SURF CLEAR - GLASS ONE

Epoxy Systems for translucent laminates

SURF CLEAR and **GLASS ONE** are specially formulated for the manufacturing of wind-surf boards and surf boards. These systems are adapted for hand lay up of glass fibre, carbon, aramid and polyester.
These formulations are compatible with all commercial foams: polystyrenes, polyurethanes, cross- linked and linear PVC foams.

Characteristics :

Very good UV stability
Hardening without tack
High gloss
Low viscosity
Transparency of laminates
Self levelling
Ease of abrasion
Scratch resistance
Standard and slow hardeners

GLASS ONE

System recommended for slalom and surf boards in polyurethane foam or polystyrene.
Other applications: Jewellery, detailed work using small amounts, models, pattern coating.

SURF CLEAR

Very tough resin with high thermo-mechanical performances.
Recommended for wave riding boards and competition slalom boards.
Creates composite parts with high mechanical resistance and UV stability, light structures from sandwich construction.
Surface preparation / Plug finishing, high-gloss requirement
Other applications: Jewellery, pattern coating, models.

Advices for application

Work in a clean environment with heating facility.
Working temperature : 20°C minimum 35-40°C maximum
Maintain a constant temperature during lamination.
Avoid high ambient humidity. Hygrometry must be lower than 70%.
Avoid exposure to U.V. during the cure. Laminates or coatings having a polymerization of 14 days
at 25 °C or a post cure will have greater U.V resistance.
Do not wet sand a laminate or coating before 4 days at 25 C
Do not dilute with acetone, ester or alcohol based solvents.
Keep packaging well sealed as hardeners are sensitive to carbonic gas and humidity.
A polyurethane paint finish can be applied without primer after sanding the final layer of resin.

Curing profile

Wait before post-curing : 24 hours
Minimum cure : 12 hours 40 °C
Optimum cure : 8 hours 60 °C

Hardeners

Reference		SD GO	SD SC	SD 7561
Reactivity		**"standard"**	**"standard"**	**"slow"**
Appearance / colour		Water clear liquid	Water clear liquid	Water clear liquid
Viscosity (mPa.s)	@ 15 °C	90 ± 20	60 ± 20	80 ± 20
Rheometer	@ 20 °C	60 ± 10	50 ± 10	60 ± 10
CP 50 mm	@ 25 °C	45 ± 10	35 ± 10	40 ± 10
Shear rate 10 s^{-1}	@ 30 °C	30 ± 10	25 ± 10	30 ± 10
	@ 40 °C	20 ± 10	15 ± 5	20 ± 10
Density (g/cm^3) Picnometer ISO 2811-1	@ 20 °C	0.95 ± 0.01	0.960 ± 0.01	0.958 ± 0.01

Epoxy resins

Reference		GLASS ONE	SURF CLEAR
Appearance / colour		Clear Liquid	Light purple liquide
Viscosity (mPa.s)	@ 15 °C	7 800 ± 1 500	3 800 ± 750
Rheometer	@ 20 °C	3 700 ± 750	2 000 ± 400
PP 50 mm	@ 25 °C	1 900 ± 400	1 200 ± 250
Shear rate 10 s^{-1}	@ 30 °C	1 100 ± 200	700 ± 150
	@ 40 °C	420 ± 100	300 ± 50
Density (g/cm^3) Picnometer ISO 2811-1	@ 20°C	1.13 ± 0.01	1.17 ± 0.01
Storage		Can cristalize at low temperature	Cristalization free

System Resin / Hardener

		GO / GO	GO / 7561	SC / SC	SC / 7561
Mix viscosities (mPa.s)	@ 20 °C	400		540	620
	@ 25 °C	310		370	460
Mixing ratio by weight		100 g / 39 g	100 g / 36 g	100 g / 38 g	100 g / 38 g
Mixing ratio by volume :		**100 ml / 50 ml 2 / 1**	**100 ml / 43 ml**	**100 ml / 50 ml 2 / 1**	**100 ml / 50 ml 2 / 1**

Reactivity

Resins / Hardeners		GO / GO	GO / 7561	SC / SC	SC / 7561
Gel time 150 g mix	@ 25 °C	38’		20’	50’
dry to touch on 500 microns film :	@ 25 °C	2 h 15'		2 h	3 h
Thru-dry, sandable	@ 25 °C	10 h		10 h	12 h

Packaging (in Kg)

Kits	Resin	Hardeners
	SR Surf Clear	**SD Surf Clear or SD 7561**
323	1 x 233	9 x 10
36	1 x 26	1 x 10
5	1 x 3.6	1 x 1.4
5 x 1	5 x 0.72	5 x 0.28
1	1 x 0.72	1 x 0.28
	SR Glass One	**SD Glass One**
350	1 x 250	10 x 10
35.6	1 x 25.6	1 x 10
5	1 x 3.6	1 x 1.4
5 x 1	5 x 0.72	5 x 0.28
1	0.72	0.28
	SR Glass One	**SD 7561**
340	1 x 250	9 x 10
35.6	1 x 25.6	1 x 10
5	1 x 3.6	1 x 1.4
5	5 x 0.72	5 x 0.28
1	1 x 0.72	1 x 0.28

Mechanical properties on cast resin

Cure Schedule		SR GLASS ONE / SD GLASS ONE			SR SURF CLEAR / SD SURF CLEAR		SR SURF CLEAR / SD 7561			
		7 days 23°C	24 h 23°C + 24 h 40°C	24 h 23°C + 8 h 60°C	24 h 23°C + 24 h 40°C	24 h 23°C + 8 h 60°C	14 days 23°C	24 h 23°C + 24 h 40°C	24 h 23°C + 16 h 60°C	24 h 23°C + 8 h 80°C
Tension										
Modulus of elasticity	N/mm^2	2920	2790	2690	3250	3130	3260	3080	3000	2830
Maximum resistance	N/mm^2	61	64	70	75	81	63	76	80	79
Resistance at break	N/mm^2	61	62	65	75	77	63	75	73	74
Elongation at max.load	%	2.7	3.2	4.5	3.3	4.5	2.2	3.6	4.4	4.6
Elongation at break	%	2.7	3.5	5.4	3.3	5.5	2.2	3.8	5.8	5.8
Flexion										
Modulus of elasticity	N/mm^2	3060	2960	2830	3360	3280	3780	3400	3280	3280
Maximum resistance	N/mm^2	95	107	108	124	130	100	118	122	123
Elongation at max.load	%	3.3	4.9	5.5	5.0	5.7	2.9	4.7	5.5	5.7
Elongation at break	%	3.3	8.5	8.7	5.6	7.6	2.9	7.5	8.6	7.5
Compressive										
Compresive yield strenght	N/mm^2							106		102
Offset compresive yield	%							6.0		7.4
Charpy impact strength	KJ/m^2	18	23	23	18	23	16	27	37	34
Resilience										
Glass Transition / DSC										
Tg 1	°C	55	64	73	66	79	55	64	79	89
Tg 1 max	°C			78		84				91

Tests carried out on samples of pure cast resin, without prior degassing, between steel plates.
Measures undertaken according to the following norms :

Tension:	NF T 51-034
Flexion :	NF T 51-001
Compression:	NF T51-101
Charpy impact strength:	NF T 51-035
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