

SR *InfuGreen* 810 / SD 882X **Green Epoxy systems for Injection and Infusion**



InfuGreen 810 is a two-component epoxy system. It has been specially formulated for resin transfer processes, such as injection or infusion.

- This system has a very low viscosity at ambient temperature.
- Different hardeners allow the production of small to very large parts.
- Cured system gives a temperature resistance up to 100 °C (Tg onset)

SR InfuGreen 810 Epoxy resin is produced with about 38 % of carbon from plant origin and has a lower environmental impact than standard Epoxy systems.

The bio-based Carbon content of our resin is certified by an independent laboratory using Carbon 14 measurements (ASTM D6866 or XP CEN/TS 16640).

This percentage is function of the carbon origin contained in the epoxy molecule.

SR InfuGreen 810 is DNV-GL "Ships classification" approved with hardeners SD 8822 and 8824.



Epoxy resin SR InfuGreen 810

Appearance		liquid
Color		colourless
Gardner color		≤ 1
Viscosity (mPa.s)	@ 15 °C	2500 ± 500
	@ 20 °C	1350 ± 250
	@ 25 °C	830 ± 170
	@ 30 °C	500 ± 100
	@ 40 °C	NC ± NC
Density	@ 20 °C	1,1600
Refractive index	@ 25 °C	1,5491 ± ,002
% Bio-based Carbon content		0 ± 4
Storage (months)	@ Ta	24

Hardener(s)

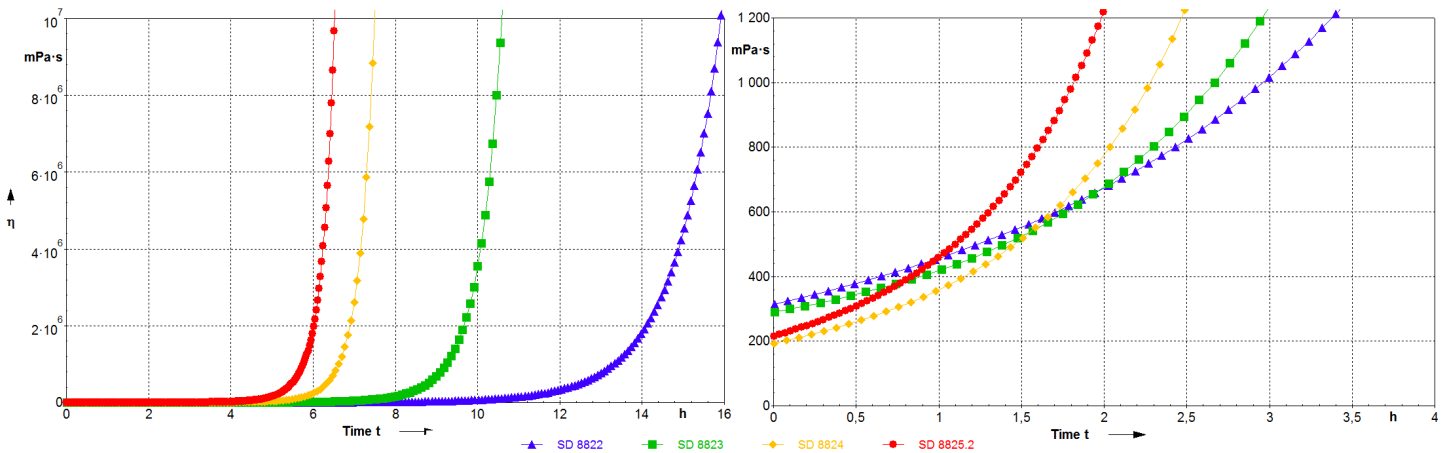
		SD 8824	SD 8823	SD 8822
Appearance		liquid	liquid	liquid
Color		colourless	light yellow	colourless
Gardner color		≤ 4	≤ 3	≤ 3
Reactivity level		Standard	Medium	Slow
Viscosity (mPa.s)	@ 15 °C	7 ± 2	12 ± 2	26 ± 5
	@ 20 °C	6 ± 2	9 ± 3	20 ± 4
	@ 25 °C	5 ± 2	8 ± 3	16 ± 3
	@ 30 °C	4 ± 2	7 ± 2	13 ± 3
			NC ± NC	
Density	@ 20 °C	0,9440	0,9420	0,9370
Refractive index	@ 25 °C	1,498 ± ,002	1,4844 ± ,002	1,471 ± ,002
Storage (months)	@ Ta	24	24	24

Mixe(s) SR InfuGreen 810 / SD 882x

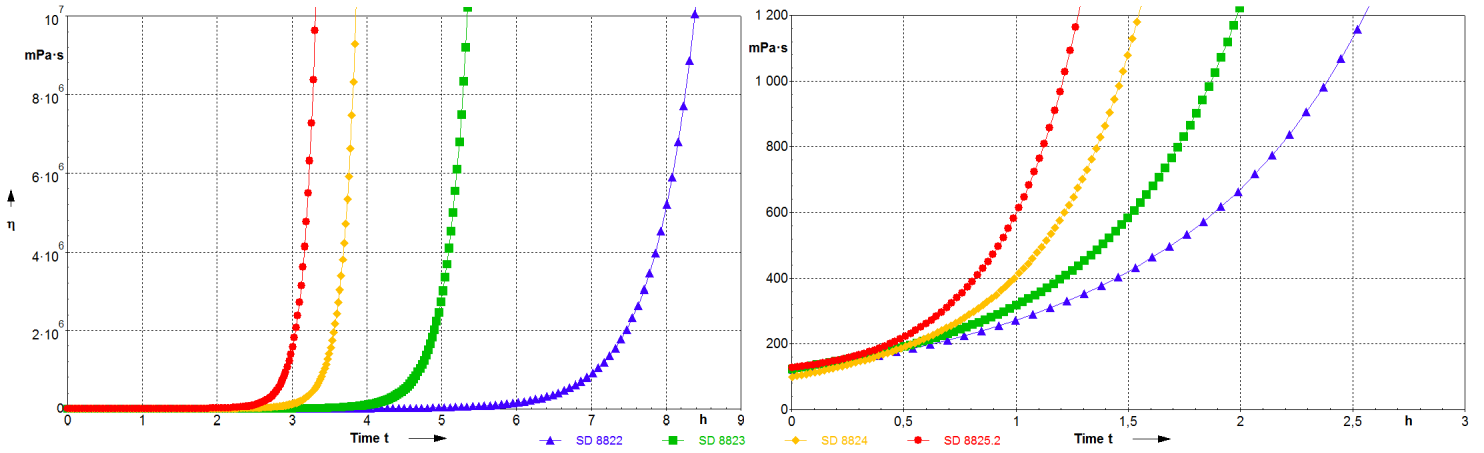
	SD 8824	SD 8823	SD 8822
Appearance	liquid	liquid	liquid
Color	light yellow	light yellow	light yellow
Mixing ratio			
By weight	100 / 22	100 / 26	100 / 31
By volume	100 / 27	100 / 32	100 / 39
Initial viscosity @ 20 °C	185	230	315
PP 50 mm / 10 s ⁻¹ (mPa.s) @ 30 °C	113000	135	121
Density @ 20 °C			

Reactivity on 1 mm thick layer

@ 20 °C



@ 30 °C



Mechanical properties on cast resin :

		SR InfuGreen 810 / SD 8824			SR InfuGreen 810 / SD 8823		
Curing cycles		16h @ TA + 24h @ 40°C	16h @ TA + 16h @ 60°C	16h @ TA + 8h @ 80°C	16h @ TA + 24h @ 40°C	16h @ TA + 16h @ 60°C	16h @ TA + 8h @ 80°C
Tensile							
Modulus	N/mm ²	3 040	2 790	2 640	3 080	2 850	2 700
Maximum strength	N/mm ²	68	65	60	70	68	66
Breaking Strength	N/mm ²	57	57	52	68	63	62
Elongation at max strength	%	3,6	4,4	5	3,6	4,3	5,2
Elongation at break	%	5,3	5,9	9,5	4	5,5	7,6
Flexion							
Modulus	N/mm ²	3 070	2 780	2 610	3 260	2 950	2 780
Maximum strength	N/mm ²	109	107	101	114	114	111
Breaking Strength	N/mm ²	64	87	68	58	83	91
Elongation at max strength	%	4,6	5,7	6	4,4	5,5	6,2
Elongation at break	%	12,6	9,3	13,5	12,5	9,9	9,9
Shear							
Breaking Strength	N/mm ²	43	42	41	46	45	45
Compression							
Modulus	N/mm ²						
Yield strength	N/mm ²	91	87	82	96	92	90
Offset compression yield	%	12,3	11,9	14,9	11,8	13,7	16,4
Charpy impact strength							
Resilience	kJ/m ²	99	86	89	96	72	56
DSC glass transition							
TG1 onset	°C	71	85	82	67	81	92
TG1 max onset	°C			82			90
DTMA glass transition							
TG tan delta	°C						
TeiG onset G'	°C						
TmG midpoint G'	°C						
TefG endpoint	°C						
TG peak G''	°C						

Mechanical properties on cast resin :

		SR InfuGreen 810 / SD 8822		
Curing cycles		16h @ TA + 24h @ 40°C	16h @ TA + 16h @ 60°C	16h @ TA + 8h @ 80°C
Tensile				
Modulus	N/mm ²	3 160	3 090	2 730
Maximum strength	N/mm ²	71	74	70
Breaking Strength	N/mm ²	70	68	69
Elongation at max strength	%	3,1	4,2	5
Elongation at break	%	3,2	5,1	5,6
Flexion				
Modulus	N/mm ²	3 250	3 010	2 770
Maximum strength	N/mm ²	116	116	114
Breaking Strength	N/mm ²	71	98	109
Elongation at max strength	%	4,6	5,4	6,4
Elongation at break	%	9,8	7,4	7,8
Shear				
Breaking Strength	N/mm ²	47	47	45
Compression				
Modulus	N/mm ²			
Yield strength	N/mm ²	104	99	93
Offset compression yield	%	11,3	12,8	14,6
Charpy impact strength				
Resilience	kJ/m ²	84	70	77
DSC glass transition				
TG1 onset	°C	69	85	98
TG1 max onset	°C			98
DTMA glass transition				
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,

Thermal tests:

Glass transition DSC:	NF EN ISO 11357-2:2014	-5°C to 180 °C under nitrogen gas
	T_{G1} or Onset:	1 st scan at 20 °C/min
	T_{G1} maximum or Onset:	2nd 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_G onset G'
	ASTM D4065-12	T_G 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 ⁻¹
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 ⁻¹
Green Carbone content:	ASTM D6866-16 or XP CEN/TS 16640 Avril 2014	

TA: Ambient temperature (20 to 25 °C)

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