

SR 8500 / SD 7160 / SD 1213

Ultra slow epoxy systems

Solvent free unfilled epoxy systems formulated for high thickness castings, wedging engines, lead or cast-iron ballast. These systems can also be used for binding in concrete or for warm RTM process. It allows manufacturing high thickness laminate by and lay up, vacuum or press.

Characteristics:

Very low viscosity, can be accelerated with **SA 300**

Harden at ambient temperature, should be post cured at 40 to 80°C

Low toxicity, almost without smell, CMR-free.

Very clear mix. For optical quality **SR 1690** is better.

Excellent impact and thermal shock resistance.

Epoxy resin SR 8500

		SR 8500
Aspect		Liquid
Colour		Clear
Viscosity (mPa.s)	15 °C	24 500 ± 3 000
Rheometer	20 °C	9 800 ± 1 000
CP 50 mm	25 °C	4 500 ± 800
Shear rate 10 s ⁻¹	30 °C	2 300 ± 400
	40 °C	750 ± 200
Density :	20 °C	1.176 ± 0.05
Picnometer		
NF EN ISO 2811-1		
Storage stability		24 months, crystallization free

Hardeners SD xxxx

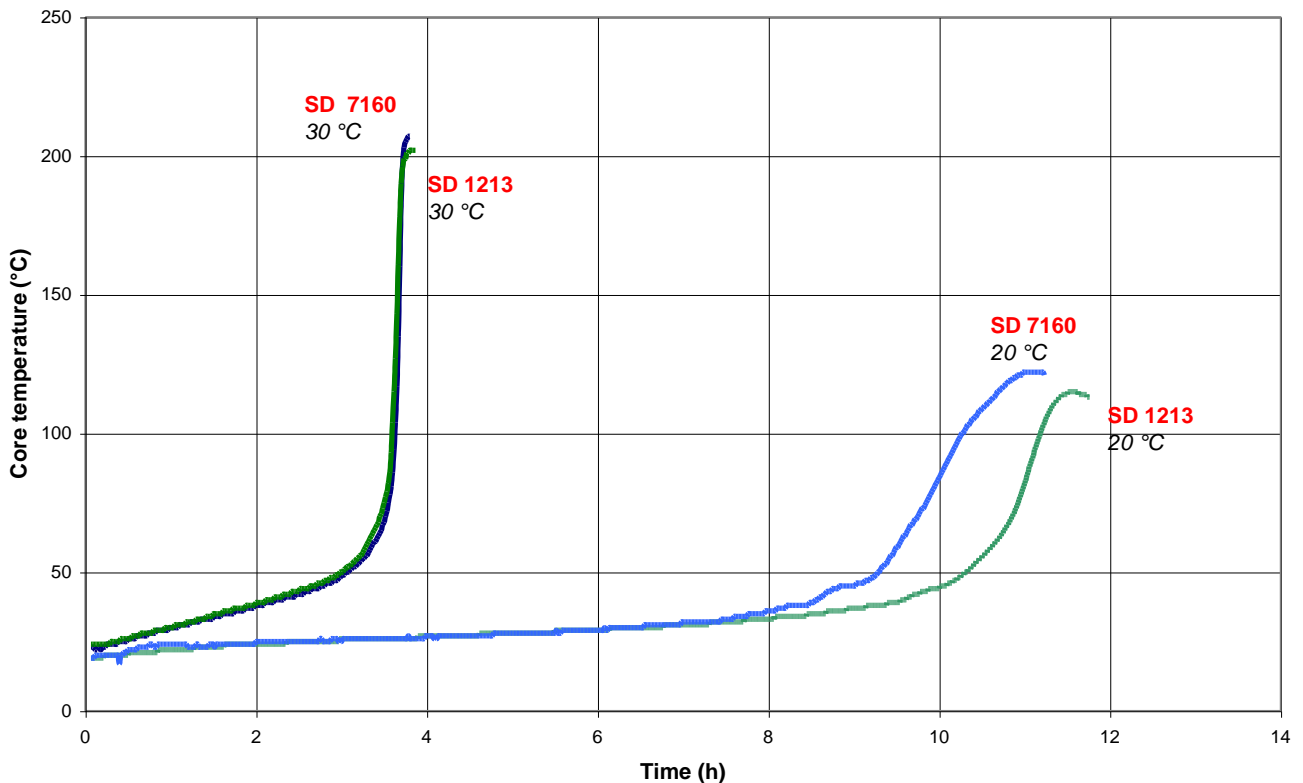
		SD 1213	SD 7160
Aspect / colour:		Clear liquid	Clear liquid
Reactivity		Ultra slow	Ultra slow
Viscosity (mPa.s)	15 °C	100 ± 20	180 ± 30
Rheometer	20 °C	75 ± 20	125 ± 20
CP 50 mm	25 °C	55 ± 15	90 ± 15
Shear rate 10 s ⁻¹	30 °C	40 ± 10	70 ± 10
	40 °C	25 ± 5	40 ± 8
Density :	20 °C	0.99 ± 0.01	0.98 ± 0.01
Picnometer			
NF EN ISO 2811-1			
Storage		24 months	24 months

SR 8500 / SD xxxx mix properties

		SR 8500 / SD 1213	SR 8500 / SD 7160
Weight ratio		100 / 47 g	100 / 47 g
Volume ratio		100 / 55 ml	100 / 55 ml
Viscosity (mPa.s)			
Rheometer	20 °C	950 ± 200	1 100 ± 200
PP 50 mm	30 °C	450 ± 100	550 ± 100
Shear rate 10 s ⁻¹	40 °C	220 ± 50	250 ± 50
	50 °C	90 ± 20	120 ± 20
	60 °C	50 ± 10	75 ± 15

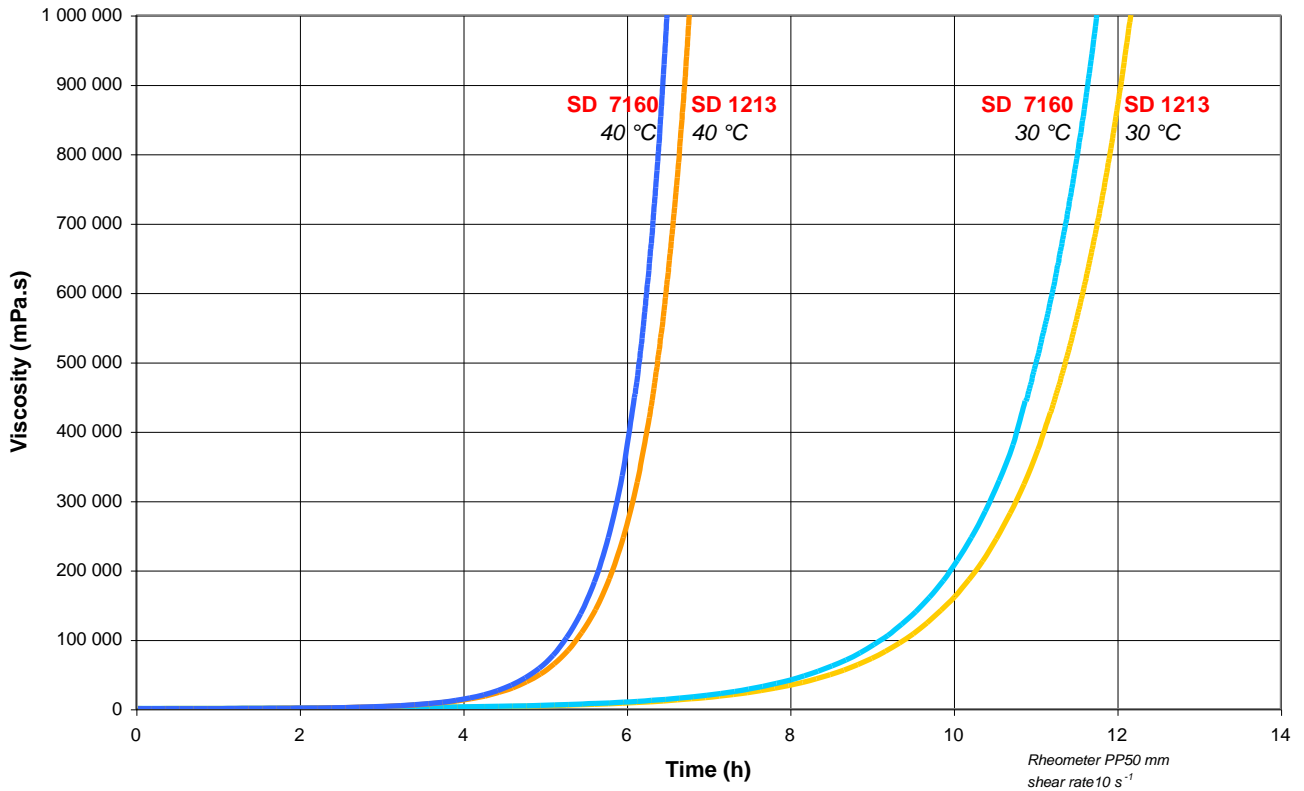
Mass reactivity – exothermic peak on a 1 000 g mix

		SR 8500 / SD 1213	SR 8500 / SD 7160
Exothermic peak on 1 000 g mix (°C)			
	30°C	202 °C	207 °C
	20°C	115 °C	122 °C
Time to reach exothermic peak on 1 000 g mix:			
	30°C	3 h 48'	3 h 47'
	20°C	11 h 30'	11 h
Time to reach 50 °C on 1 000 g mix:			
	30°C	3 h 05'	2 h 58'
	20°C	10 h 20'	9 h 20'

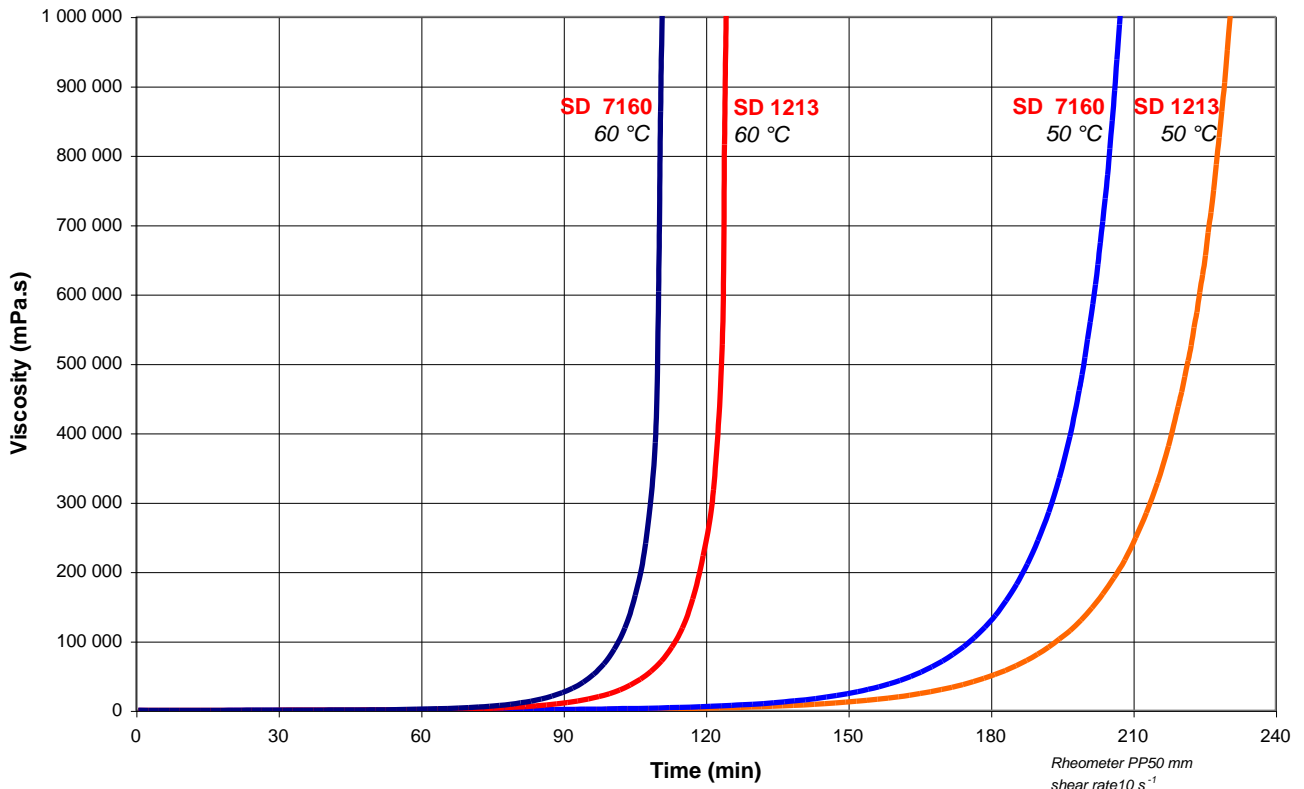


Reactivity – 1 mm film viscosity evolution

- 30 & 40 °C



- 50 & 60 °C



Post cure advice

Leave at ambient temperature then put :

24 hours 40 °C or 8 hours 60 °C or 3 hours at °C

Mechanical properties of pure resin

Cycles de polymérisation	SR 8500 / SD 1213				SR 8500 / SD 7160				
	14 days at 23 °C	48 h 23 °C + 24 h 40 °C	48 h 23 °C + 8 h 60 °C	48 h 23 °C + 16 h 60 °C	14 days at 23 °C	48 h 23 °C + 24 h 40 °C	48 h 23 °C + 8 h 60 °C	48 h 23 °C + 16 h 60 °C	
Tension									
Modulus of elasticity	N/mm ²	2262	2870	2890	2600	3300	2820	2870	2720
Maximum resistance	N/mm ²	46	63	58	56	61	63	64	63
Resistance at break	N/mm ²	38	57	49	50	61	48	56	52
Elongation at max. load	%	2.9	3.2	3	3.6	2.2	3.3	3.4	3.6
Elongation at break	%	3.6	3.5	3	5.8	2.2	4.8	4.7	4.7
Flexion									
Modulus of elasticity	N/mm ²	2234	3530	3170	2990	3350	3000	2960	2990
Maximum resistance	N/mm ²	67	111	101	96	99	99	101	103
Elongation at max. load	%	3.9	4.4	4.4	5.2	3.6	4.5	4.8	5
Elongation at break	%	12.5	10	15.7	10.3	4.2	14.3	10.2	9.5
Charpy Impact strength									
Resilience	kJ/m ²	23	35	35	29	19	51	51	53
Glass transition / DSC									
Tg1	°C	51	65	65	84	51	59	71	75
Tg1 max.	°C				84				80

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 gaz
 Tg1 or Onset : 1st point at 20 °C/mn
 Tg1 maximum or Onset : second passage

Mechanical properties of laminates based on SR 8500/ SD 7160

Laboratory reference	CE 311	
Sampling	SR 8500 / SD 7160	
Matrix	3300	
Reinforcement material	15	
Number of layers	Press	
Method	75	
Weight of reinforcement	%	16 h 60 °C
Cure cycle		
Flexural		
Modulus	N/mm ²	29 200
Maximum resistance	N/mm ²	675
Maximum elongation	%	2.8
Bending delamination		
Shear load at break	N/mm ²	51
Impact (Choc Charpy)		
	kJ/m ²	190
Water Absorption		
	%	+ 0.89
Glass Transition		
Tg 1	°C	77
Tg1 max.	°C	79

Tests carried out in accordance with the following norms:

Flexion :	NF T 57-105
Shear:	NF T 57-104
Charpy Impact Strength:	NF T 57-108
Water absorption:	Internal. Polymerisation according to cycle, machining, weighting, time spent in distilled water at 70 °C / 48 hours, weighting 1 hour after emerging, drying 24 h at 40°C, weighting, mechanical tests on 10 samples
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
Reinforcement 3300:	Twill 2/2 E Glass, weight 300 g/m ²

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