SR 1280 / SZ 851x

Ultra slow systems @ room temperature
Fast curing from 60 °C / Tg > 140 °C

- Blend with liquid resin like SR 1280, the hardeners SZ 851x gives ultra slow systems at ambiant but very fast curing @ 60 – 80 °C.
- The initial color of mixes are very clear resin. The color change during the cure and with the reticulation level since a dark brown color
- Excellent temperature resistance
- This system should be well adapted for tooling or industrial parts working up to 120 °C

Epoxy resin SR 1280 :

Appearance		Viscous liquid
Colour		Clear to yellow, Gardner < 2
Chemical nature		Modified epoxy resin based on bisphenol A / epichlorhydrine polymer
Storage		Shelf life : 2 years @ 18 – 25°C Can crystallize at low temperature or after a long storage.
Density (kg/l) Picnometer NF EN ISO 2811-1		1.159 ± 0.005
Viscosity (mPa.s) Rheometer CP 50 mm Shear rate 10 s^{-1}	@ 15 °C @ 20 °C @ 25 °C @ 30 °C @ 40 °C	6380 ± 1 270 3240 ± 650 1780 ± 360 1040 ± 210 410 ± 80

Hardeners SZ 851x

		SZ 8511	SZ 8513
Appearance / colour		Light yellow liquid	Light yellow liquid
Reactivity		Ultra slow	Ultra slow
Viscosity (mPa.s) Rheometer CP 50 mm Shear rate 10 s^{-1}	@ 15 °C @ 20 °C @ 25 °C @ 30 °C	48 ± 10 35 ± 7 26 ± 5 21 ± 4	56 ± 6 41 ± 8 31 ± 6 24 ± 5
Density Picnometer ISO 2811-1	@ 20 °C	1.000 ± 0.005	1.000 ± 0.005
Refractive Index	@ 25 °C	1.4653 ± 0.002	1.4906 ± 0.002

SR 1280 / SZ 851x Mixes :

		SR 1280 / SZ 8511	SR 1280 / SZ 8513
Viscosities (m.Pas ± 20 %) Rheometer CP 50 mm Shear rate 10 s^{-1}	@ 20 °C @ 25 °C @ 30 °C @ 40 °C	2400 ± 480 1600 ± 320/ 750 ± 150 350 ± 70	2500 ± 500 1650 ± 320 940 ± 190 500 ± 100
Quantity by weight		100 g / 9 g	
Quantity by volume		100 ml / 10 ml (10 / 1)	

Visual control of polymerisation:

Translucent	Orange	Brown
Color of the blend @ ambiant	Color after cure @ 60- 80 °C	Color after cure @ 100 °C

Gel time on 1 mm film thickness (hrs)

	SR 1280 / SZ 8511	SR 1280 / SZ 8513
@ 20 °C	15	11
@ 30 °C	12	7
@ 40 °C	6	4

Mechanical properties of pure resin

		SR 1280 / SZ 8511		SR 1280 / SZ 8513	
Cure Schedule →		16 h 25 °C + + 4 h 60 °C + 4 h 80 °C	16 h 25 °C + + 4 h 60 °C + 4 h 80 °C + 2 h 100 °C + 2 h 120 °C	16 h 25 °C + + 4 h 60 °C + 4 h 80 °C	16 h 25 °C + + 4 h 60 °C + 4 h 80 °C + 2 h 100 °C + 2 h 120 °C
Tensile					
Modulus of elasticity	N/mm^2	3000	2500	3000	2700
Maximum resistance	N/mm^2	73	54	65	53
Resistance at break	N/mm^2	73	53	65	53
Elongation at max. resistance	%	3.4	2.5	2.5	2.5
Elongation at break	%	3.4	2.5	2.5	2.5
Flexion					
Modulus of elasticity	N/mm^2	3100	2700	3160	2700
Maximum resistance	N/mm^2	120	100	115	100
Elongation at max. resistance	%	6.2	6.2	5.2	5.1
Elongation at break	%	7.0	7.0	5.3	5.1
Charpy impact strength					
Resilience	KJ/m^2	13	14	8	9
Glass Transition / DSC					
Tg 1	°C	109	129	107	138
Tg 1 max	°C		143		155

Tests carried out on samples of pure cast resin, without prior degasing, betwween steel plates.
Measures undertaken according to Afnor normes :

Tension:	NF T 51-034
Flexion :	NF T 51-001
Choc Charpy:	NF T 51-035
Glass transition DSC :	Onset - Tg1: 1st point @ 20 °C / mn, Tg 1 max.: 2nd run @ 180 °C under nitrogen gaz ISO 11357-2

Mechanical properties of laminates based on SR 1280 resin

Systems		SR 1280 / SZ 8511	
Curing cycles →		24h @ 25 °C + 4h @ 60 °C + 4 h @ 80 °C	24h @ 25 °C + 4h @ 60 °C + 4 h @ 80 °C + 2h @ 100 °C + 2h @ 120 °C
Laminate			
Reinforcement		Twill E Glass 300 g /m²	
Number of layers		15	
Glass content ratio by weight (Wf)		75 %	
Flexion			
Modulus of elasticity	N/mm^2	23 510	24 740
Maximum resistance	N/mm^2	613	665
Elongation at maximum load	%	2.8	3.0
Shear strength			
Shear stress	N/mm^2	53	50
Charpy impact strength	KJ/m^2	204	226
Glass transition			
Tg 1	°C	108	128
Tg1 max.	°C		143

Tests carried out in accordance with the following norms:

Flexion :	NF T 57-105
Shear:	NF T 57-104
Charpy Impact Strength:	NF T 57-108
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
Water absorption:	Internal. Polymerisation according to cycle, machining, weighting, time spent in distilled water at 70 °C / 48 hours, weighting 1 hour after emerging, drying 24 h at 40°C, weighting, mechanical tests on 10 samples
Reinforcement 3300:	Twill 2/2 E Glass, weight 300 g/m²