

DeepCast Epoxy

Clear Casting Resin System



An epoxy system with enhanced UV resistance, designed for casting of decorative objects, bottle prototypes, jewellery, river tables...

- Very low reactivity allowing high thicknesses up to 10 cm at 20 °C.
- High clarity polymer, colourless and with good brightness.
- Room temperature curing

Reactivity level		Slow
Initial viscosity (mPa.s)	@ 20 °C	360
	@ 30 °C	250
Pot Life (500 g)	@ 20 °C	01 h 00
	@ 30 °C	40 min
Mixing ratio	By weight	100 / 42
	By volume	100 / 50
Density		1,1307
TG1 max onset	°C	61

This resin comes from the latest innovations in bio-based chemistry. It is produced with a high content of carbon from plant origin. The bio-based Carbon content of this system is certified by an independent laboratory using Carbon 14 measurements (ASTM D6866 or XP CEN/TS 16640)

This is a significant technological advance on the following points:
Clarity, color, performance and guaranty of available industrial tonnages.

This is an epoxy resin that has 37% of its molecular structure coming from plant origin. This percentage is the function of the carbon origin contained in the epoxy molecule. The final rate of the mix bio-based carbon content will depend on the hardener choice.

This resin is an epoxy system with enhanced UV resistance, designed for production by casting of decorative objects, bottle prototypes, jewellery, river tables...

- Very low reactivity allowing high thicknesses up to 10 cm at 20 °C.
- High clarity polymer, colourless and with good brightness.
- Room temperature curing
- Almost odourless.
- 2:1 ratio and very easy mixing.
- Excellent degassing.
- Excellent impact and thermal shock resistance.
- Good UV resistance

Resin

Appearance		liquid
Color		colourless
Gardner color		≤ 0
Pt/Co Color Index		≤ 15
Viscosity (mPa.s)	@ 15 °C	2400 $\pm$ 480
	@ 20 °C	1300 $\pm$ 260
	@ 25 °C	780 $\pm$ 160
	@ 30 °C	480 $\pm$ 100
	@ 40 °C	210 $\pm$ 42
Density	@ 20 °C	1,1700
Refractive index	@ 25 °C	1,5499 $\pm$,002
Bio-based Carbon content (%)		37
Storage (months)	@ Ta	24

Hardener(s)

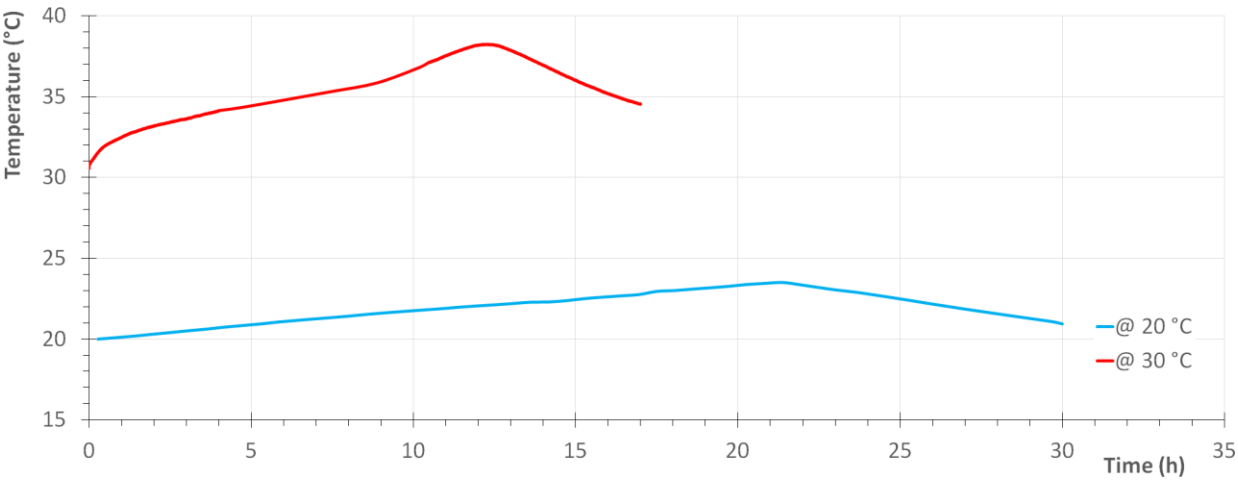
Appearance		liquid
Color		colourless
Gardner color		≤ 1
Pt/Co Color Index		≤ 50
Reactivity level		Slow
Viscosity (mPa.s)	@ 15 °C	180 $\pm$ 30
	@ 20 °C	125 $\pm$ 20
	@ 25 °C	90 $\pm$ 15
	@ 30 °C	70 $\pm$ 10
Density	@ 20 °C	0,9700
Refractive index	@ 25 °C	1,459 $\pm$,002
Storage (months)	@ Ta	24

Appearance		liquid
Color		colourless
Mixing ratio		
	By weight	100 / 42
	By volume	100 / 50

Density	@ 20 °C	1,1307
Initial viscosity (mPa.s)	@ 20 °C	360
PP 50 mm / 10 s ⁻¹	@ 30 °C	250

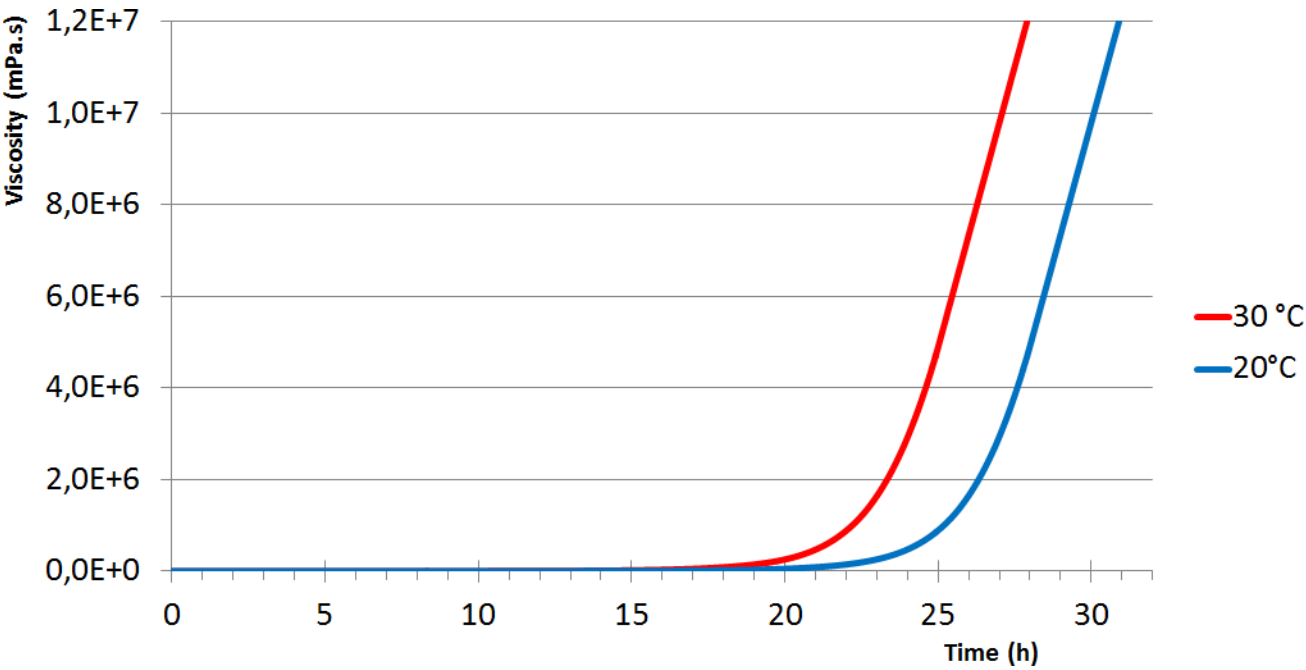
Reactivity for 500 g

	20 °C	30 °C	°C
Exothermic temperature (°C)	23,5	38	
Exothermic peak time	21 h 30	12 h 00	-
Time to reach 50 °C	-	-	-



Reactivity on a 6 mm thick cast

@ 20 & 30 °C



Mechanical properties on cast resin :

Curing cycles		7 days @ TA	48 h @ TA + 24 h @ 40 °C	48 h @ TA + 16 h @ 60 °C
Tensile				
Modulus	N/mm ²	620	1 500	2 150
Maximum strength	N/mm ²	11,5	26	38
Breaking Strength	N/mm ²			
Elongation at max strength	%	5,9	3,3	3,1
Elongation at break	%	50	27,8	19
Flexion				
Modulus	N/mm ²	780	1 200	1 940
Maximum strength	N/mm ²	20	32	59
Breaking Strength	N/mm ²			
Elongation at max strength	%	6,2	5,5	4,9
Elongation at break	%	15	15	15
Shear				
Breaking Strength	N/mm ²	17,5	25	30
Compression				
Modulus	N/mm ²			
Yield strength	N/mm ²	30	25	65
Offset compression yield	%	12,1	10,8	10,7
Charpy impact strength				
Resilience	kJ/m ²	84	67	58
DSC glass transition				
TG1 onset	°C	45	50	58
TG1 max onset	°C			61

Tests carried out on samples of pure cast resin, without prior degassing, between steel plates.

Measures undertaken according to the following norms:

Mechanical tests:

Tension: NF EN ISO 527-2:2012

Flexion: NF EN ISO 178:2011

Compression: NF EN ISO 604:2004 or NF EN ISO 844:2014 (foam product)

Charpy impact strength: NF EN ISO 179-1:2010

Shear Strength: ASTM D732-17 (Punch Tool)

Interlaminar shrinkage strength: ASTM D5528-13

Toughness (GIC et KIC) : ISO 13586:2000

Water absorption: Internal. Polymerization according to cycle, machining, weighing, time spent in distilled water at 70 °C / 48 hours, weighing 1 hour after emerging,

Thermal tests:

Glass transition DSC: NF EN ISO 11357-2:2014 -5°C to 180 °C under nitrogen gas
 T_{G1} or Onset: 1st scan at 20 °C/min
 T_{G1} maximum or Onset: 2nd scan at 20 °C/min

Glass transition DTMA: Temperature ramp 0 °C to 180 °C @ 2°C/min under normal atmosphere
NF EN ISO 11357-1:2016 T_G onset G'
ASTM D4065-12 T_G peak G''

Physical tests:

Gardner color: NF EN ISO 4630:2016 Visual method
Refractive index: NF ISO 280:1999
Viscosity: NF EN ISO 3219:1994 Rheometer 50 mm, shear 10 s⁻¹
Density on liquids: ISO 2811-1:2016 Pycnometer
Density on solid: NF EN ISO 1183-3:1999 Helium Pycnometer
Density on foam: NF EN ISO 845:2009
Gel time: Cross $G' G''$ Rheometer CP50 - Shear rate 10 s⁻¹
Green Carbone content: ASTM D6866-16 or XP CEN/TS 16640 Avril 2014

TA: Ambient temperature (20 to 25 °C)

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