SR InfuGreen 810

Green Epoxy systems for Injection and Infusion

The ***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.
The different hardeners allow the production of small to very large parts.
The cured system gives a temperature resistance up to 100°C (Tg onset)
The hardeners SD 4770 and 4771 are designed for very thick laminates by infusions.

***SR InfuGreen* 810** Epoxy resin is produce 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 *Maritime* approved DNV·GL.

GreenPoxy®

Sicomin, 31 avenue de la Lardière, 13220 Châteauneuf les Martigues, France
T: +33 (0)4 42 42 30 20 / F: +33 (0)4 42 81 29 29 / E: info@sicomin.com / www.sicomin.com

Epoxy resin *SR InfuGreen* 810

Aspect Color Gardner		Clear liquid 1 maximum
Viscosity (± 20 % mPa.s)	@ 15 °C @ 20 °C @ 25 °C @ 30 °C @ 40 °C	2 200 1200 750 470 210
Carbon Green content (± 3 %)	GreenPoxy®	38 %
Density Pycnometer (±0.01) Helium (±0.005)	@ 20 °C	 1.16 1.152
Refractive index (± 0.0020)	@ 25 °C	1.5491
Storage stability		24 Months @ ambient temperature Can crystallize at low temperature or after a long storage. If SR InfuGreen 810 develops a haziness or crystallizes during storage, warming it @ 50 to 60 °C, with stirring, will restore it to its original state

Hardeners SD 882x SD 477x

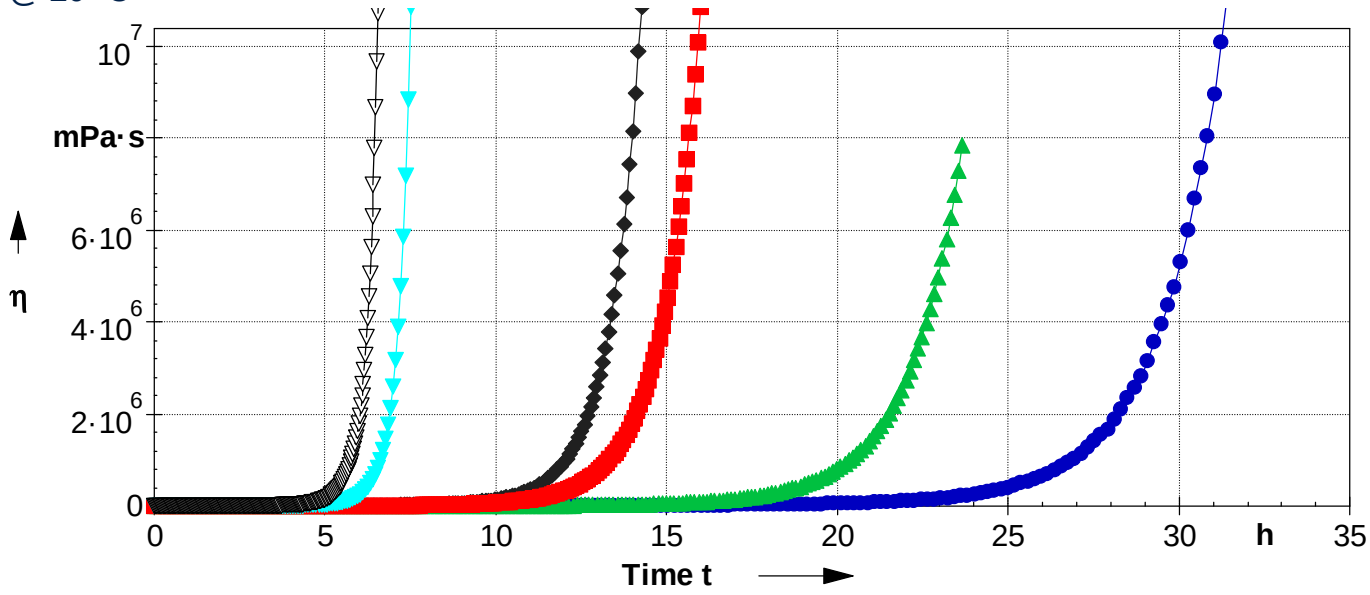
Reference		SD 8825.2	SD 8824	SD 8822	SD 4772	SD 4771	SD 4770
Reactivity type		**Fast**	**Standard**	**Slow**		**Ultra-slow**	**Mega slow**
Aspect / colour		Light yellow liquid					
Color Gardner		3 maximum	4 maximum	5 maximum	3 maximum		
Viscosity (+ 20 % mPa.s)	@ 15 °C	9	7	27	13		
	@ 20 °C	7	6	20	11		
	@ 25 °C	6	5	16	9		
	@ 30 °C	5	4	13	7		
	@ 40 °C	4	3	9	5		
Carbon Green content	%	none					
Storage stability	AT	24 months Hardeners react with carbon dioxide and moisture. Keep tightly closed packaging, minimize maximum contact with the air.					
Density Pycnometer (±0.010)	@ 20 °C	0.915	0.944	0.935	0.927	0.944	0.944
Refractive index (± 0.002)	@ 25 °C	1.4785	1.4982	1.4712	1.4822	1.4594	1.4604

SR InfuGreen 810 / SD 8822 SD 477x Mixes

References		SD 8825.2	SD 8824	SD 8822	SD 4772	SD 4771	SD 4770
Mixing ratio by weight		100 / 22	**100 / 22**	**100 / 31**	**100 / 29**		
Mixing ratio by volume		100 / 28	**100 / 27**	**100 / 39**	**100 / 36**		
Initial mix viscosities	@ 20 °C	230	200	320	330	235	142
	@ 30 °C	130	100	120	90	115	100
Time to reach 300 cps “ Optimal infusion time’’	@ 20 °C	28’	44’	/	/	60’	3 h 20’
	@ 30 °C	40’	50’	67’	90’	130’	160’
Carbon Green content maximum Calculated (+/- 3 %)	GreenPoxy®	31	31	29	29	29	29

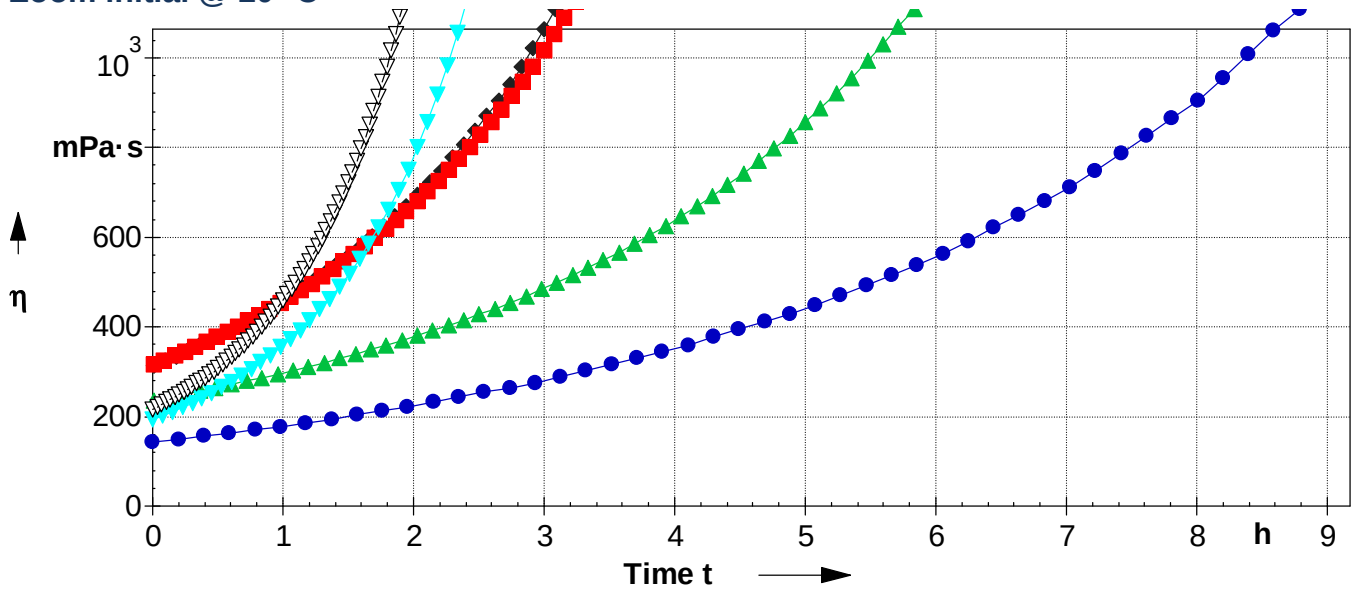
Viscosities increase on 1 mm film thickness

@ 20 °C



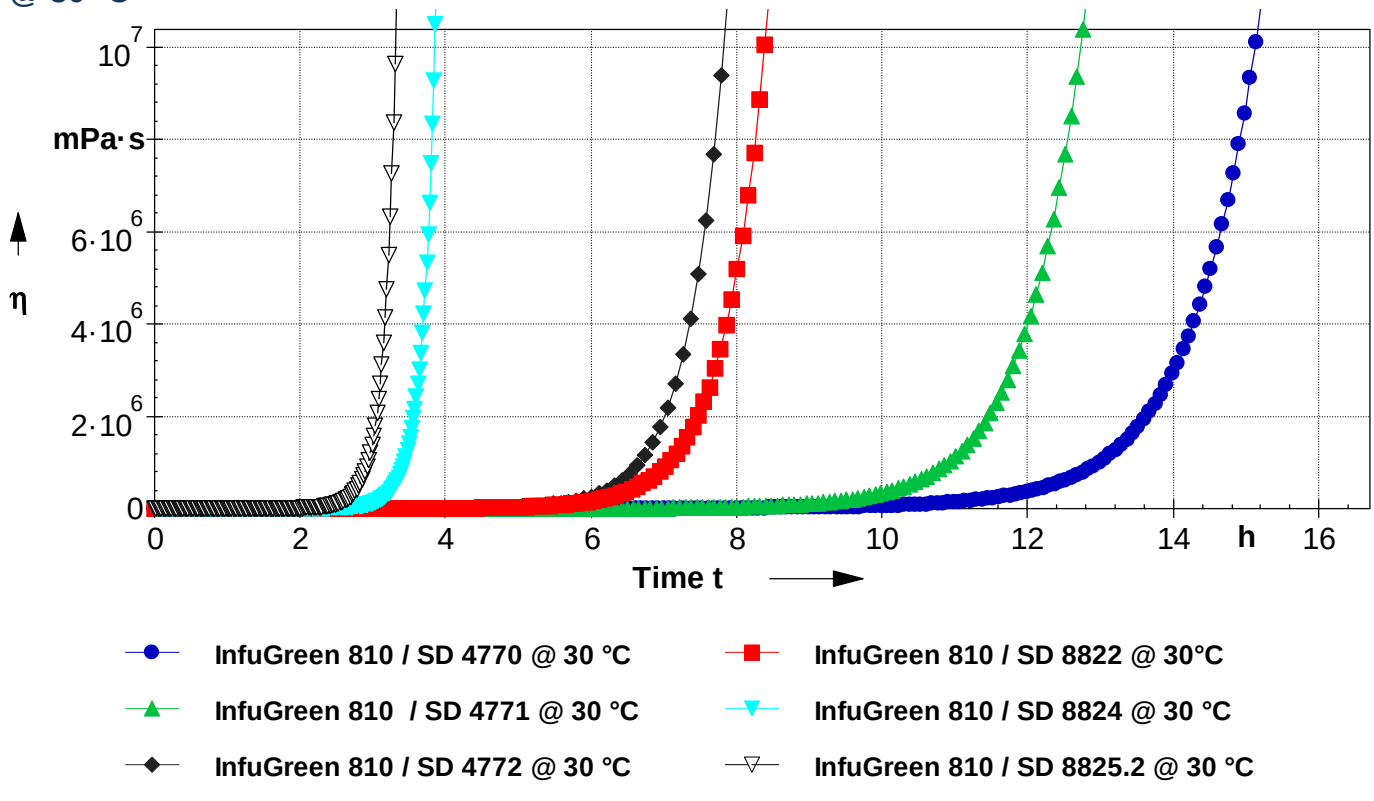
- InfuGreen 810 / SD 4770 @ 20°C
- InfuGreen 810 / SD 8822 @ 20°C
- InfuGreen 810 / SD 4771 @ 20°C
- InfuGreen 810 / SD 8824 @ 20 °C
- InfuGreen 810 / SD 4772 @ 20 °C
- InfuGreen 810 / SD 8825.2 @ 20°C

Zoom initial @ 20 °C

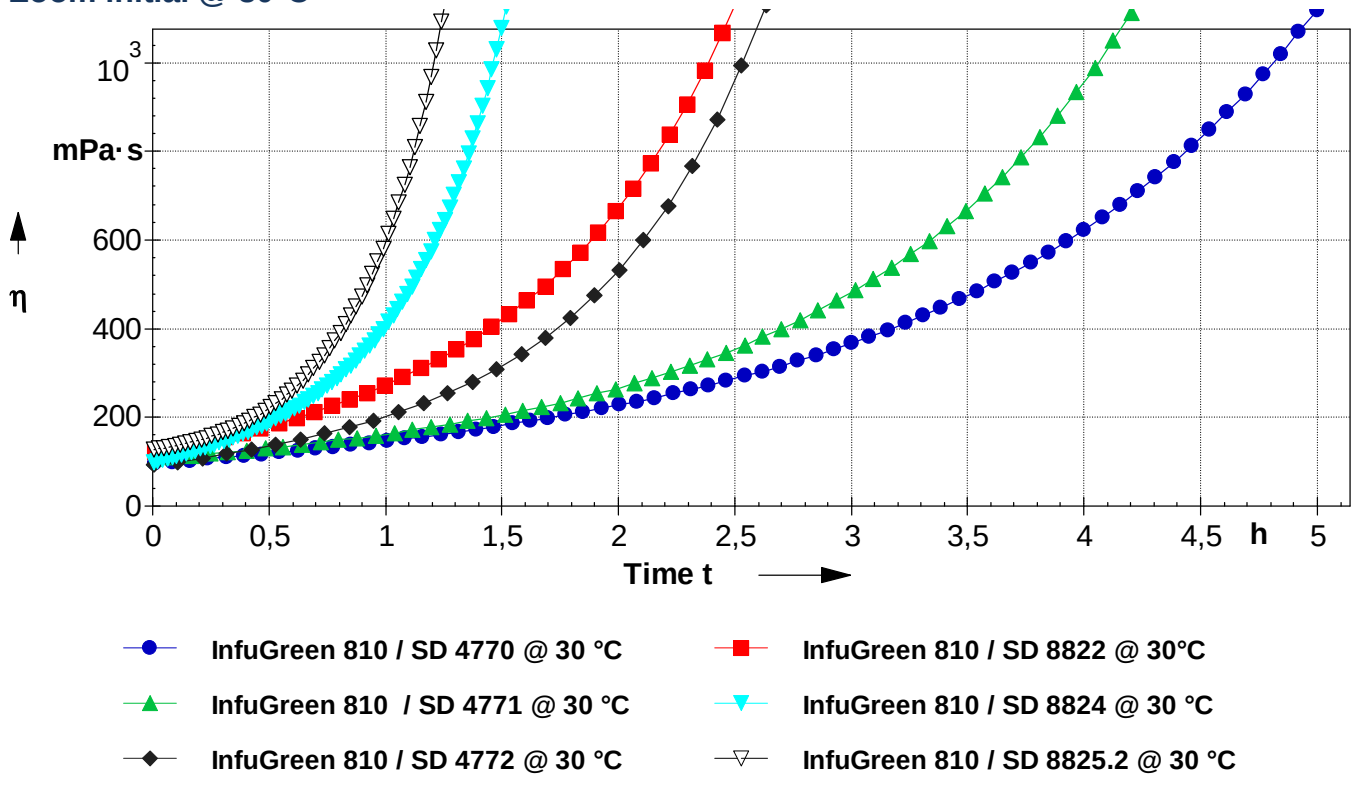


- InfuGreen 810 / SD 4770 @ 20°C
- InfuGreen 810 / SD 8822 @ 20°C
- InfuGreen 810 / SD 4771 @ 20°C
- InfuGreen 810 / SD 8824 @ 20 °C
- InfuGreen 810 / SD 4772 @ 20 °C
- InfuGreen 810 / SD 8825.2 @ 20°C

@ 30 °C



Zoom initial @ 30°C



Mechanical properties on cast resin

		***SR InfuGreen* 810 / SD 8825.2**			***SR InfuGreen* 810 / SD 8824**		
Curing cycle →		AT + 24 hrs 40 °C	AT + 16 hrs 60 °C	AT + 8 hrs 80 °C	AT + 8 hrs 40 °C	AT + 16 hrs 60 °C	AT + 8 hrs 80 °C
Tension							
Modulus of elasticity	N/mm^2	3000	2700	2600	3000	2800	2600
Maximum resistance	N/mm^2	69	68	67	68	65	60
Resistance at break	N/mm^2	55	53	64	57	57	52
Elongation at max.load	%	3.8	4.8	5.7	3.6	4.4	5.0
Elongation at break	%	5.9	9.1	8.0	5.3	5.9	9.5
Flexion							
Modulus of elasticity	N/mm^2	3000	2700	2600	3100	2800	2600
Maximum resistance	N/mm^2	113	112	108	109	107	101
Elongation at max.load	%	4.9	6.1	6.6	4.6	5.7	6.0
Elongation at break	%	12.6	11.6	11.9	12.6	9.3	13.4
Shear strenght							
Maximum resistance	N/mm^2	46	45	45	43	42	41
Compressive							
Compressive yield strength	N/mm^2	98	95	93	91	87	82
Offset compressive yield	%	11.7	15.1	15.7	12.3	13.0	14.9
Impact Choc Charpy							
Resilience	KJ/m^2	80	80	70	100	90	90
Glass Transition							
Tg1 onset	**°C**	72	91	96	69	83	82
Tg1 onset maximum	**°C**			94			82

		***SR InfuGreen* 810 / SD 8822**			***SR InfuGreen* 810 / SD 4770**		
Curing cycle →		AT + 24 hrs 40 °C	AT + 24 hrs 40 °C	AT + 16 hrs 60 °C	AT + 8 hrs 80 °C	AT + 16 hrs 60 °C	AT + 8 hrs 80 °C
Tension							
Modulus of elasticity	N/mm^2	3000	2900	2700	3160	3100	2700
Maximum resistance	N/mm^2	66	67	61	71	74	70
Resistance at break	N/mm^2	55	60	53	70	68	69
Elongation at max.load	%	3.5	4.4	4.9	3.1	4.2	5.0
Elongation at break	%	4.3	6.1	8.0	3.2	5.1	5.6
Flexion							
Modulus of elasticity	N/mm^2	2900	2800	2700	3250	3000	2770
Maximum resistance	N/mm^2	99	106	101	116	116	115
Elongation at max.load	%	4.4	5.6	6.0	4.6	5.4	6.4
Elongation at break	%	15.5	13.6	13.6	9.8	7.4	7.8
Shear strenght							
Maximum resistance	N/mm^2	43	43	41	47	47	45
Compressive							
Compressive yield strength	N/mm^2	91	91	84	104	100	95
Offset compressive yield	%	11	12	13	11.3	12.8	14.6
Impact Choc Charpy							
Resilience	KJ/m^2	85	88	75	85	83	80
Glass Transition							
Tg1 onset	**°C**	63	74	85	69	84	97
Tg1 onset maximum	**°C**			84			98

Measures undertaken according to the following norms:

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

Tension:	*ISO 527 - 2*
Flexion:	*ISO 178*
Charpy impact strength:	*NF T 51-035*
Shear Strength:	*ASTM D 732 - 93*
Compression:	*ISO 604*
Water absorption:	*Internal. Polymerization 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 gas*
T_{G1} or Onset: 1st point at 20 °C/min *T_{G1} maximum or Onset: second passage*

Glass transition DTMA: *ISO 11357-1 - T_G onset G'* *Temperature ramp 0 °C to 180 °C @ 2°C/min*
ASTM D4065 - T_G peak G''

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 10 s^{-1}*
Density:	*NF EN ISO 2811-1*	*Pycnometer*
Density solid	*NF EN ISO 845*	
Gel time:	*Cross G' G''*	*Rheometer CP50 - Shear rate 10 s^{-1}*
Green Carbone content:	*ASTM D6866 or XP CEN/TS 16640 Avril 2014*	

AT: *Ambiant temperature*

LEGAL NOTES:

The information given in writing or verbally, in the context of our technical assistance and our trials, do not engage our responsibility. They are given in good faith based on SICOMIN's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with SICOMIN's recommendations. So, we advise the users of SICOMIN products, to check by some practical trials they are suitable for the envisaged processes and applications. The customer's storage, the use, the implementation and the transformation of the supplied products, are not under our control and your responsibility only will respond for it.

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If our responsibility should nevertheless be involved, it would be, for all the damages, limited to the value of the goods supplied by us and implement by the customer. We guaranty the non-reproachable quality of our products, in the general context of sales and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.