

Sicomin

Epoxy resin systems



SR 1280 / SD 477x

Epoxy resin systems

SR 1280 :

Epoxy matrix

Without classified Toxic products (T)

Hardeners :

SD 4775 : Intermediate, medium hardener (experimental ref: ED 1417.7)

SD 4771 : Ultra slow hardener (experimental ref ED) 1417.5

Profile:

Cure at ambient temperature and post cure at 40 to 100 °C

Applications:

Hand laminating, infusion, adhesive, tooling, casting, laminates...

Epoxy resin SR 1280 :

Appearance	Viscous liquid	
Chemical nature	Epoxy resin. Reaction product between bisph ϕ mol and epichlorhydrine.	
Storage	Can crystallize at low temperature or after a long storage. Shelf life : 2 years @ 18 – 25°C	
Color	Clear to yellow, Gardner < 3	
Density (Kg/l) Picnometer NF EN ISO 2811-1	@ 20 °C	1.159 – 0.005
Viscosities (m.Pas $\pm$ 20 %)	@ 15 °C	6 380 $\pm$ 1270
	@ 20 °C	3 240 $\pm$ 650
	@ 25 °C	1 780 $\pm$ 60
Rheometer CP 50 mm	@ 30 °C	1 040 $\pm$ 210
Shear rate 10 s ⁻¹	@ 40 °C	410 $\pm$ 80

Base Hardeners SD 477x :

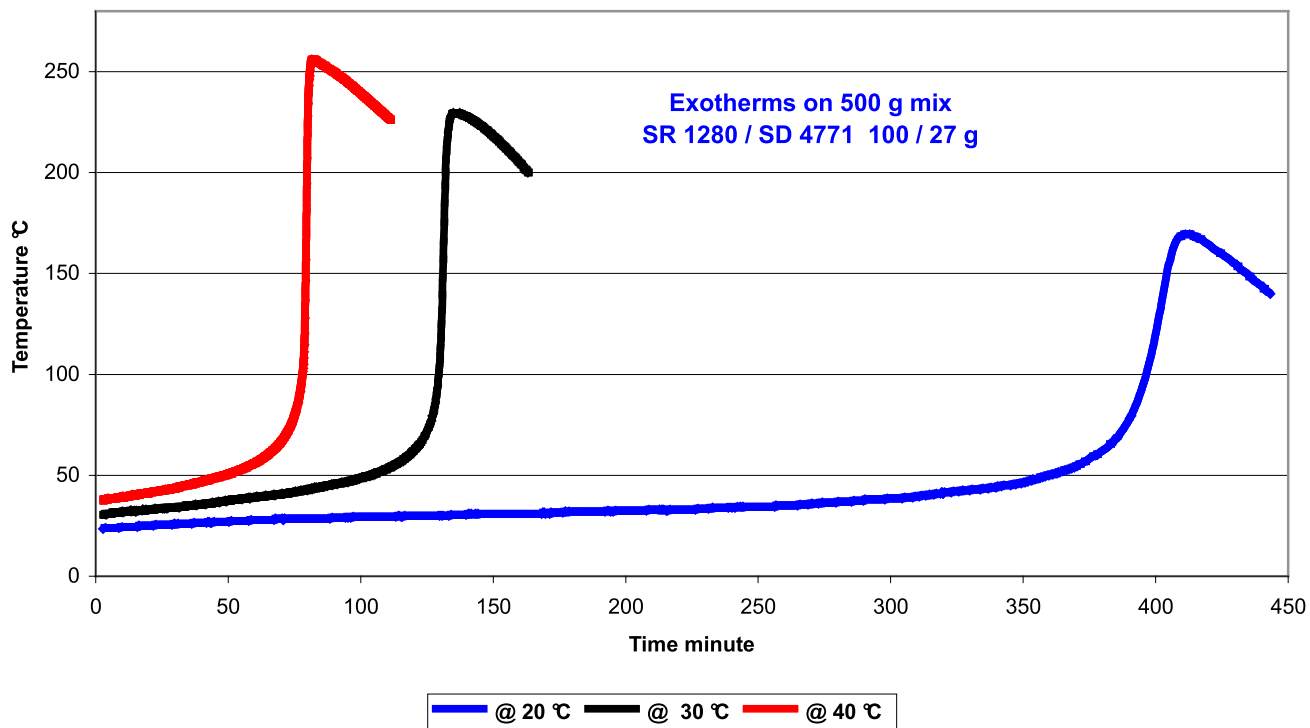
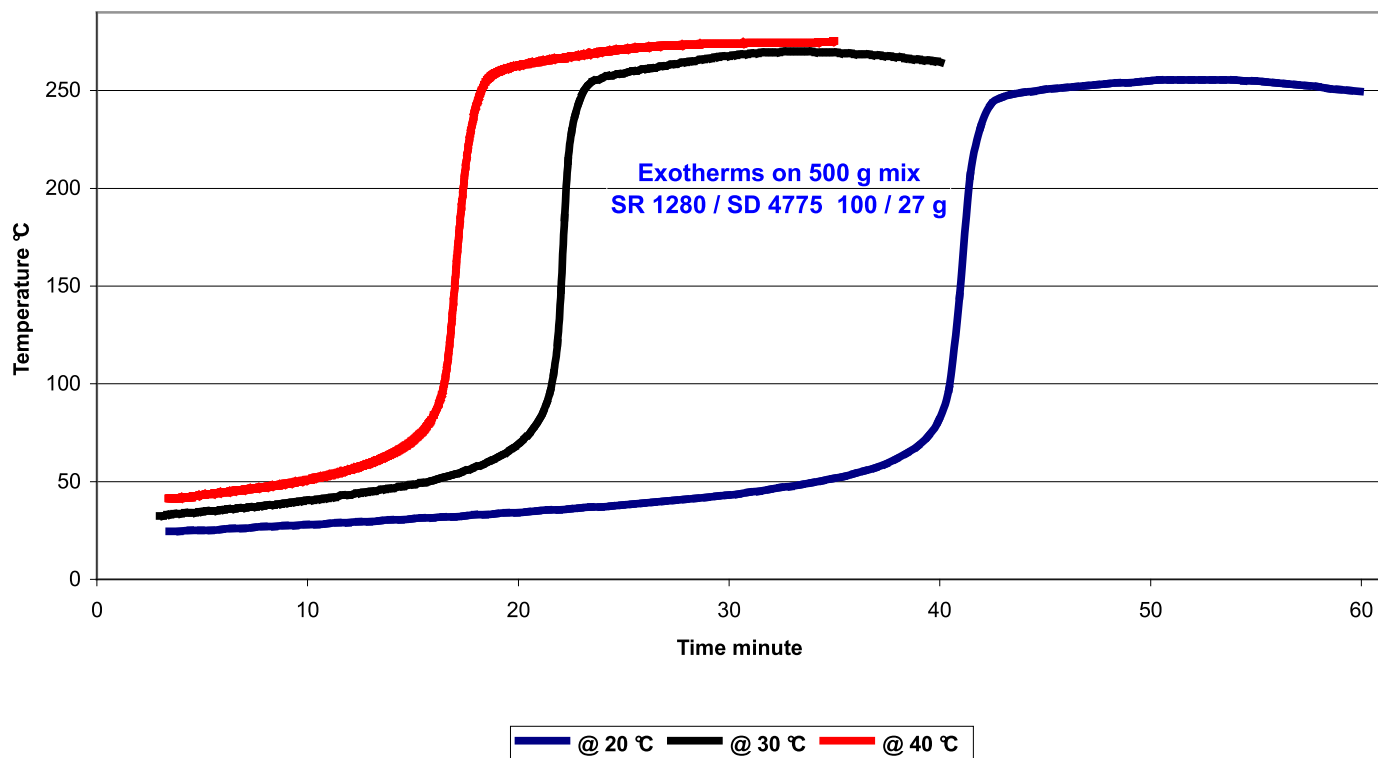
		SD 4775	SD 4771
Aspect / color		Clear Liquid	Clear Liquid
Reactivity levels		Medium	Ultra slow
Viscosities (m.Pas $\pm$ 20 %)	@ 15 °C	285 $\pm$ 60	13 $\pm$ 3
	@ 20 °C	190 $\pm$ 40	11 $\pm$ 2.5
	@ 25 °C	130 $\pm$ 30	9 $\pm$ 2
Rheometer CP 50 mm	@ 30 °C	95 $\pm$ 20	7 $\pm$ 1.5
Shear rate 10 s ⁻¹	@ 40 °C	55 $\pm$ 10	5 $\pm$ 1
Density (g/cm ³ $\pm$ 0.005) Picnometer NF EN ISO 2811-1	@ 20 °C	1.010 – 0.005	0.947 – 0.005

SR 1280 / SD 477x Mixes :

		SR 1280 / SD 4775	SR 1280 / SD 4771
Mixing ratio:			
Quantity by weigh		100 g / 27 g	100 g / 27 g
Quantity by volume		100 ml / 31 ml	100 ml / 33 ml
Viscosities (m.Pas $\pm$ 20 %) Rheometer CP 50 mm Shear rate 10 s ⁻¹	@ 20 °C	1300	800
	@ 30 °C	540	260
	@ 40 °C	270	105

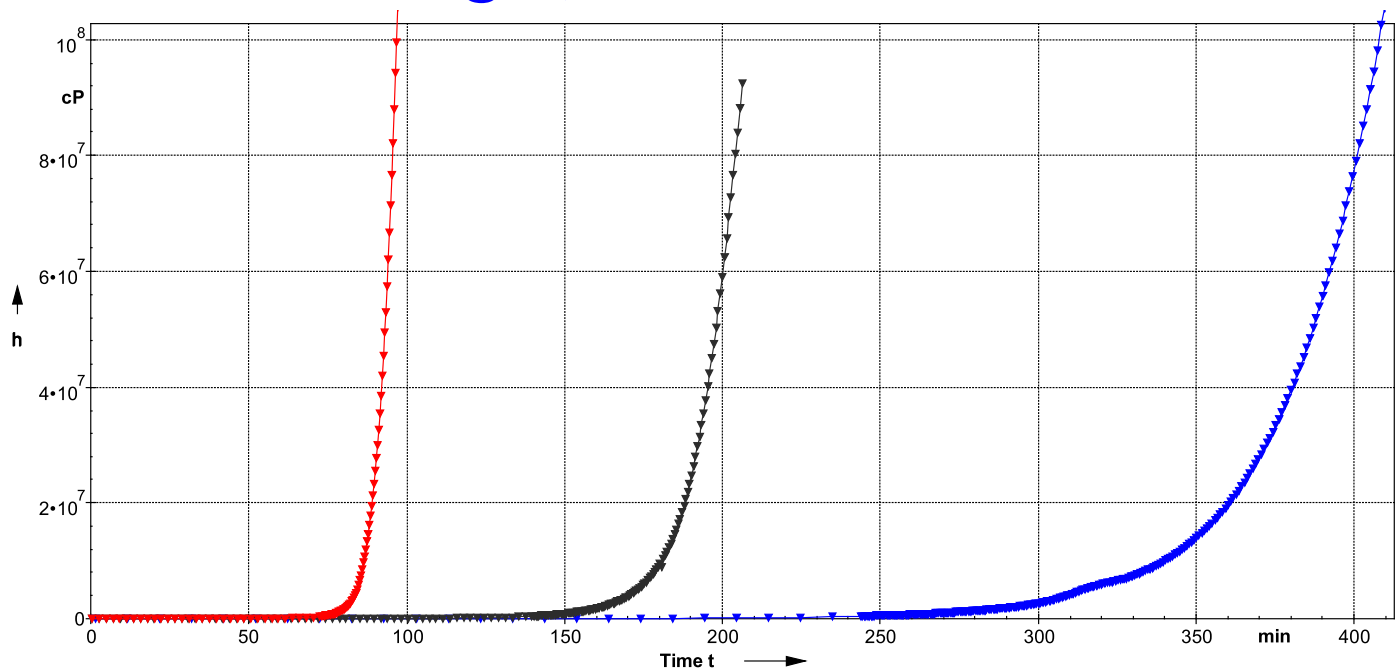
Reactivities on 500 g mix SR 1280 / SD 477x

	1280 / 4775	1280 / 4771
Exothermic temperature (°C) :		
@ 20 °C	255	170
@ 30 °C	270	230
@ 40 °C	295	255
Time taken to achieve exotherm :		
@ 20 °C	50'	6 hrs 50'
@ 30 °C	32'	2 hrs 15'
@ 40 °C	38'	1 hr 20'
Time taken to reach 50 °C :		
@ 20 °C	34'	6 hrs 00
@ 30 °C	15'	1 hrs 40'
@ 40 °C	9'	50'



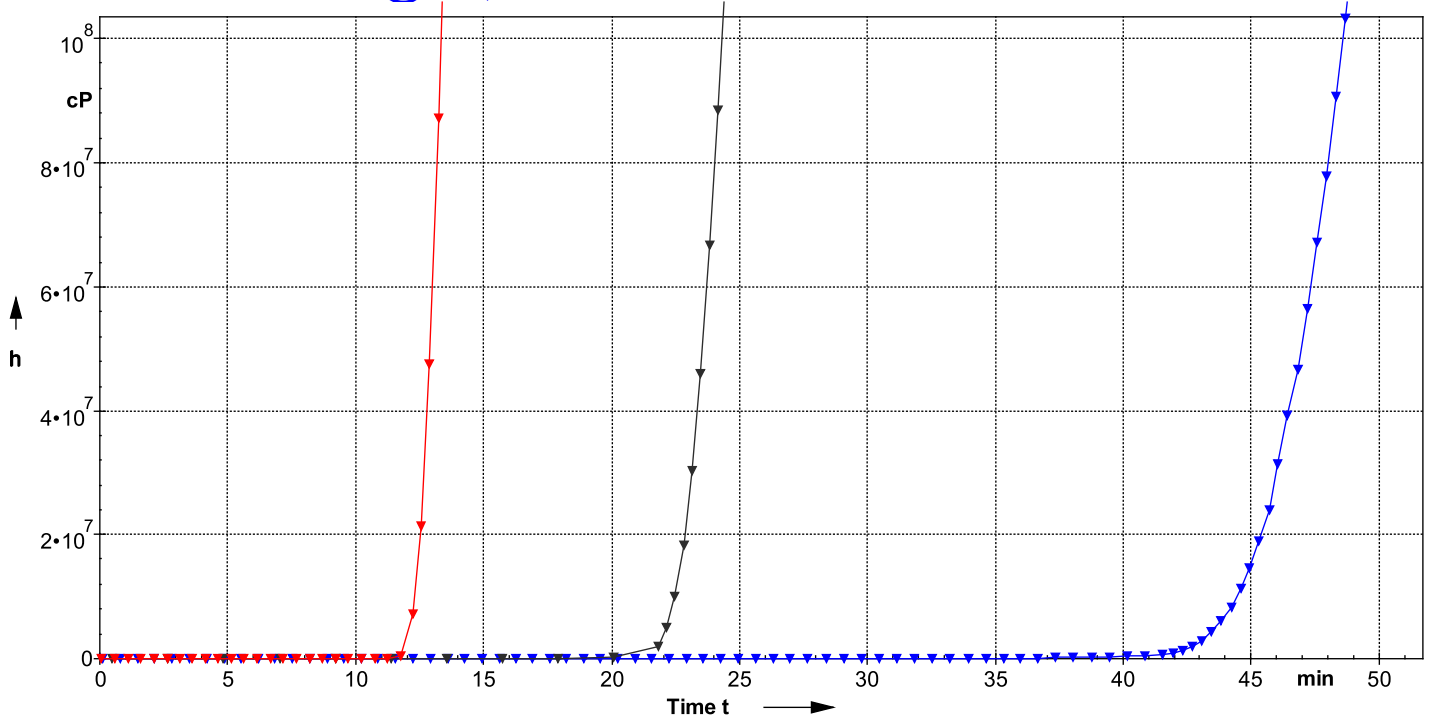
Reactivity – 1 mm film viscosity evolution with the temperature

SR 1280 / SD 4775@ 20, 30 and 40 °C



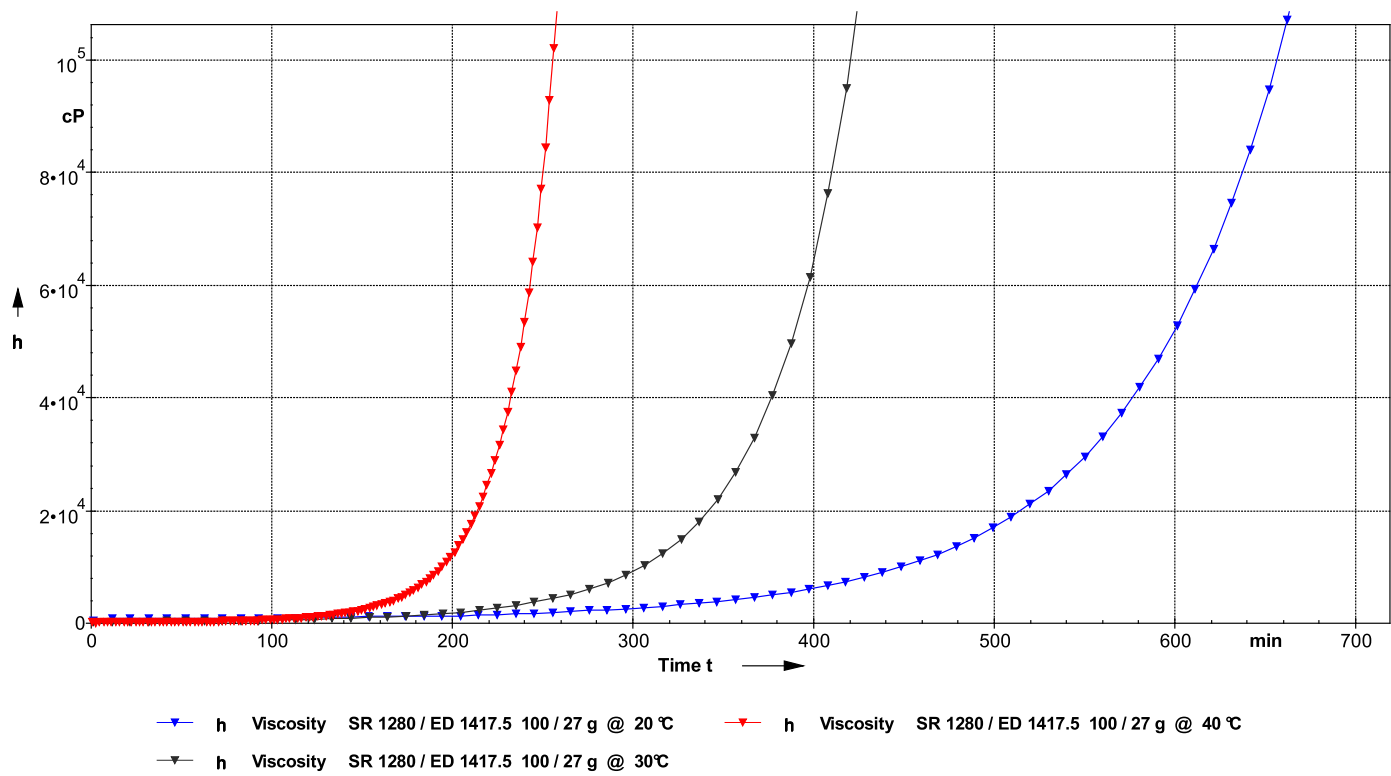
—▲ h Viscosity SR 1280 / ED 1417.7 100 / 27 g @ 20 °C —▼ h Viscosity SR 1280 / ED 1417.7 100 / 27 g @ 40 °C
—▼ h Viscosity SR 1280 / ED 1417.7 100 / 27 g @ 30 °C

SR 1280 / SD 4775@ 50, 60 and 70 °C

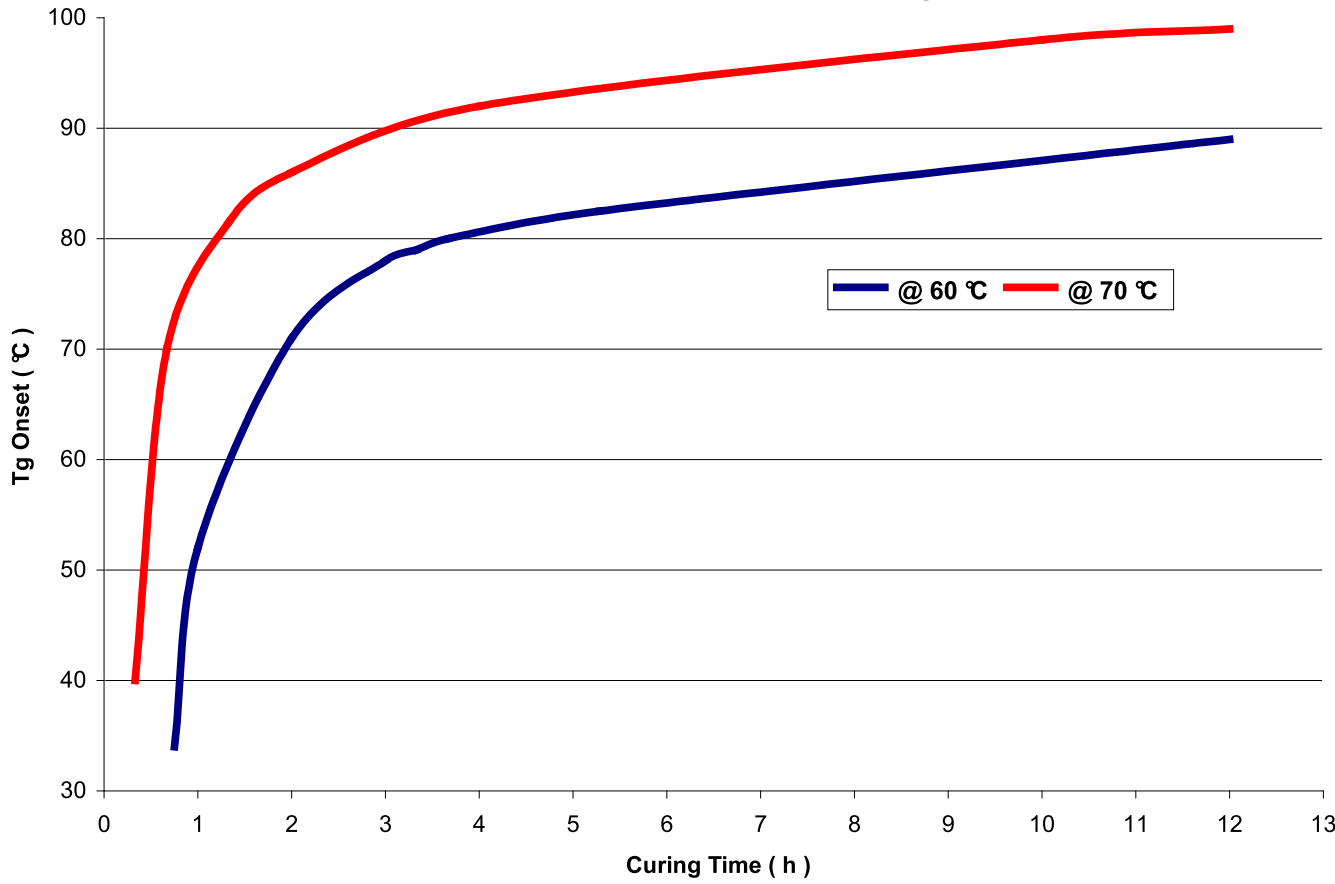


—▲ h Viscosity SR 1280 / ED 1417.7 100 / 27 g @ 50 °C
—▼ h Viscosity SR 1280 / ED 1417.7 100 / 27 g @ 60 °C
—▼ h Viscosity SR 1280 / ED 1417.7 100 / 27 g @ 70 °C

SR 1280 / SD 4771@ 20, 30 and 40 °C



Kinetic: Curing Time / Tg Onset
SR 1280 / SD 4775 100 / 27 g



Mechanical properties of pure resin

Systems	SR 1280 / SD 4775				SR 1280 / SD 4771		
	24 hrs 40 °C	8 hrs 60 °C	4 hrs 80 °C		24 hrs 40 °C	16 hrs 60 °C	8 hrs 80 °C
Cure							
Tension							
Modulus of elasticity				N/mm ²			
Maximum resistance	3400	3230	3050	N/mm ²	3290	3110	2800
Resistance at break	82	78	75		73	74	74
Elongation at max. resistance	81	77	70	%	69	71	70
Elongation at break	3.9	4.9	5.0	%	3.2	4.2	5.4
	4.3	5.8	6.0		3.4	5.1	6.0
Flexion							
Modulus of elasticity				N/mm ²			
Maximum resistance	3400	3200	2900	N/mm ²	3250	3150	2800
Elongation at max. resistance	127	127	125	%	115	116	117
	5.0	5.6	6.5		4.4	5.3	6.2
Charpy impact strength							
Resilience	25	25	23	KJ/m ²	17	39	21
Glass Transition							
Tg 1 Onset	69	90	100		71	89	103
Tg 1 Onset maximum			98				101

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

Charpy impact strength: NF T 51-035

Glass transition DSC : ISO 11357-2 : 1999 -5°C to 180°C under nitrogen gas

Tg1 or Onset : 1st point at 20 °C/min

Tg1 maximum or Onset : second passage



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