SR *Green**Poxy* 80 / SZ 852x EVO

Hot press biobased epoxy system

SR *GreenPoxy* 80 / SZ 852x EVO** is a highly biobased epoxy system, **SR *Green**Poxy* 80** contains 80 % of biobased carbons. It has high reactivity for short curing cycles and is specially designed for hot press applications (90 – 120 °C). Designed for outdoors composite equipment, it has very good adhesion on various materials.

		SR *Green**Poxy* 80	
		SZ 8525 EVO	**SZ 8526 EVO**
Reactivity		Fast	Very fast
Initial viscosity (mPa.s)	20 °C	2 170	2 700
	80 °C	76	68
Mixing ratio	By weight	100 / 25	100 / 23
T_g2 (°C)		100	103
Gel time	20 °C	4 h 35	3 h 55
	80 °C	4 min	4 min

SICOMIN
31 Avenue de la Lardière
13 220 Châteauneuf les Martigues
France

+33 (0)4 42 42 30 20
info@sicomin.com

www.sicomin.com

Resin

		SR GreenPoxy 80
Aspect and color		Cloudy liquid
Gardner color		< 3
Viscosity (mPa.s)	15 °C	3 500
	20 °C	2 100
	25 °C	1 300
	30 °C	830
Density (kg/L)	20 °C	1.21
Biobased carbon content (%)		80
Shelf life	23 °C	24 months

Hardeners

		SZ 8525 EVO	SZ 8526 EVO
Reactivity		Fast	Very fast
Aspect and color		Yellow liquid	
Gardner color		< 3	< 4
Viscosity (mPa.s)	15 °C	66	85
	20 °C	47	60
	25 °C	35	45
	30 °C	27	33
Density (kg/L)	20 °C	0.94	0.94
Shelf life	23 °C	12 months	12 months

Mixtures SR *Green*Poxy 80 / SZ 852x EVO

		SR *Green*Poxy 80	
		SZ 8525 EVO	SZ 8526 EVO
Mixing ratio	By weight	100 / 25	100 / 23
Initial viscosity (mPa.s)	20 °C	2 170	2 700
	80 °C	76	68
Biobased carbon content (%)		64*	64

*Calculated value

Reactivity of 100 g mixtures

Temperature: 20 °C	SR *Green*Poxy 80	
	SZ 8525 EVO	SZ 8526 EVO
Pot life	20 – 24 min	18 – 22 min
Maximum temperature (°C)	216	221 °C
Time to reach exothermic peak	34 min	30 min

Reactivity of 1 mm thickness film

		SR *Green*Poxy 80	
		SZ 8525 EVO	SZ 8526 EVO
Gel time	20 °C	4 h 35	3 h 55
	80 °C	4 min	4 min

Optimal curing temperature: 100 °C

Post-curing

The mechanical properties on an epoxy system can be optimized through the implementation of a post-curing cycle. The Sicomin laboratory uses predefined cycles to create technical data sheets and facilitate the comparison of different systems. These experimental cycles can be adapted to the specific target application, taking into account the following parameters:

- Selected epoxy system (T_g2)
- Available heating methods
- Dimensions and sampling of the piece
- Nature of the tooling (thermal conductivity of the material)

Many system can provide good mechanical properties after curing at room temperature (>18 °C) for 24 to 48 hours before demolding. However, mechanical properties improve rapidly with a slightly higher temperature, around 40 °C, for several hours.

Epoxy systems with high T_g and slow hardeners imperatively require post-curing at higher temperature. The post-curing can start immediately after the exothermic peak, but it can also begin later, after the assembly of different components and before finishing operations. If the nature of the models and tooling is not suitable for high temperatures, we recommend carrying out the initial steps up to a maximum admissible temperature, then, after cooling and demolding, continuing the cycle with suitable former.

For a conventional epoxy system, we recommend a step-by-step cycle of 20 °C each for a duration of 4 hours.

Example for an epoxy system with a T_g2 of 100 °C:

4 h at 40 °C + 4 h at 60 °C + 4 h at 80 °C + cooling at room temperature before demolding.

There are many epoxy systems with short, high temperature curing cycles that do not fit into this post-curing scheme (pultrusion, hot press, pre-preg). For these systems, the initial curing achieves maximum mechanical performance without post-curing.

We invite you to contact our technical department for any questions on this subject.

Mechanical properties on cast resin

		SR *Green*Poxy 80	
		SZ 8525 EVO	SZ 8526 EVO
Post-curing cycle*		8 h 80 °C	
Tensile			
Modulus	N/mm²	3 450	3 600
Maximum strength	N/mm²	69	72
Breaking strength	N/mm²	69	72
Elongation at max. strength	%	4.4	3.2
Elongation at break	%	4.4	3.2
Flexion			
Modulus	N/mm²	3 300	3 400
Maximum strength	N/mm²	118	129
Breaking strength	N/mm²	117	128
Elongation at max. strength	%	6.2	5.6
Elongation at break	%	6.8	5.9
Shear			
Breaking strength	N/mm²	54	56
Compression			
Yield strength	N/mm²	102	120
Offset compression yield	%	22.0	23.0
Charpy impact strength			
Resilience	kJ/m²	27	20
Glass transition			
T_g1	°C	100	103
T_g2	°C	100	103

*These post-curing cycles are applied after a 24 hour ambient temperature hardening period, allowing to surpass gel point and the exothemic peak.

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

Measurements are carried out following norms:

Physical properties

Gardner color	*NF EN ISO 4630*
Viscosity	*NF EN ISO 3219 - Rheometer, geometry cone/plate 50 mm - 2 ° at 10 s^{-1}*
Liquid density	*ISO 2811-1 - Pycnometer*
Powder density	*NF EN ISO 1183-3 – Helium pycnometer*
Foam density	*NF EN ISO 845*
Biobased carbon content	*ASTM D68166-16 – Some values are theoretically calculated*

Reactivity

Gel time	*Time sweep G' = G''- Rheometer, geometry plate/plate 50 mm*
Pot life	*Mean time to reach 50 °C or limit time for use*

Thermal properties

Glass transition	*NF EN ISO 11357-2 - Ramp from -5 to 180 °C at 20 °C/min* *The T_g values are recorded at the midpoint using the tangent method.* *T_g1 : 1er pass* *T_g2 : 2nd pass*

Mechanical properties

Tensile	*ISO 527-2*
Flexion	*ISO178*
Compression	*ISO 604 ou NF EN ISO 844 (foams)*
Charpy impact strength	*NF EN ISO 179-1*
Shear	*ASTM D732-17 (Punch tool)*
Toughness	*ISO 13586:2000*