system, a mid cure at 60°C for 4 hours is recommended, then ramp at 0.1°C /min to 120°C and dwell for 12 hours. Higher temperature or longer time may be required to achieve full post-curing depends on different heating condition, heat loss and radiation for instance.

Cure schedules should be tailored to each specific application. Accordingly, times, temperatures, and ramp rates should be adjusted such that the entire composite mold receives sufficient heat history to attain full properties.

Average expansion coefficient (1/°C)



Mechanical properties

Prooerties	Test method	Typicalvalue
Flexural modulus	ASTMD-790	2.5~3.5Gpa
Flexural strength	ASTMD-790	120~135MPa
Tensilestrength	ASTMD-638	70~80MPa
Compression strength	ASTMD-695	100~120Mpa
Linear shrinkage	ASTMD-2566	0.4-0.6%
CTE(30°Cto 120°C)	ASTME831	6.12*10-5K-1
Glasstransitiontemperature(Ultimate)	ASTMD-3418 (DSC)	175°C

* Typical properties, not to be construed as specifications.

CTE Test result

Module: TMA DataName: EPMOLD170LV

MeasurementDate: 2018/1/4 SampleName: EPMOLD170LV

SampleLength: 3.891mm SampleCross-sectionArea: 0.000mm²

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Processing

Resin and hardener are weighed at given mixing ratio, and then mixed thoroughly before use. To void slow infusion and poor impregnation to the glass fiber because of increased viscosity, recommended to consume the mixed material within 2/3 of the pot life. Demolding could be carried out after heating at 60°C for 12 hours. In order to avoid any risks 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.

Packaging

EPMOLD 170LV Resin	EPMOLD 170LV Hardener
1,000kg	900 kg
220kg	180 kg

Shelf life and storage

While stored in dry place and in original unopened containers at temperature between 15°C and 25°C, the shelf life 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 60-80°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

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
60 °C	140 °F
1.15 ~1.25 g/cm ³	71.8 to 78 lb/ft ³
0.92 ~0.98 g/cm ³	57.4 to 61.2 lb/ft ³
25 °C	77 °F
1,200~1,600 mPa	174045 to 232060 psi
10~ 30 mPa	1450 to 4351 psi
250~ 300 mPa	36259 to 43511 psi
1.12 ~1.20 g/cm ³	69.9 to 74.9 lb/ft ³
100 g	0.2205 lb
30 °C	86 °F
35 °C	95 °F
69 °C	156.2 °F
174 °C	345.2 °F
232 °C	449.6 °F
500 g	1.102 lb
25 °C	77 °F
270 mPa	39160 psi
0.1 °C/min	0.18 °F/min
120 °C	248 °F
2.5~3.5 Gpa	362.6 to 507.6 ksi
120~135 MPa	17405 to 19580 psi
70~80 MPa	10153 to 11603 psi
100~120 Mpa	14504 to 17405 psi
175 °C	347 °F
3.891 mm	0.1532 in
0.000 mm	0 in
1,000 kg	2205 lb
900 kg	1984 lb
220 kg	485 lb
180 kg	396.8 lb
15 °C	59 °F

Source value	US equivalent
60-80 °C	140 to 176 °F