

## SR 1690

### Clear casting epoxy system

Epoxy system formulated with highly translucent components, designed for decorative parts, prototype of jewellery where high finish is required.

The very slow reactivity of SR 1690/7160 permits to cast thick sections in one operation, without a change of colour. You obtain a totally water clear polymer.

This epoxy system hardens at room temperature, in order to get the full mechanical properties, a post-cure from 40 to 80°C is advised.

Almost no odour during application.

Excellent resistance to thermal and physical shocks.

### SR 1690 Epoxy resin

		SR 1690
Aspect		Liquid
Colour		Clear
Viscosity (mPa.s)	15 °C	10 000 ± 2 000
Rheometer	20 °C	4 500 ± 900
CP 50 mm	25 °C	2 200 ± 500
Shear rate 10 s <sup>-1</sup>	30 °C	1 200 ± 250
	40 °C	400 ± 80
Density :	20 °C	1.176 ± 0.05
Pycnometer NF EN ISO 2811-1		
Refractive index ISO 280 : 1998		1.572 ± 0.002
Storage stability:		24 months, crystallisation free

### SD xxxx hardeners

		SD 7160	SD 1213
Aspect / colour:		Clear liquid	Clear liquid
Reactivity		Slow	Ultra slow
Viscosity (mPa.s)	15 °C	180 ± 30	100 ± 20
Rheometer	20 °C	125 ± 20	75 ± 20
CP 50 mm	25 °C	90 ± 15	55 ± 15
Shear rate 10 s <sup>-1</sup>	30 °C	70 ± 10	40 ± 10
	40 °C	40 ± 8	25 ± 5
Refractive index ISO 280 : 1998		1.459 ± 0.002	1.456 ± 0.002
Density	20 °C	0.99 ± 0.01	0.98 ± 0.01
Pycnometer NF EN ISO 2811-1			
Storage stability:		24 months, crystallisation free	

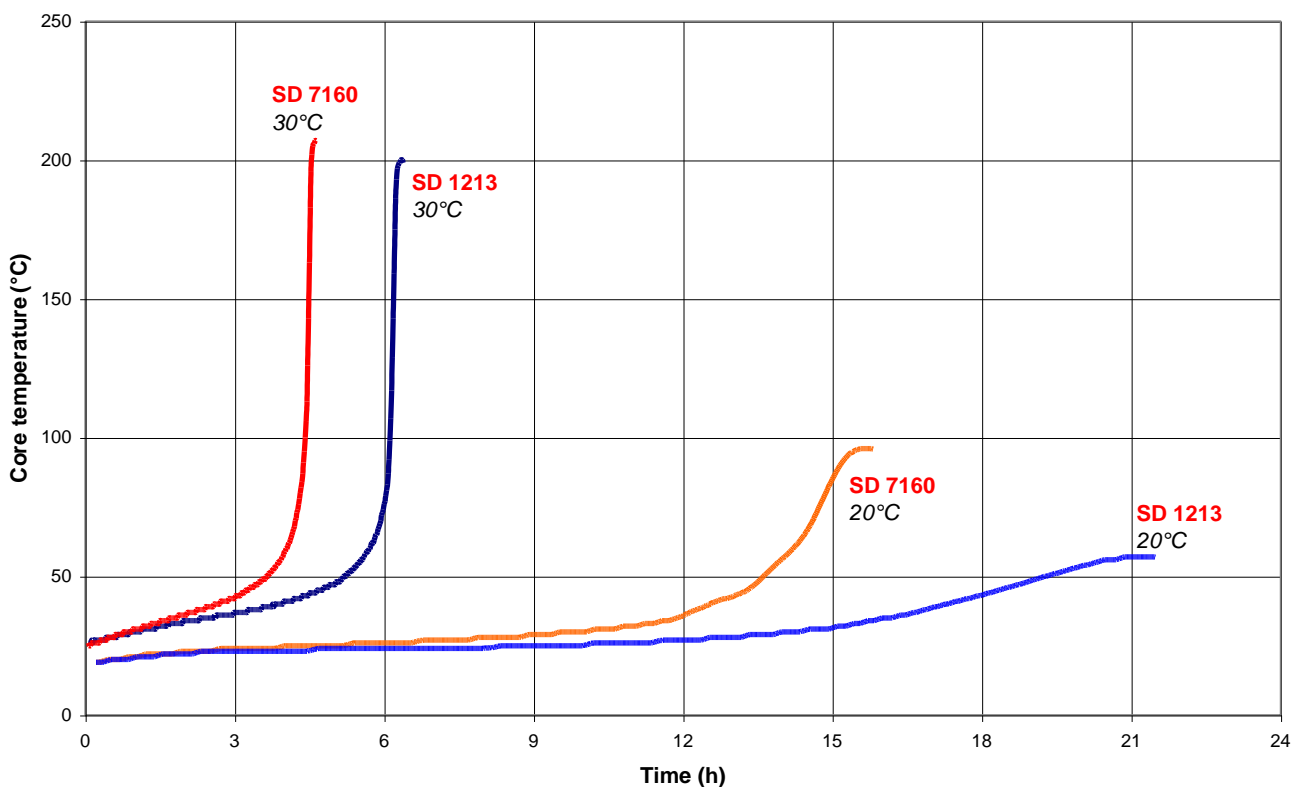
## SR 1690 / SD xxxx mix properties

		SR 1690 / SD 7160	SR 1690 / SD 1213
Weight ratio		100 / 49 g	100 / 49 g
Volume ratio		100 / 57 ml	100 / 57 ml
Viscosité (mPa.s)			
Rheometer	20 °C	800 ± 150	550 ± 100
PP 50 mm	25 °C	500 ± 100	350 ± 70
Shear rate 10 s <sup>-1</sup>	30 °C	300 ± 50	220 ± 40
	40 °C	150 ± 30	100 ± 20

## Mass reactivity on 1 000 g mix

		SR 1690 / SD 7160	SR 1690 / SD 1213
Exothermic peak on 1 000 g mix:			
	20°C	96 °C	57 °C
	30°C	207 °C	200 °C
Time to reach exothermic peak on 1 000 g mix:			
	20°C	15 h 30'	21 h
	30°C	4 h 30'	6 h 20'
Time to reach 50 °C on 1 000 g mix:			
	20°C	13 h 30'	19 h
	30°C	3 h 40'	5 h 10'

## Core temperature on 1 000 g mix



## 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 + 12 hours at 60 °C

## Mechanical properties on pure cast resin

		SR 1690 / SD 7160		
Curing cycles		14 jours 23 °C	48 h 23 °C + 24 h 40 °C	48 h 23 °C + 8 h 40 °C + 12 h 60 °C
<b>Tension</b>				
Modulus of elasticity	N/mm <sup>2</sup>	3 300	3 200	2 900
Maximum resistance	N/mm <sup>2</sup>	66	63	64
Resistance at break	N/mm <sup>2</sup>	66	59	56
Elongation at max. load	%	2.8	2.9	3.5
Elongation at break	%	2.8	2.9	4.8
<b>Flexion</b>				
Modulus of elasticity	N/mm <sup>2</sup>	3 300	3 200	2 900
Maximum resistance	N/mm <sup>2</sup>	103	105	106
Elongation at max. load	%	3.9	4.2	4.8
Elongation at break	%	7.3	9.6	10.2
<b>Charpy impact strength</b>				
Resilience	kJ/m <sup>2</sup>	22	46	51
<b>Glass Transition / DSC</b>				
Tg1	°C	52	62	77
Tg1 max.	°C			83

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

Measures undertaken according to the following norms :

Tension: NF T 51-034

Flexion : NF T 51-001

Charpy impact strength: NF T 51-035

Glass transition DSC : ISO 11357-2 : 1999 -5°C to 180°C under nitrogen gaz

Tg1 or Onset : 1st point at 20 °C/mn

Tg1 maximum or Onset : second passage

## Propriétés mécaniques sur résine pure :

		SR 1690 / SD 1213		
Curing cycles		14 jours 23 °C	48 h 23 °C + 24 h 40 °C	48 h 23 °C + 8 h 40 °C + 12 h 60 °C
<b>Tension</b>				
Modulus of elasticity	N/mm <sup>2</sup>	3020	3000	2900
Maximum resistance	N/mm <sup>2</sup>	56	67	65
Resistance at break	N/mm <sup>2</sup>	54	65	63
Elongation at max. load	%	2.8	3.2	3.4
Elongation at break	%	3.1	3.6	3.8
<b>Flexion</b>				
Modulus of elasticity	N/mm <sup>2</sup>	3150	3300	3020
Maximum resistance	N/mm <sup>2</sup>	96	101	98
Elongation at max. load	%	3.8	3.9	4.4
Elongation at break	%	6	8.8	7.6
<b>Charpy impact strength</b>				
Resilience	kJ/m <sup>2</sup>	10	8.5	7.5
<b>Glass Transition / DSC</b>				
Tg1	°C	46	52	67
Tg1 max.	°C			75

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

Measures undertaken according to the following norms :

Tension: NF T 51-034  
 Flexion : NF T 51-001  
 Charpy impact strength: NF T 51-035  
 Glass transition DSC : ISO 11357-2 : 1999 -5°C to 180°C under nitrogen gaz  
 Tg1 or Onset : 1st point at 20 °C/mn  
 Tg1 maximum or Onset : second passage

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