

SR GreenPoxy 56 / SZ 8525 Clear epoxy system for compression moulding

High bio-based carbon content

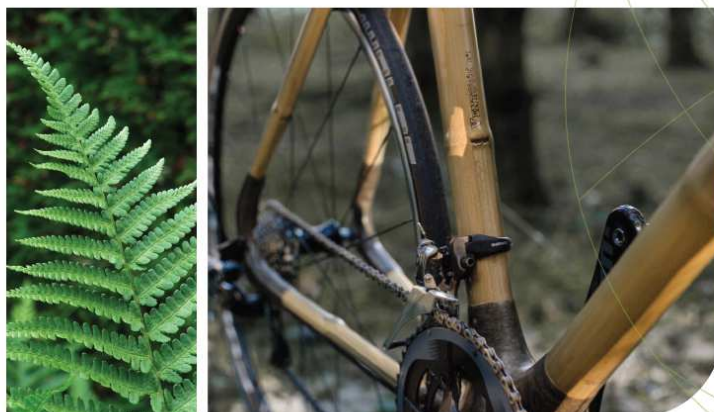


SR GreenPoxy 56 resin is out coming from the latest innovations in bio-based chemistry. **SR GreenPoxy 56** resin is produce with a high content of carbon from plant origin. The bio-based Carbon content of our system is certified by an independent laboratory using Carbon 14 measurements (ASTM D6866 or XP CEN/TS 16640)


This is a significant technological advance on the following points:
Clarity, color, performances and guarantees of industrial tonnages availability.

SR GreenPoxy 56 is an epoxy resin which has up to 56% 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 GreenPoxy 56 / SZ 8525 epoxy system:
Clear laminate and final aspect.
High mechanical properties.
Good wetting out properties resulting in a low resin consumption.
Recommended cycle of 10 min at 100°C
Mix bio-based carbon content of about 45%.




Resin SR GreenPoxy 56:

Aspect / colour		Clear liquid
Storage		2 years, crystallisation free
Viscosity (mPa.s \pm 20 %)		
	@ 15 °C	2500
	@ 20 °C	1400
	@ 25 °C	800
	@ 30 °C	500
	@ 40 °C	250
 % bio-based Carbon content		50 - 58
Color (Gardner)		2 max
Density (\pm 0.005)	@ 20 °C	1.198
Refractive index (\pm 0.5%)	@ 25 °C	1.5350

Hardener SZ 8525:

Aspect / Color		Liquid / Light yellow
Gardner color		3 maximum
Reactivity level		Standard
Density	@ 20 °C	0.94 \pm 0.01
Bio-based Carbon	%	0
Viscosities	@ 20 °C	33
(m.Pas \pm 20 %)	@ 30 °C	25
	@ 40 °C	17
	@ 50 °C	11
	@ 60 °C	8
	@ 70 °C	6
	@ 80 °C	4
	@ 90 °C	3
Refractive index	@ 25 °C	1.4908
(\pm 0.5 %)		

SR GreenPoxy 56 / SZ 8525 mix properties

Weight ratio		100 / 25
Volume ratio		100 / 32
		
% mix bio-base Carbon content		40 - 50
Mix viscosity (mPa.s ± 20 %)	@ 20 °C	1 160
	@ 30 °C	420
	@ 40 °C	155
	@ 50 °C	120
	@ 60 °C	90
	@ 70 °C	50
	@ 80 °C	50
	@ 90 °C	30
	@ 100 °C	30

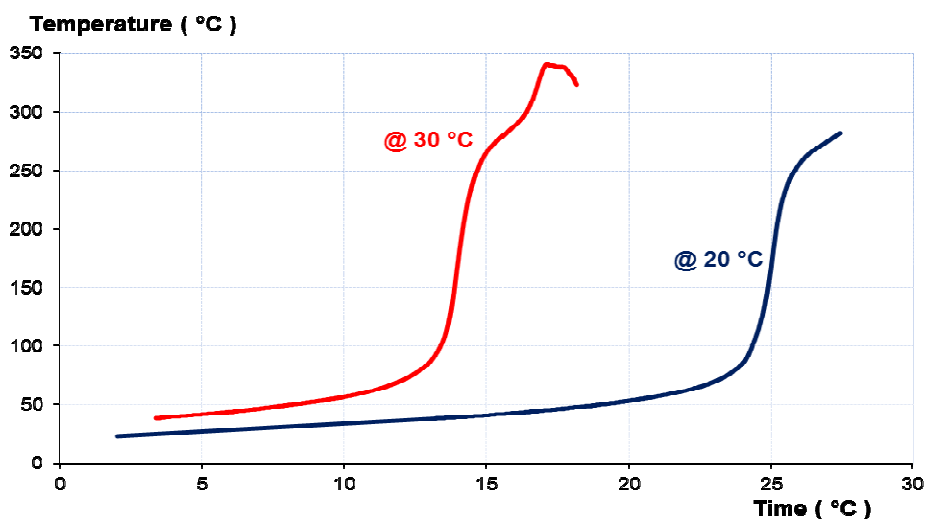
Reactivity – mass exotherm

NB: **SR GreenPoxy 56 / SZ 8525 is very reactive.**

Make sure to avoid exothermic mass reaction that can generates high temperatures and fumes.

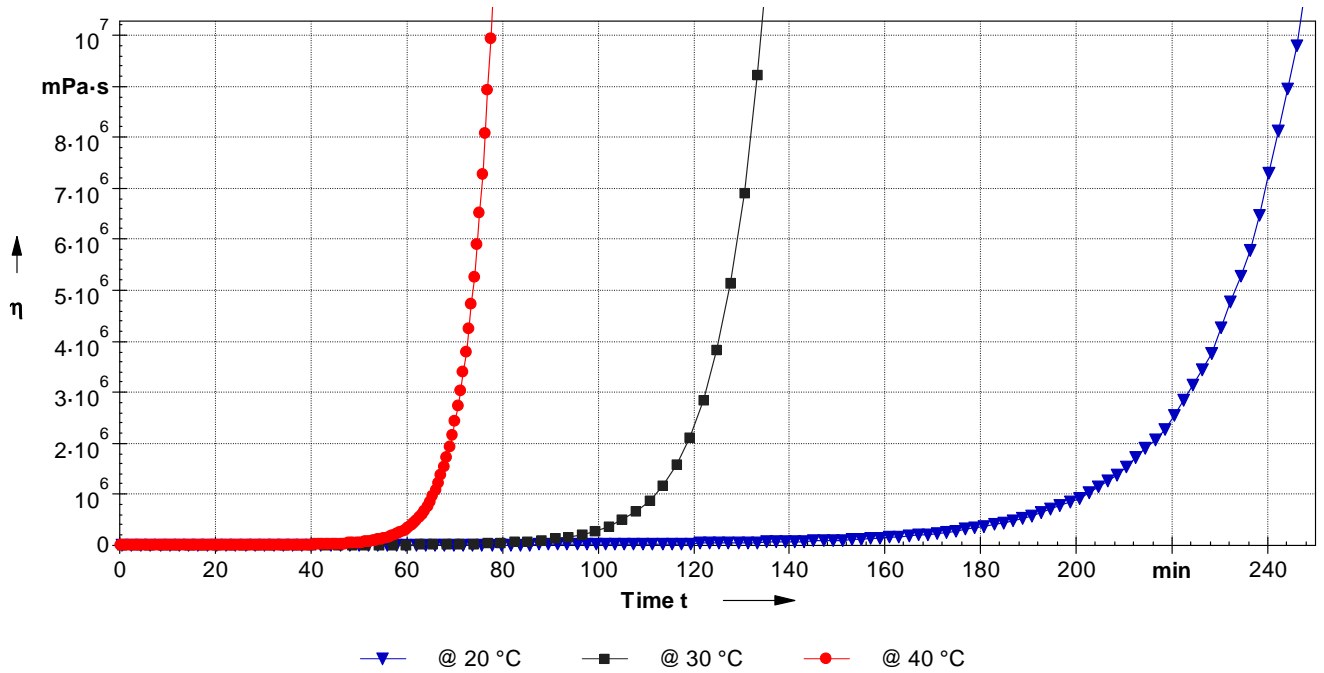
Exothermic peak on 500 g mix :	
@ 20 °C	280
@ 30 °C	340
Time to reach exothermic peak on 500 g mix :	
@ 20 °C	27'
@ 30 °C	17'
Time to reach 50 °C on 500 g mix :	
@ 20 °C	19'
@ 30 °C	8'

Exotherms on 500 g mix @ 20 and 30°C:

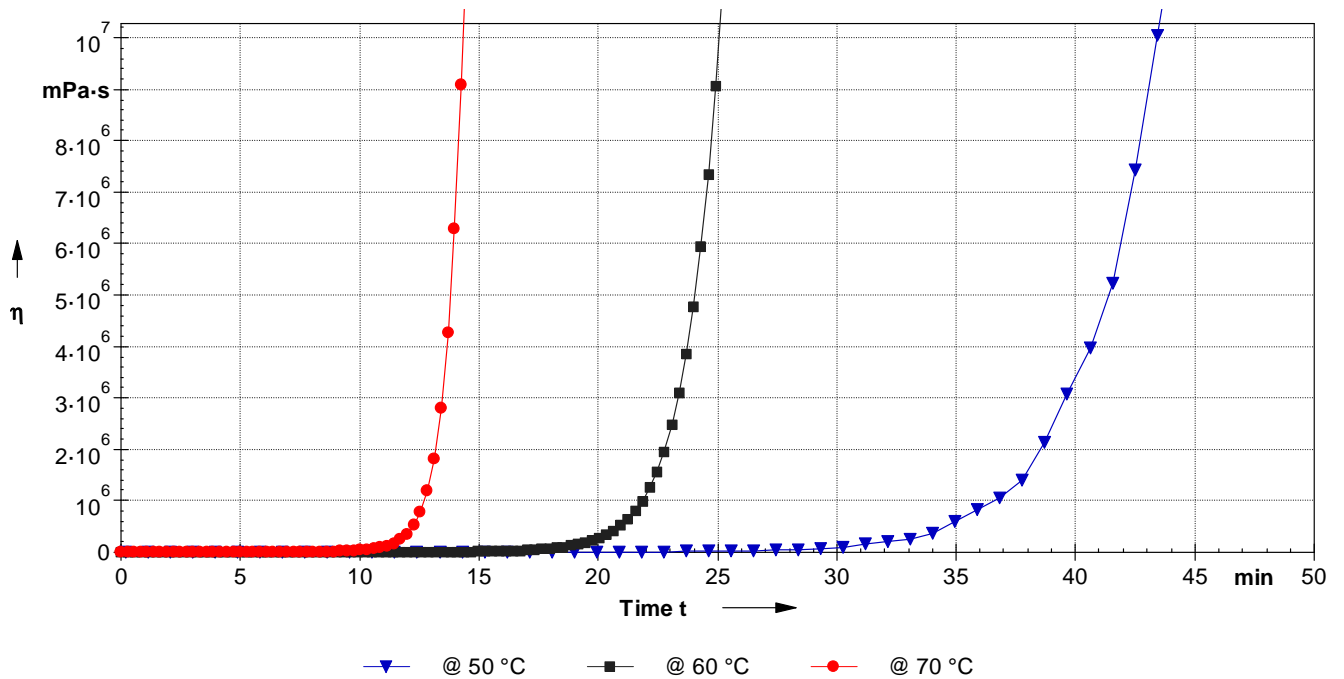


Reactivity – 1 mm film viscosity evolution

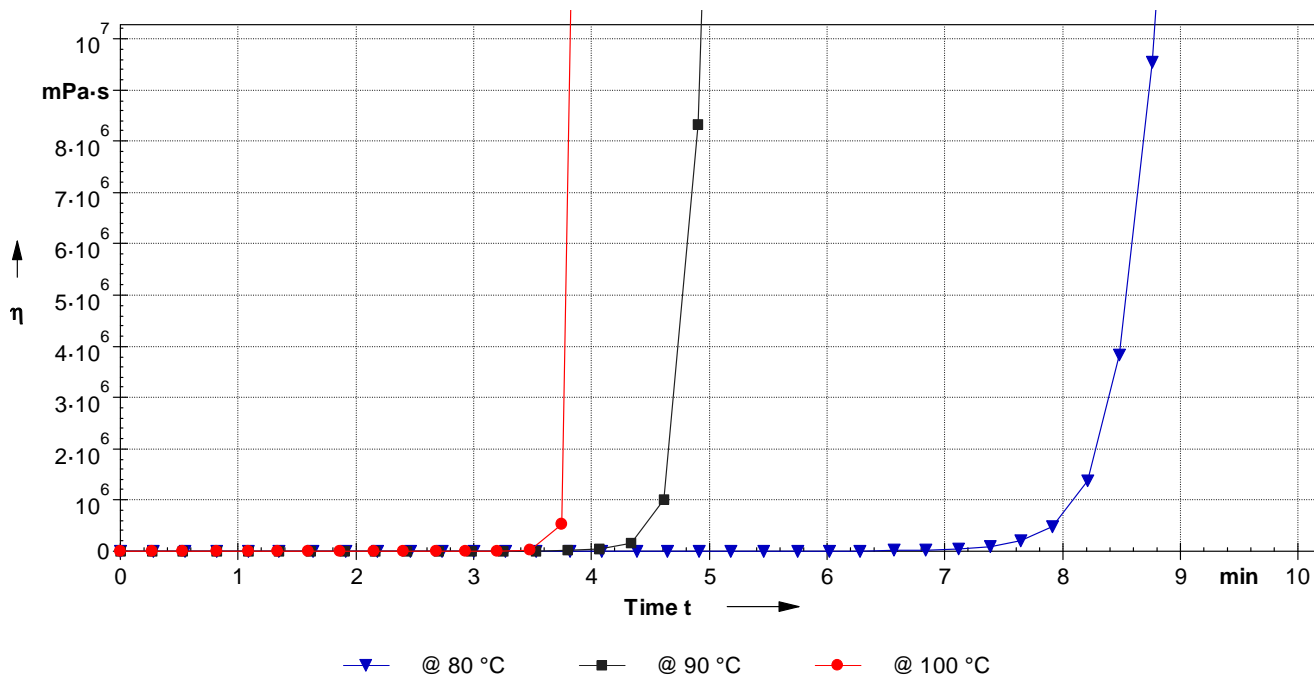
@ 20 – 30 – 40 °C



@ 50 – 60 – 70 °C



@ 80 – 90 – 100 °C



Gel time (min) on 1 mm thickness:

@ 20 °C	240'
@ 30 °C	120'
@ 40 °C	65'
@ 50 °C	43'
@ 60 °C	24'
@ 70 °C	13'
@ 80 °C	8.5'
@ 90 °C	5'
@ 100 °C	4'

**Time of Cure (min) / Tg onset by DSC.
Process @ 60, 70, 80, 90 and 100 °C**

Curing time	Tg onset DSC @ 60 °C	Tg onset DSC @ 70 °C	Tg onset DSC @ 80 °C	Tg onset DSC @ 90 °C	Tg onset DSC @ 100 °C
5'					54
7'				40	76
8'				48	82
9'				58	88
10'				68	92
11'			32	74	95
12'			38	78	98
13'			44	82	101
14'			50	86	104
15'			58	89	106
17'			69	95	110
20'			81	102	114
25'			89	106	116
35'		67	96	109	119
45'	54	82	100	109	120
1 h	71	89	103	110	121
2 h	87	97	107	111	122
4 h	88	98	108	114	124
8 h	89	99	109	116	124
16 h	90	100	110	118	124

	Not recommended, insufficient crosslinking
	Good mechanical

Caution: Data measured without the equivalent heating time to reach the curing temperature and without the time necessary for the mold to cool down.

Mechanical properties on pure casted resin

		SR GreenPoxy 56 / SZ 8525	SR GreenPoxy 56 / SZ 8525	SR GreenPoxy 56 / SZ 8525
Curing cycle		1 day AT + 16 h 50 °C	1 day AT + 8 hrs @ 60 °C	1 day AT + 2 hrs @ 100 °C
Tension				
Modulus of elasticity	N/mm ²	3 700	3 250	3 150
Maximum resistance	N/mm ²	74	75	78
Resistance at break	N/mm ²	74	72	77
Elongation at max. load	%	2.6	3.6	5.1
Elongation at break	%	2.6	4.8	5.1
Flexion				
Modulus of elasticity	N/mm ²	3 600	3 500	3 100
Maximum resistance	N/mm ²	128	128	121
Elongation at max. load	%	4.9	5.7	6.4
Elongation at break	%	5.8	8.5	6.9
Shear strength				
Shear stress	N/mm ²	55	55	55
Compressive				
Compressive yield strength	N/mm ²	125	127	120
Offset compressive yield	%	6	7	8
Charpy impact strength				
Resilience	kJ/m ²	17	19	18
Glass transition				
Tg1 onset	°C	76	87	120
Tg1 onset maximum	°C			117

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

Compressive NFT51-101

Water absorption: Internal. Polymerisation 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 gaz

Tg1 or Onset : 1st point at 20 °C/mn Tg1 maximum or Onset : second passage

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 10s⁻¹

Density: NF EN ISO 2811-1 Pycnometer

Gel time : Cross G' G'' / rheometer CP50 - Shear rate 10 s⁻¹

GreenCarbon content: ASTM D6866 or XP CEN/TS 16640 Avril 2014

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