

## SR *GreenCast* 160 / SD 7160 Clear Casting Resin System



Water clear, low odor epoxy system, designed for decorative parts and jewelry prototyping, where a high transparency finish is required.

### Description

**SR *GreenCast* 160** system exhibits very slow reactivity that allows casting of thick sections in one operation, without a change in color. With almost no odor during application, it hardens at room temperature, but in order to get the full mechanical properties (excellent resistance to thermal and physical shocks,) a post-cure from 40 to 80 °C is advised.

		SD 7160
Reactivity level		Slow
Initial viscosity (mPa.s)	@ 20 °C	360
	@ 30 °C	250
Pot Life (500 g)	@ 20 °C	12 h 00
	@ 30 °C	06 h 00
Mixing ratio	By weight	100 / 42
	By volume	100 / 50
Density		1,1307
TG1 max onset	°C	61
Gel Time (on 6mm)	@ 20 °C	26 h 00
	@ 30 °C	23 h 00
Demold time (on 6mm)	@ 20 °C	60 h 00
	@ 30 °C	48 h 00

**SR GreenCast 160** resin is out coming from the latest innovations in bio-based chemistry. **SR GreenCast 160** resin is produced with a high content of carbon from plant origin. The bio-based Carbon content of our 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.

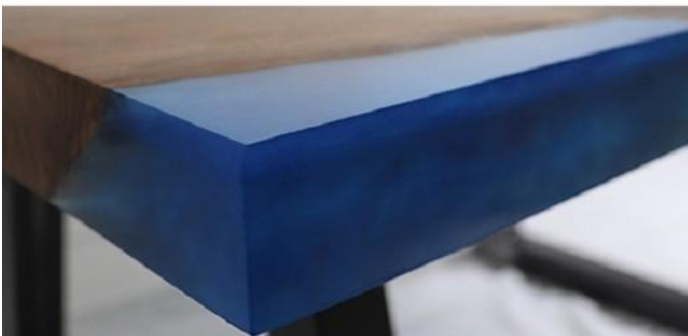
**SR GreenCast 160** is an epoxy resin which has 37% of its molecular structure coming from plant origin.

This percentage is 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.

**SR GreenCast 160** 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<sup>(1)</sup> at 20 °C.
- Obtaining a high clarity polymer, colourless and with good brightness.
- Cures at room temperature
- Almost odourless.
- 2:1 ratio and very easy mixing.
- Excellent degassing.
- Excellent impact and thermal shock resistance.
- Good UV resistance

*(1) castings made from thermally insulating materials should not exceed 5 cm in thickness at 20 ° C.*



## Epoxy resin SR Green Cast 160

Appearance		liquid
Color		colourless
Gardner color		≤ 0
Viscosity (mPa.s)	@ 15 °C	1480 ± 300
	@ 20 °C	850 ± 170
	@ 25 °C	520 ± 105
	@ 30 °C	330 ± 70
	@ 40 °C	210 ± 42
Density	@ 20 °C	1,1700
Storage (months)	@ Ta	24

## Hardener(s)

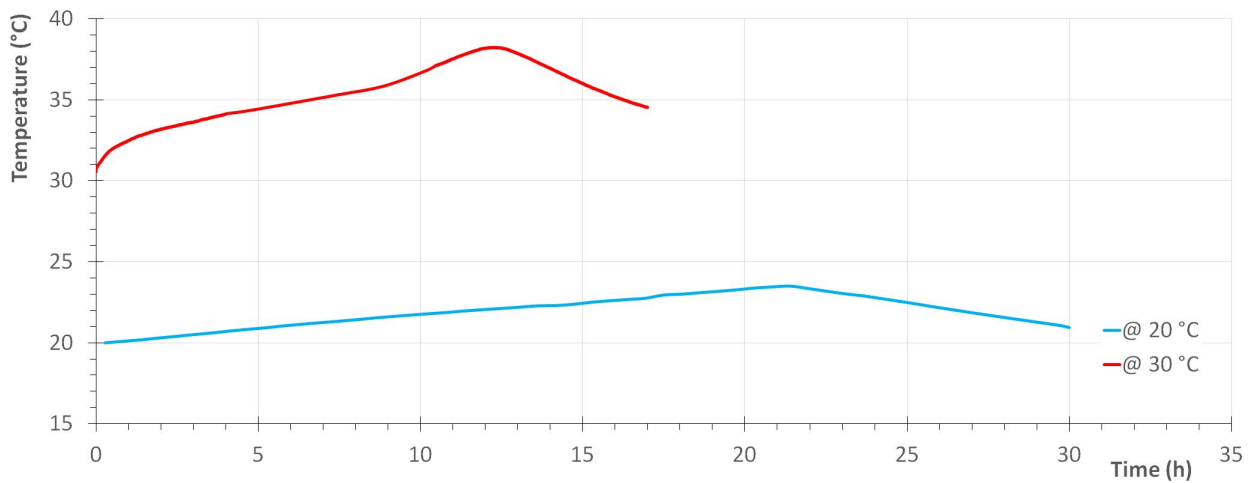
		SD 7160
Appearance		liquid
Color		colourless
Gardner color		≤ 1
Pt/Co Color Index		≤ 50
Reactivity level		Slow
Viscosity (mPa.s)	@ 15 °C	180 ± 30
	@ 20 °C	125 ± 20
	@ 25 °C	90 ± 15
	@ 30 °C	70 ± 10
Density	@ 20 °C	0,9700
Storage (months)	@ Ta	24

### Mixe(s) SR GreenCast 160 / SD 7160

		SD 7160
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 <sup>-1</sup>	@ 30 °C	250

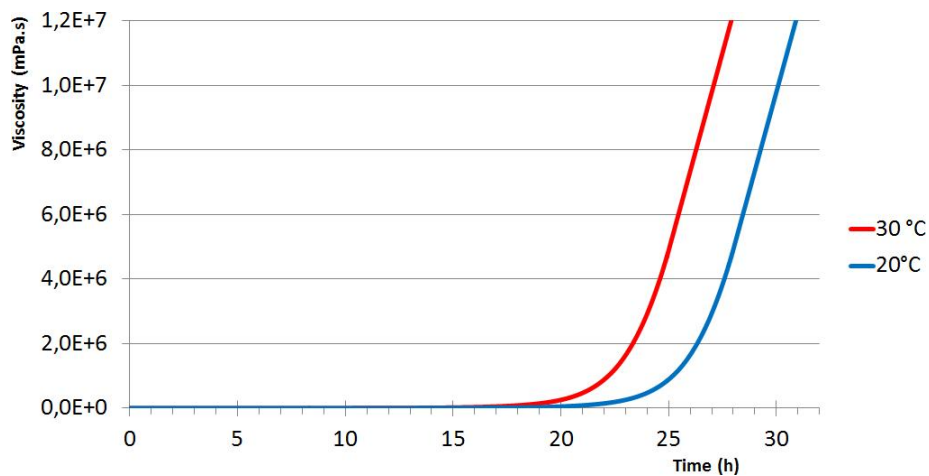
### Reactivity for 500 g

	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 :

		SR Green Cast 160 / SD 7160		
Curing cycles		7 days @ TA	48 h @ TA + 24 h @ 40 °C	48 h @ TA + 16 h @ 60 °C
<b>Tensile</b>				
Modulus	N/mm <sup>2</sup>	620	1 500	2 150
Maximum strength	N/mm <sup>2</sup>	11,5	26	38
Breaking Strength	N/mm <sup>2</sup>			
Elongation at max strength	%	5,9	3,3	3,1
Elongation at break	%	50	27,8	19
<b>Flexion</b>				
Modulus	N/mm <sup>2</sup>	780	1 200	1 940
Maximum strength	N/mm <sup>2</sup>	20	32	59
Breaking Strength	N/mm <sup>2</sup>			
Elongation at max strength	%	6,2	5,5	4,9
Elongation at break	%	15	15	15
<b>Shear</b>				
Breaking Strength	N/mm <sup>2</sup>	17,5	25	30
<b>Compression</b>				
Modulus	N/mm <sup>2</sup>			
Yield strength	N/mm <sup>2</sup>	30	25	65
Offset compression yield	%	12,1	10,8	10,7
<b>Charpy impact strength</b>				
Resilience	kJ/m <sup>2</sup>	84	67	58
<b>DSC glass transition</b>				
TG1 onset	°C	45	50	58
TG1 max onset	°C			61
<b>DTMA glass transition</b>				
TG tan delta	°C			
TeiG onset G'	°C			
TmG midpoint G'	°C			
TefG endpoint	°C			
TG peak G''	°C			

**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,

Bonding Strength Double lap shear:	ASTM D3528-96
	ADH = adhesive failure
	COH = cohesive failure
	TLC = thin-layer cohesive failure
	FT = fiber-tear failure.
	LFT = light-fiber-tear failure

**Thermal tests:**

Glass transition DSC:	NF EN ISO 11357-2:2014 -5°C to 180 °C under nitrogen gas
	T <sub>G1</sub> or Onset: 1 <sup>st</sup> scan at 20 °C/min
	T <sub>G1</sub> maximum or Onset: 2 <sup>nd</sup> 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 <sub>G</sub> onset G'
	ASTM D4065-12 T <sub>G</sub> 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 <sup>-1</sup>
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 <sup>-1</sup>
Green Carbone content:	ASTM D6866-16 or XP CEN/TS 16640 Avril 2014	

TA:	Ambient temperature (20 to 25 °C)
NC:	No information Communicated
NB:	No Breaking (maximum flexion deformation : 15 %)

Table 1st page:

Pot Life:	Time to reach 50 °C or time limit for use
Gel time:	Intersection of tangents on the viscosity curve of 1 mm thick layer
Release time:	Time required to obtain sufficient mechanical strength to release
Minimum Vacuum Time:	Time in which vacuum can be applied (25000 mPa.s)
Maximum Vacuum time:	Limit time below which a vacuum can be applied (G'G'' crossing)
Optimum Infusion time:	Time to reach 400 mPa.s
Max Infusion Time:	Time to reach 25000 mPa.s
Vacuum cut-off time:	Time to reach G'G'' crossover + 20%

**LEGAL NOTES:**

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