

AEROBOND SR 7100 / SD 7105

Epoxy structural adhesive for thin bonding and lamination to recover prepreg.

AEROBOND **SR 7100** - **SD 7105** system was specially formulated for thin bonding to resist high stress in fatigue (excellent against propagation of microcracks).

The application on non-porous surface materials is possible. The hand mixing of quantities higher than 200 or 300 grams can be complicated and induce significant risks of non-homogeneous mixtures in production. A dosing machine and mixing can then be considered, and even essential to avoid any deviation from quality in mixtures.

AEROBOND SR 7100 Epoxy Resin

		AEROBOND SR 7100	
Aspect		Gel	
Colour		Clear blue	
Viscosity (mPa.s)	@ 15°C	21 600 ± 4 300	
	@ 20°C	12 700 ± 2 500	
	@ 25°C	8 650 ± 1 700	
	@ 30°C	6 650 ± 1 300	
	@ 40°C	4 900 ± 900	
Density	@ 20°C	1,176 ± 0,005	
Refraction Index	@ 25°C	1,5412	
Storage stability:		24 months, crystallization free	

AEROBOND SD 7105 Hardener

		AEROBOND SD 7105	
Aspect		Viscous liquid	
Colour		Clear yellow	
Viscosity (mPa.s)	@ 15°C	37 800 ± 7 500	
	@ 20°C	28 300 ± 5 600	
	@ 25°C	22 300 ± 4 400	
	@ 30°C	18 300 ± 3 600	
	@ 40°C	13 600 ± 2 700	
Density	@ 20°C	1,063 ± 0,05	
Refraction Index	@ 25°C	1,5397	
Storage stability:		24 months, crystallization free	

AEROBOND SR 7100 / SD 7105 Mix

		AEROBOND SR 7100 / SD 7105	
Aspect / colour		Green transparent gel (dark green with hardening)	
Weight ratio		100 / 45	
Volume ratio		2 / 1	
Initial viscosity (mPa.s)	@ 20 °C	36 700	
	@ 30 °C	28 000	
	@ 40 °C	22 700	

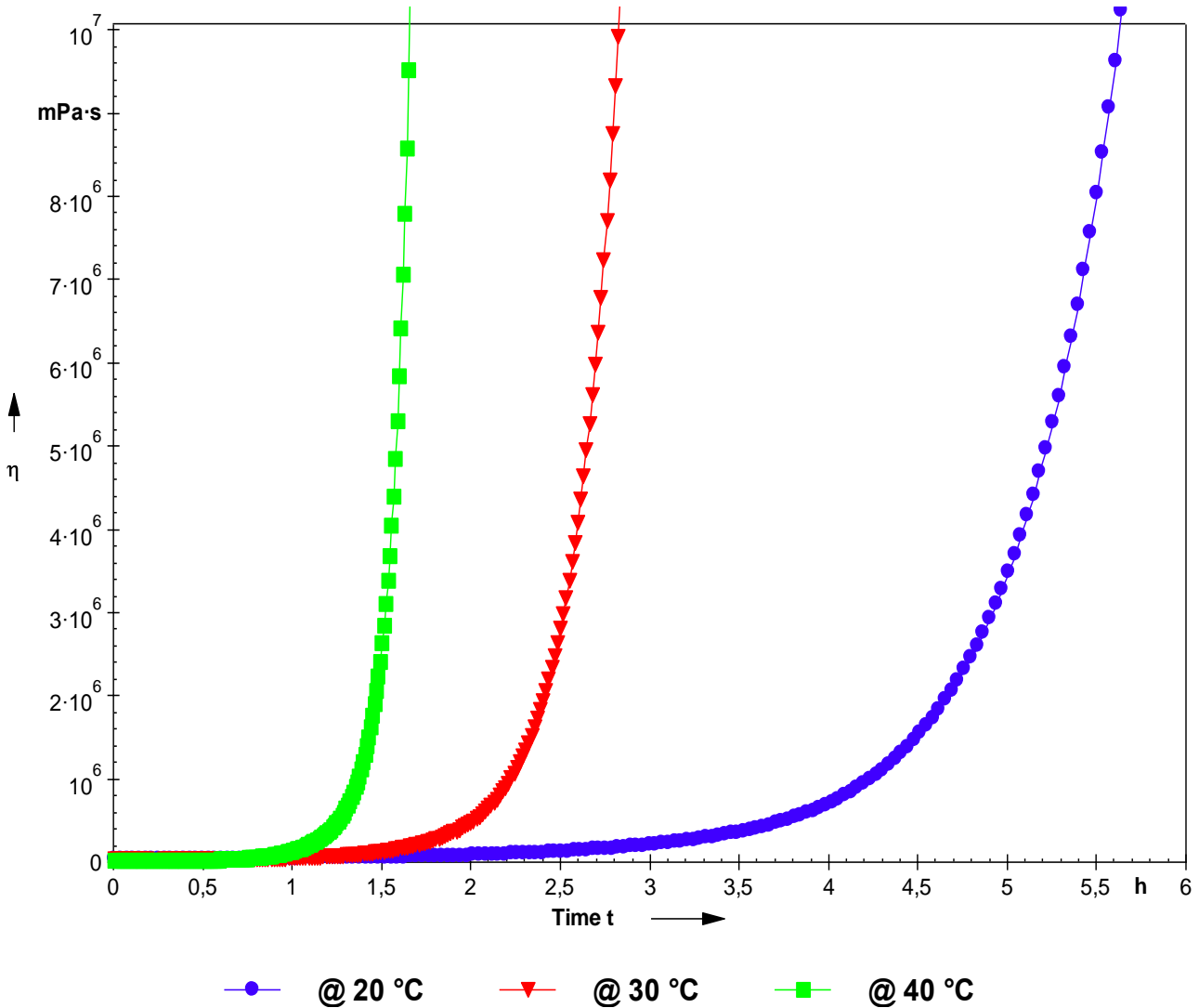
Implementation

The resin and hardener being in the form of gel, they must be mixed with great care until the green color is very homogeneous. Extra attention to take for the sides and bottom of the mixing container to be free of any groove or irregularity.

The blue color of the resin and the yellow color of the hardener facilitate this control.

Reactivity

Evolution of viscosity over a layer of 1 mm thick



Mechanical properties

		AEROBOND SR 7100 / AEROBOND SD 7105		
Crosslinking cycle		7 days @ 23 °C	16 h 40 °C	8 h 60 °C
Tension				
Modulus of elasticity	N/mm ²	2 180	2 210	2 260
Maximum resistance	N/mm ²	45	47	47,5
Elongation at max. resistance	%	3,7	3,8	3,8
Elongation at break	%	11	15,5	26
Flexion				
Modulus of elasticity	N/mm ²	2 130	2 130	1930
Maximum resistance	N/mm ²	76	77	73
Elongation at max. resistance	%	4,6	4,9	5,1
Charpy impact strength				
Résilience	kJ/m ²	40	38	34
Shear				
Maximum resistance (resin alone)	N/mm ²	32	31	35
Lap shear bonding				
Maximum resistance - steel/steel bonding	N/mm ²	NA	23	NA
Maximum resistance – teak/teak bonding	N/mm ²	NA	10	NA
Interlaminar fracture toughness				
G _{1C} - CBT	J/m ²	960	970	NA
Interlaminar fracture toughness				
With laminating recovery, G _{1C} - CBT	J/m ²	NA	550	NA
Glass transition				
DSC - T _{G1}	°C	50	50	50
DSC - T _{Gmax}	°C	55	57	58
DTMA - peak Tan δ	°C	63	67	72
DTMA - T _{eiG} onset – G' (TG1 onset)	°C	47	47	55
DTMA - T _{mG} – G'	°C	58	62	68
DTMA - T _{efG} – G'	°C	75	76	83
DTMA - T _G pic G''	°C	53	54	57

Tests carried out on samples of pure cast resin with degassing, between steel plates.

		Dry	Wet
Lap shear bonding wood (teak / teak)	N/mm ²	10,0	9,0

Dry: test after 24h @ 40 °C - 50 % humidity

Wet: test after 24h @ 40 °C (50% humidity) + 3 h @ 70 °C in water + drying 24 h @ 20 °C (BS1204)

Measured according to the standards:

Viscosity:	Rheometer - CP 50 mm - Shear rate 10 s ⁻¹
Density:	Pycnometer (ISO 2811-1)
Gel time:	Crossing of the G'G'' curves method
Tension:	ISO 527-2
Flexion:	ISO 178
Compression:	ISO 604
Shear:	ASTM D 732-93
Charpy impact strength:	NF T 51-035
Interlaminar fracture toughness:	ASTM D5528
Glass transition:	ISO 11357-2: 1999
	-5°C/180°C with nitrogen
	Tg ₁ or Onset: 1 st pass @ 20°C/min
	Tg _{max} or Onset: 2 nd pass @ 20°C/min
	DMTA: 0°C / 180°C @ 2°C/min

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