

SR 1670 CF

Clear casting epoxy system

Epoxy system designed for the production by casting decorative objects, bottles prototypes, jewellery...

- Very low reactivity allows high thickness without change of colour cast.
- Obtaining a polymer with high clarity, good brightness and colourless.
- Cures at room temperature, if necessary post cure from 40 to 80 °C.
- Almost odourless.
- Excellent impact resistance and thermal shock.

Epoxy resin SR 1670 CF

		SR 1670 CF
Appearance		Liquid
Colour		Clear and colourless*
Viscosity (mPa.s)	15 °C	2 850 ± 570
<i>Rheometer</i>	20 °C	1 560 ± 315
<i>CP 50 mm - Shear rate 10 s⁻¹</i>	25 °C	915 ± 185
	30 °C	560 ± 115
	40 °C	245 ± 50
Density	25 °C	1.552 ± 0.002
Refractive index	20 °C	1.15 ± 0.05
Storage stability		24 month, crystallization free

* Resin is slightly bluish in thick

Hardener SD 7160

		SD 7160
Appearance		Liquid
Colour		Clear and colourless
Reactivity		Slow
Viscosity (mPa.s)	15 °C	180 ± 30
<i>Rheometer</i>	20 °C	125 ± 20
<i>CP 50 mm - Shear rate 10 s⁻¹</i>	25 °C	90 ± 15
	30 °C	70 ± 10
	40 °C	40 ± 8
Density	25 °C	0.99 ± 0.01
Refractive index	20 °C	1.459 ± 0.05
Storage stability		24 month, crystallization free

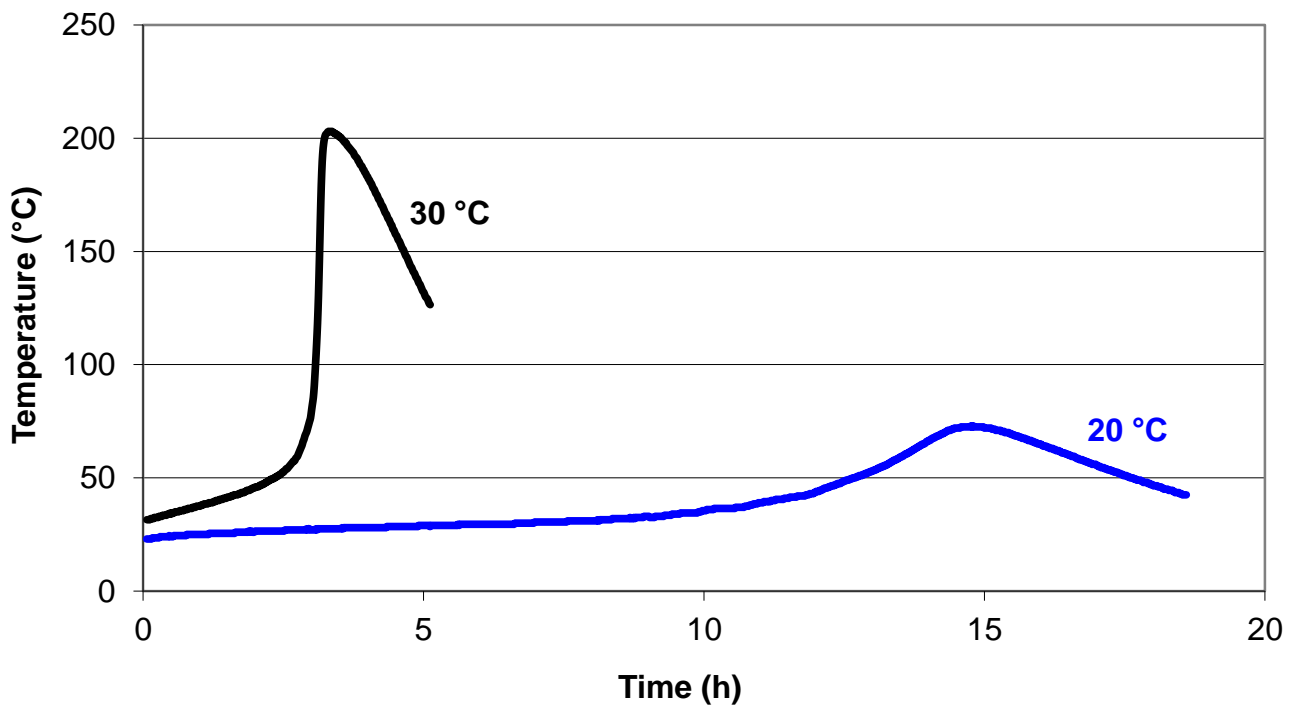
Blends SR 1670 CF / SD 7160

		SR 1670 CF / SD 7160
Weight ratio		100 / 47 g
Volume ratio		100 / 50 ml
Viscosity (mPa.s)		
Rheometer	20 °C	540 ± 110
CP 50 mm - Shear rate 10 s ⁻¹	30 °C	290 ± 60
	40 °C	155 ± 30

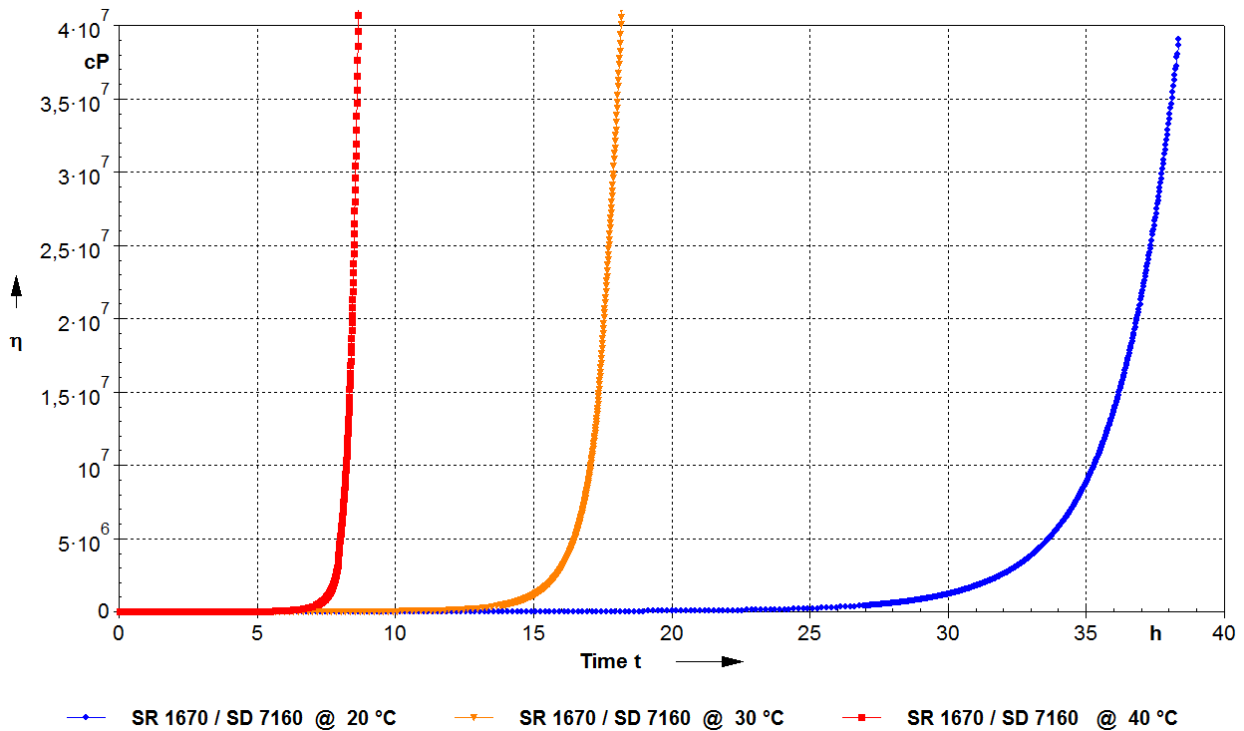
Mass reactivity on 1 000 g mix @ 20 & 30 °C

		SR 1670 CF / SD 7160
Exothermic peak on 1 000 g mix:		
	20°C	73 °C
	30°C	203 °C
Time to reach exothermic peak on 1 000 g mix:		
	20°C	14 h 46 min
	30°C	3 h 18 min
Time to reach 50 °C on 1 000 g mix:		
	20°C	12 h 40 min
	30°C	2 h 20 min

Core temperature on 1 000 g mix @ 20 & 30 °C



Increase of viscosity on a layer of 1 millimeter thick @ 20 °C, 30 °C and 40 °C



Curing time

It depends on the prepared and cast quantity, on the part geometry, mould thermal conductivity and ambient temperature

Both systems are very slow on small casting. In order to reduce the release time, we advise to try several level of temperature during the cure, while controlling the exothermic temperature in the part.

Advised post cure cycle

Let cure at ambient temperature then increase the thermal properties of the system by a post-cure of: 24 hours 40 °C or 8 hours at 40 °C + 16 hours at 60 °C

Propriétés mécaniques sur résine pure

		SR 1670 CF / SD 7160		
Cycles de polymérisation		14 days 23 °C	48 h 23 °C + 24 h 40 °C	48 h 23 °C + 24 h 40 °C + 16 h 60 °C
Tension				
Modulus of elasticity	N/mm ²	2 850	2 850	2 800
Maximum resistance	N/mm ²	59	60	57
Resistance at break	N/mm ²	59	57	55
Elongation at max. load	%	2,9	3,4	3,3
Elongation at break	%	3,0	3,8	3,6
Flexion				
Modulus of elasticity	N/mm ²	2 800	2 920	2 800
Maximum resistance	N/mm ²	89	96	92
Elongation at max. load	%	3.9	4.2	4.4
Elongation at break	%	6.2	8	6.4
Charpy impact strength				
Resilience	kJ/m ²	24	28	21
Glass Transition / DSC				
T _{G1}	°C	56	60	62
T _{G1 max.}	°C	-	-	63

Tests carried out on samples of pure cast resin, without prior degassing, between steel plates.
Measures undertaken according to the following norms:

Tension: ISO 527 - 2
Flexion: ISO 178
Charpy impact strength: NF T 51-035
Shear Strength: ASTM D 732 - 93
Compression: ISO 604
Water absorption: Internal. Polymerization according to cycle, machining, weighing, time spent in distilled water at 70 °C / 48 hours, weighing 1 hour after emerging,

Glass transition DSC: ISO 11357-2: 1999 -5°C to 180 °C under nitrogen gas
T_{G1} or Onset: 1st point at 20 °C/min T_{G1} maximum or Onset: second passage

Glass transition DTMA: ISO 11357-1 - T_G onset G' Temperature ramp 0 °C to 180 °C @ 2°C/min
ASTM D4065 - T_G peak G''

Physical tests according standard:

Gardner color: NF EN ISO 4630 Visual method
Refractive index: NF ISO 280
Viscosity: NF EN ISO 3219 Rheometer 50 mm, shear 10 s⁻¹
Density: NF EN ISO 2811-1 Pycnometer
Gel time: Cross G' G'' Rheometer CP50 - Shear rate 10 s⁻¹
Green Carbone content: ASTM D6866 or XP CEN/TS 16640 Avril 2014

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