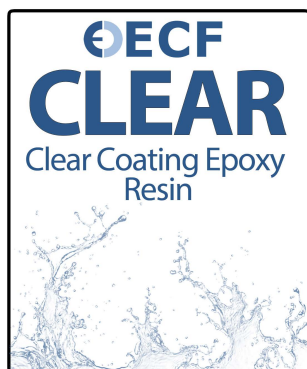
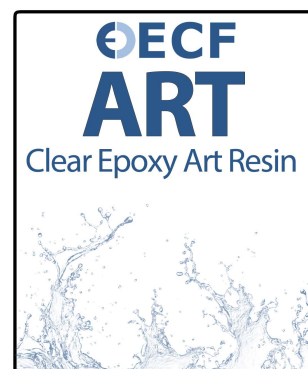


ECF CLEAR/ ECF ART

Epoxy system for Coating and Art resin



PART A: RESIN
MIX RATIO - 100 PART A: 50 PART B by vol
sales@ecfcomposites.co.uk
For technical info or advice on application call
0191 497 5134



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		SD EVO Slow	SD EVO Medium	SD EVO Fast
Reactivity level		Slow	Standard	Fast
Initial viscosity (mPa.s)	@ 20 °C	1020	1570	2000
	@ 30 °C	440	610	660
Pot Life (150 g)	@ 20 °C	01 h 10	10 min	8 min
	@ 30 °C	33 min	6 min	4 min
Mixing ratio				
	By weight	100 / 38	100 / 39	100 / 41
	By volume	100 / 50	100 / 50	100 / 50
	N/mm ²	72	70	68
% Elongation at max strength	%	3,9	4,1	4
TG1 max onset	°C	89	84	80
Gel Time	@ 20 °C	09 h 20	03 h 18	02 h 51
	@ 30 °C	05 h 00	01 h 57	01 h 42
Time to reach 400 mPa.s	@ 20 °C	04 h 20	-	01 h 08
	@ 30 °C	02 h 40	49 min	44 min
Demold time	@ 20 °C	28 h 00	09 h 54	08 h 33
	@ 30 °C	15 h 00	05 h 51	05 h 06

Characteristics:

Easy ratio per volume 2:1.

UV stability for artists as such the number one priority was always to ensure that **Surf Clear EVO** looks as good in years to come as it does when you first pour it.

Other applications: jewelry and model coating, and surf repairs etc...
Low odor and reduced skin aggression for a better work environment.

Advices for application:

Work in a clean environment with heating facility.

Ideal working temperature from 18 °C to 30 °C.

Maintain a constant temperature during coating.

Avoid high ambient humidity.

Avoid exposure to U.V. during the cure. Coatings benefitting from a sun free post cure or polymerized for at least 7 days at 18°C will obtain greater U.V. resistance and mechanical properties

Do not dilute with solvents. Please consult our technical assistance.

The use of compatible pigments is possible.

Keep packaging well-sealed as hardeners are sensitive to carbonic gas and humidity.

A polyurethane or other top coat paint can (for best UV protection) be applied, without primer, after sanding the final layer of **Surf Clear EVO**.

Green Technology:

Sicomin is heavily involved in green chemistry. When technology and availability of raw materials allows, we choose raw materials from biomass sourcing.

Surf Clear EVO epoxy resin is manufactured with a bio-based carbon content of about 40 % (resin alone)

OH additive, the shiniest Resin in the world

Sicomin offers the possibility to use an extra additive to mix with the resin **Surf Clear EVO** to improve the light radiance of your project. A perfect, super shiny finish can transform watercolours, oils, mixed media, photographs, child masterpieces, in fact just about any creative project, in new exciting ways.

OH additive can modify the color perception (blue effect with carbon or pink effect with wood or linen fabrics), please test before to avoid any surprises. Mixing: 1 g of OH for 1 kg of resin SR Surf Clear EVO - First mix resin and OH additive, then mix with hardener



Appearance		liquid
Color		purple
Viscosity (mPa.s)	@ 15 °C	5500 ± 1100
	@ 20 °C	2925 ± 575
	@ 25 °C	1680 ± 320
	@ 30 °C	1070 ± 220
Density	@ 20 °C	1,1817
Refractive index	@ 25 °C	1,545 ± ,002
Storage (months)	@ Ta	24

Hardener(s)

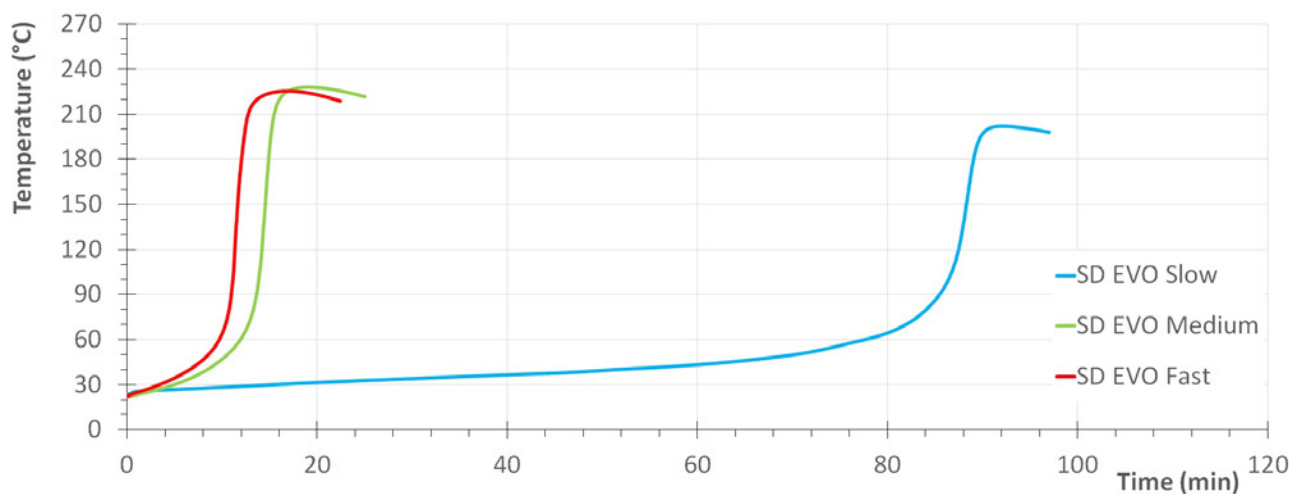
		Slow	Medium	Fast
Appearance		liquid	liquid	liquid
Color		colourless	light yellow	colourless
Gardner color		≤ 2	≤ 1	≤ 1
Reactivity level		Slow	Standard	Fast
Viscosity (mPa.s)	@ 15 °C	80 ± 15	180 ± 40	290 ± 60
	@ 20 °C	60 ± 15	120 ± 25	190 ± 40
	@ 25 °C	45 ± 10	80 ± 20	125 ± 25
	@ 30 °C	32 ± 6	60 ± 12	90 ± 20
Density	@ 20 °C	0,9710	0,9920	1,0000
Refractive index	@ 25 °C	1,471 ± ,002	1,5113 ± ,002	1,5169 ± ,002
Storage (months)	@ Ta	24	24	24

Mixe(s) SR Surf Clear EVO / SD EVO

		SD EVO Slow	SD EVO Medium	SD EVO Fast
Appearance		liquid	liquid	liquid
Color		purple	purple	purple
Mixing ratio				
	By weight	100 / 38	100 / 39	100 / 41
	By volume	100 / 50	100 / 50	100 / 50
Initial viscosity (mPa.s)	@ 20 °C	1020	1570	2000
PP 50 mm / 10 s ⁻¹	@ 30 °C	440	610	660
Density	@ 20 °C	1,1	1,1	1,1

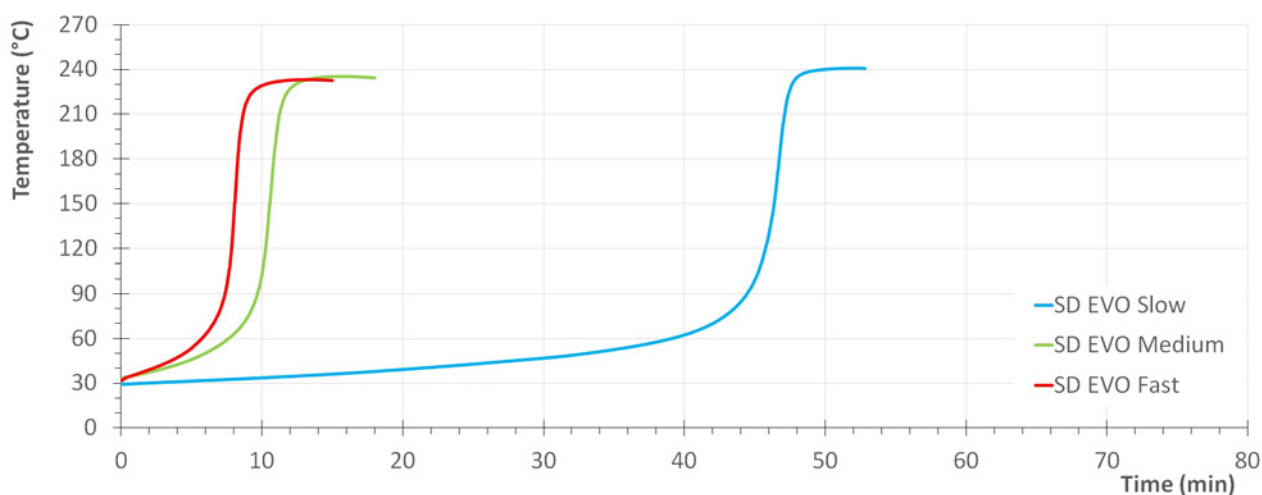
Reactivity @ 20 °C for 150 g SR Surf Clear EVO / SD EVO

	Slow	Medium	Fast
Exothermic temperature (°C)	202	228	225
Exothermic peak time	01 h 30	18 min	15 min
Time to reach 50 °C	01 h 10	10 min	8 min



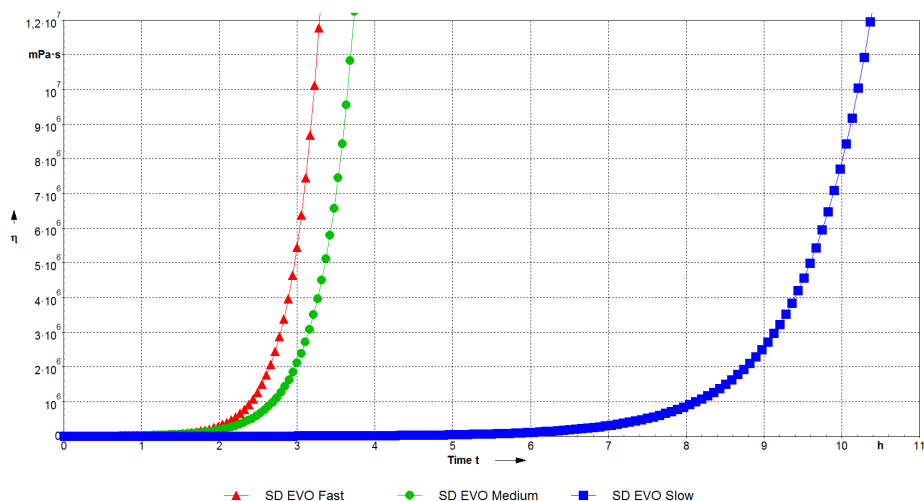
Reactivity @ 30 °C for 150 g

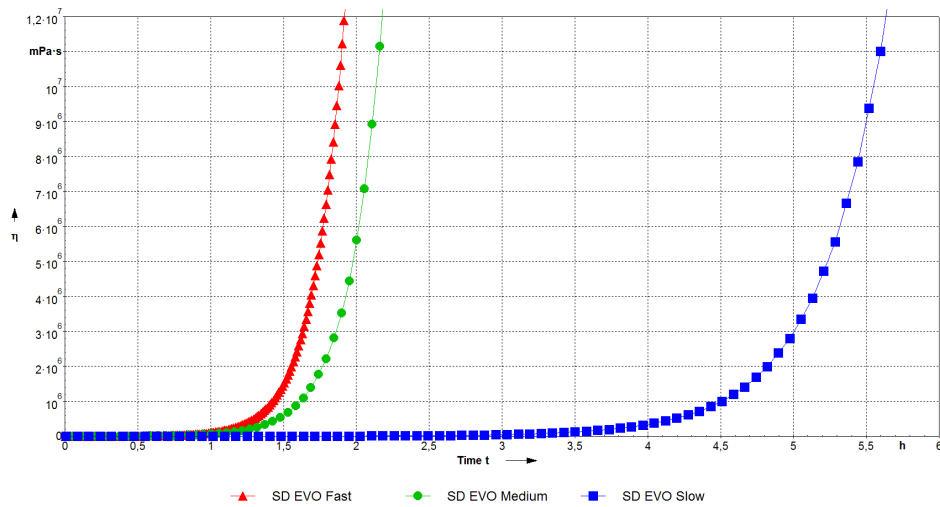
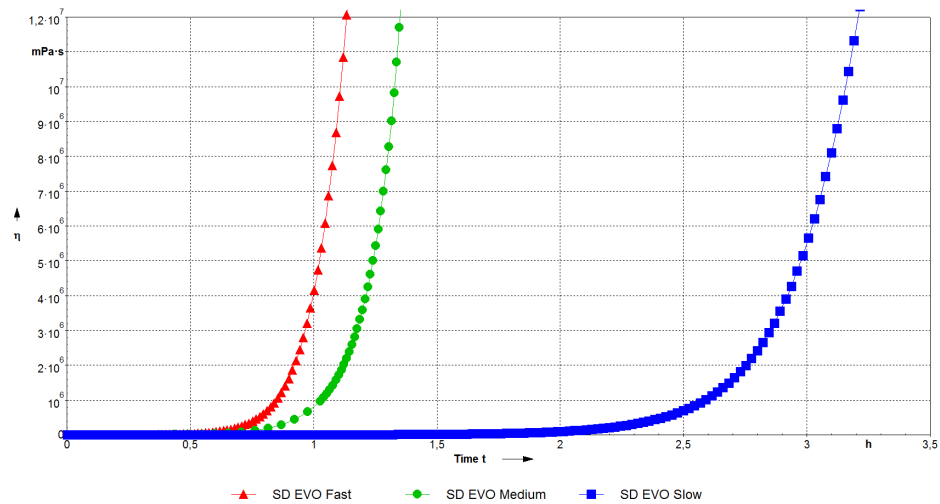
	Slow	Medium	Fast
Exothermic temperature (°C)	241	235	233
Exothermic peak time	53 min	14 min	12 min
Time to reach 50 °C	33 min	6 min	4 min



Reactivity on 1 mm thick layer

@ 20 °C



@ 30 °C**@ 40 °C**

Mechanical properties on cast resin :

		Slow			Medium		
Curing cycles		24 h @ Ta + 16 h @ 60 °C			24 h @ Ta + 16 h @ 60 °C		
Tensile							
Modulus	N/mm ²	3 400			3 400		
Maximum strength	N/mm ²	72			70		
Breaking Strength	N/mm ²	67			66		
Elongation at max strength	%	3,9			4,1		
Elongation at break	%	5,1			6		
Flexion							
Modulus	N/mm ²	3 100			3 200		
Maximum strength	N/mm ²	120			122		
Breaking Strength	N/mm ²	111			108		
Elongation at max strength	%	5,4			5,7		
Elongation at break	%	7,2			8,2		
Shear							
Breaking Strength	N/mm ²	47			49		
Compression							
Modulus	N/mm ²						
Yield strength	N/mm ²	99			105		
Offset compression yield	%	13,4			15,8		
Charpy impact strength							
Resilience	kJ/m ²	44			40		
DSC glass transition							
TG1 onset	°C	86			88		
TG1 max onset	°C	89			84		
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 :

			Fast		
Curing cycles 			24 h @ Ta + 16 h @ 60 °C		
Tensile					
Modulus	N/mm ²		3 400		
Maximum strength	N/mm ²		68		
Breaking Strength	N/mm ²		65		
Elongation at max strength	%		4		
Elongation at break	%		6,5		
Flexion					
Modulus	N/mm ²		3 200		
Maximum strength	N/mm ²		117		
Breaking Strength	N/mm ²		103		
Elongation at max strength	%		5,6		
Elongation at break	%		8,5		
Shear					
Breaking Strength	N/mm ²		48		
Compression					
Modulus	N/mm ²				
Yield strength	N/mm ²		103		
Offset compression yield	%		14,3		
Charpy impact strength					
Resilience	kJ/m ²		38		
DSC glass transition					
TG1 onset	°C		80		
TG1 max onset	°C		80		
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)

LEGAL NOTES:

Information given in writing or verbally, in the context of our technical assistance and our trials, does not engage our responsibility. Information is 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. We advise users of SICOMIN products to check by some practical trials that they are suitable for the intended processes and applications. The customer's storage, the use, the implementation and the transformation of the supplied products are not under SICOMIN's control and entirely under the sole responsibility of the user.

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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 processed 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.