

SR 1700

High performance epoxy laminating system

High modulus, very stiff system, with low water absorption when cured and excellent adhesion to all types of reinforcements (carbon, aramid, glass etc). This system was developed for automotive, naval, and aerospace applications.

The SD 2806 and SD 2803 hardeners can be mixed in any proportion to achieve the required reactivity. The fast hardener SD 2806 offers fast laminate hardening at ambient temperature from 10 to 40 °C / 50 to 104 °F and can be slowed down by SD 2803. Good mechanical properties are achieved after room temperature curing, awesome after post curing.

Fast hardeners SD 2806 & SD 2805

Fast reactivity, short working time, for laminating thin composites. Awesome mechanical properties, parts can be released after 24 hours at 18 °C / 64.4 °F. Mechanical properties are optimized by post-curing at 50-55 °C / 122-131 °F. Designed for the manufacturing of high performance composites, with a service temperature up to 70-80 °C / 158-176 °F.

Standard hardener SD 2803

Slow reactivity, long working time, for laminating medium thickness composites. Good mechanical properties, parts can be released after 24 hours at 18 °C. Mechanical properties are optimized by post-curing at 50-55 °C. Designed for the manufacturing of high performance composites, with a service temperature up to 60-70 °C.

Ultra slow hardener SD 2801

Specially formulated for laminating medium and big size parts under vacuum. Requires a post cure at 40 °C minimum. Can be accelerated by SD 2806. Dedicated to high performance composite tool manufacturing, working at 60-70 °C continuously.

Slow hardener SD 7820

Slow hardener, very low viscosity allowing fast reinforcements wet out. Laminates require 6 to 8 hours of working time. Adapted to the production of parts with a service temperature up to 120°C. Items can be handled and extracted from moulds after 12 hours at 40°C or 8 h at 60°C

SR 1700 epoxy resin physical properties

		SR 1700
Aspect / colour		Yellow liquid
Viscosity (mPa.s)	@ 15 °C	3 800 ± 400
Rheometer	@ 20 °C	1 950 ± 200
CP 50 mm	@ 25 °C	1 100 ± 150
Shear rate 10 s ⁻¹	@ 30 °C	640 ± 100
	@ 40 °C	250 ± 100
Density	@ 20 °C	1.16 ± 0.01
Picnometer ISO 2811-1		
Storage		No crystallisation Avoid long storage periods at temperatures over 40 °C

SD 280x & SD 7820 hardeners physical properties

		SD 2806	SD 2805	SD 2803	SD 2801	SD 7820
Reactivity		Very fast	Rapide	standard	Very slow	Slow
Aspect / colour		Yellow liquid	Liquide Jaune	Yellow liquid	Clear liquid	Clear liquid
Viscosity (mPa.s)	@ 15 °C	450 ± 100	300 ± 50	200 ± 40	80 ± 15	120 ± 20
Rheometer	@ 20 °C	300 ± 60	200 ± 40	140 ± 30	60 ± 10	80 ± 15
CP 50 mm	@ 25 °C	200 ± 40	140 ± 25	100 ± 20	45 ± 10	60 ± 15
Shear rate 10 s ⁻¹	@ 30 °C	140 ± 30	100 ± 20	80 ± 15	35 ± 5	45 ± 10
Density (g/cm ³)	@ 20 °C	1.07 ± 0.01	1.04 ± 0.01	1.00 ± 0.01	0.95 ± 0.01	0.96 ± 0.01
Picnometer ISO 2811-1						

SR 1700 / SD 280x & SD 7820 mix properties

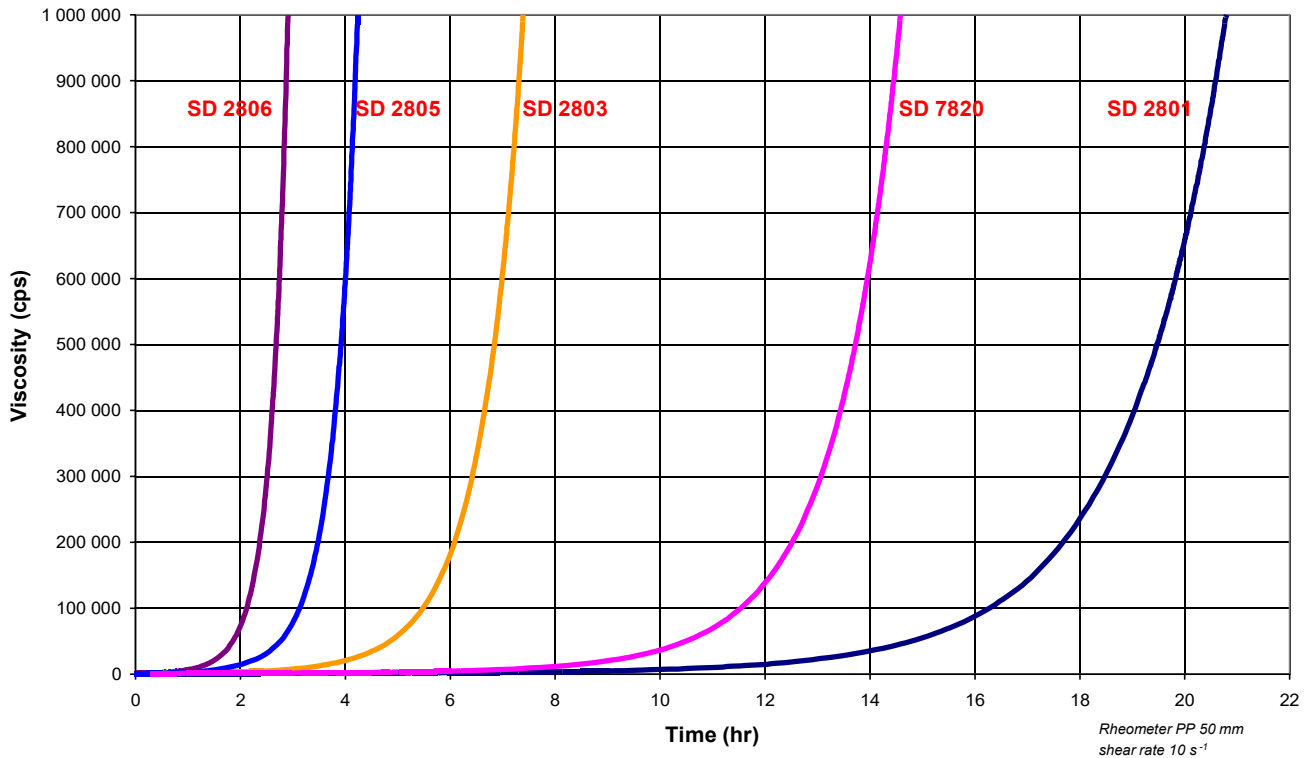
		SR 1700 / SD 2806	SR 1700 / SD 2805	SR 1700 / SD 2803	SR 1700 / SD 2801	SR 1700 / SD 7820
Weight ratio		100 / 39 g	100 / 39 g	100 / 39 g	100 / 39 g	100 / 36 g
Volume ratio		100 / 43 ml	100 / 44 ml	100 / 45 ml	100 / 48 ml	100 / 43 ml
Mix viscosity						
Rheometer	@ 20 °C	940 ± 100	800 ± 100	700 ± 100	510 ± 100	750 ± 150
PP 50 mm	@ 30 °C	360 ± 50	330 ± 50	300 ± 50	260 ± 50	250 ± 50
Shear rate 10 s ⁻¹	@ 40 °C					150 ± 30
	@ 50 °C					60 ± 10
	@ 60 °C					40 ± 10
	@ 70 °C					30 ± 5

Mass reactivity

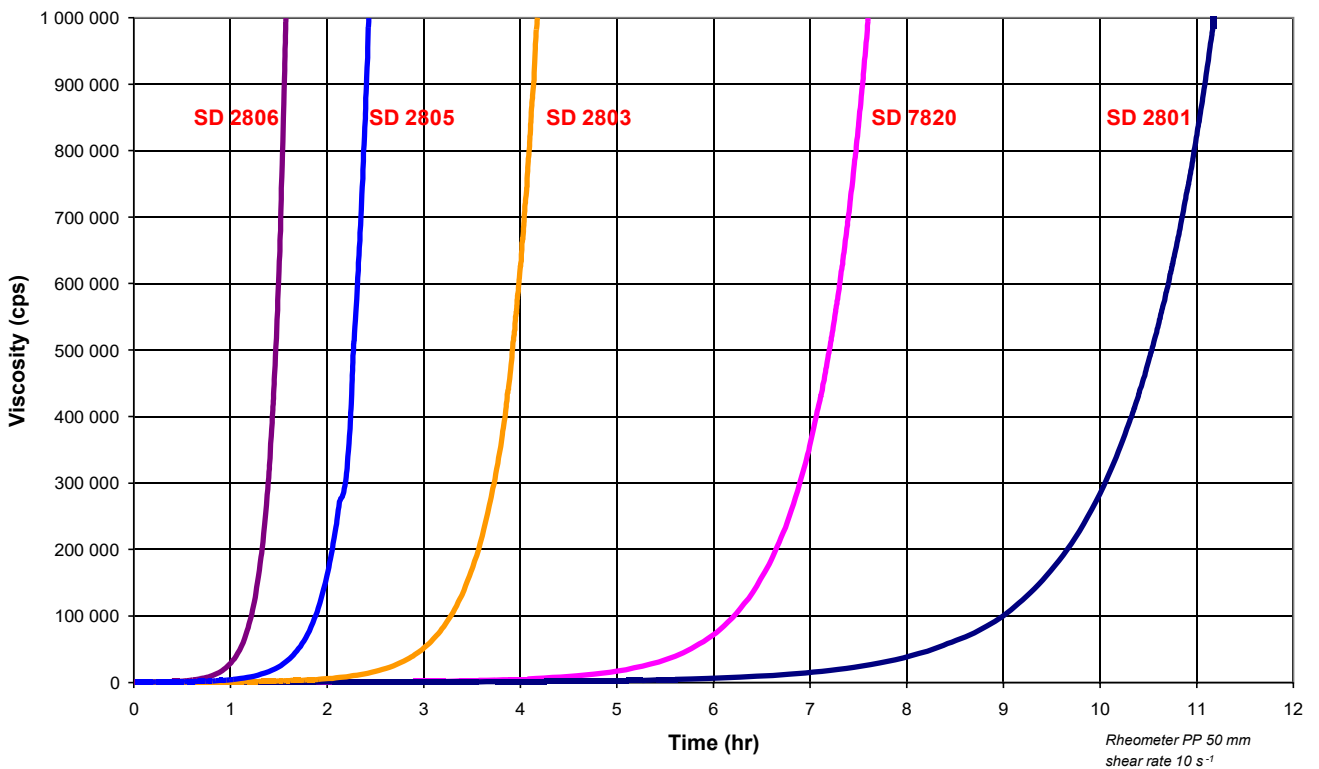
	SR 1700 / SD 2806	SR 1700 / SD 2805	SR 1700 / SD 2803	SR 1700 / SD 2801	SR 1700 / SD 7820
Exothermic peak on 500 g mix (°C) :					
@ 30 °C	> 210 °C	> 210 °C	> 210 °C	> 210 °C	> 210 °C
@ 20 °C	> 210 °C	> 210 °C	200 °C	37 °C	140 °C
Time to reach exothermic peak :					
@ 30 °C	14'	23'	42'	2 h 35'	1 h 20'
@ 20 °C	27'	42'	2 h 10'	14 h	9 h 30'
Time to reach 50 °C on 500 g mix :					
@ 30 °C	11'	18'	30'	2 h	1 h
@ 20 °C	23'	36'	1 h 58'	na	8 h 45'

Reactivity – 1 mm film viscosity evolution

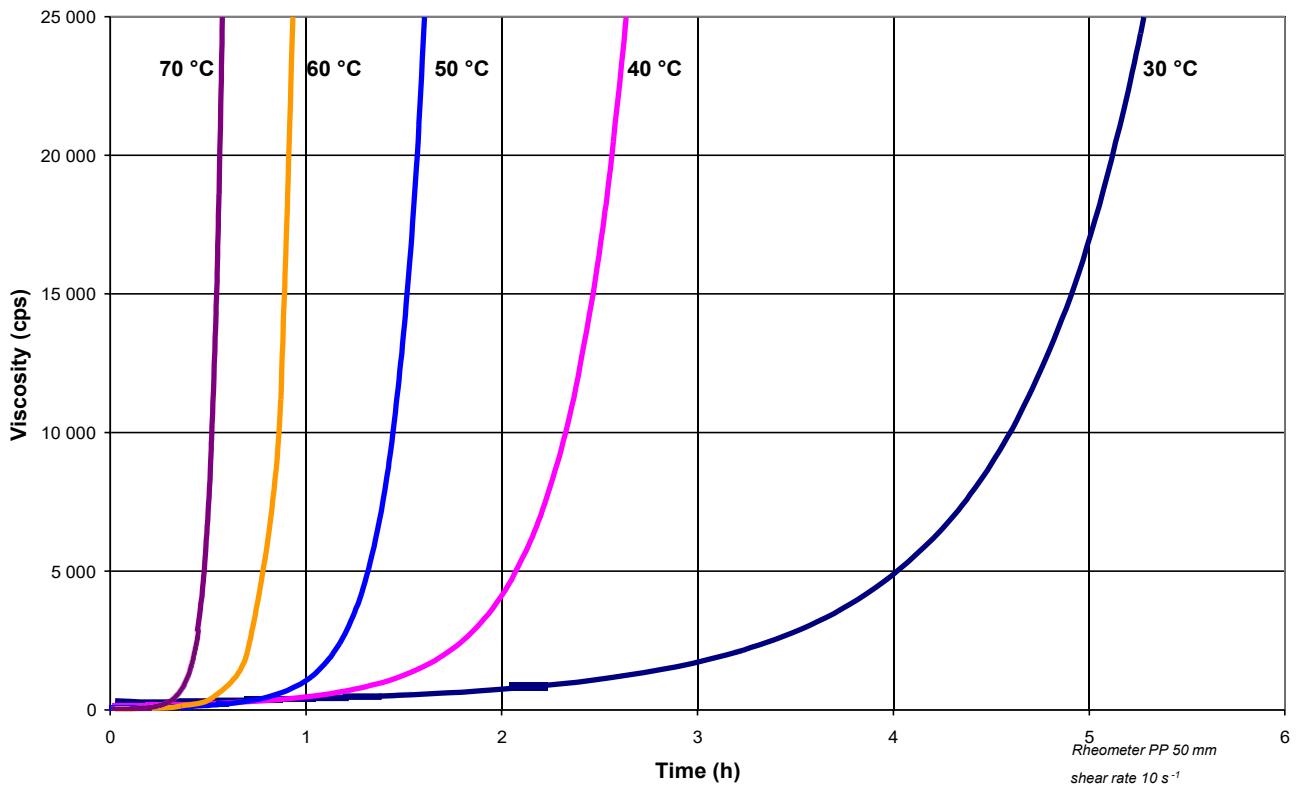
- @ 20 °C



- @ 30 °C



SR 1700 / SD 7820 hot film reactivity



Mechanical properties on pure cast resin

		SR 1700 / SD 2806			
Curing schedule		10 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
Tensile					
Modulus of elasticity	N/mm ²	4100	3800	3750	3700
Maximum resistance	N/mm ²	83	88	90	95
Resistance at break	N/mm ²	83	88	89	91
Elongation at maximum resistance	%	3.1	3.4	3.8	4.3
Elongation at break	%	3.1	3.4	4.5	5.6
Flexion					
Modulus of elasticity	N/mm ²	4150	3800	3800	3900
Maximum resistance	N/mm ²	130	134	138	142
Elongation at maximum resistance	%	4.2	4.8	5.5	5.6
Elongation at break	%	4.7	6.1	7.6	8.0
Charpy Impact strength					
Resilience	kJ/m ²	12	14	14	14
Glass transition					
Tg1	°C	56	70	82	87
Tg1 max.	°C				89

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 @ 20 °C/mn

Tg1 maximum or Onset : second passage

Mechanical properties on pure cast resin

		SR 1700 / SD 2805			
Curing schedule		10 days @ 23 °C	24 h 23 °C + 24h 40°C	24 h 23 °C + 16 h 60° C	24 h 23 °C + 8 h 80 °C
Tensile					
Modulus of elasticity	N/mm ²	4100	3700	3600	3500
Maximum resistance	N/mm ²	75	86	88	90
Resistance at break	N/mm ²	75	86	87	91
Elongation at maximum resistance	%	3.0	3.5	3.8	4.3
Elongation at break	%	3.0	3.8	4.6	5.4
Flexion					
Modulus of elasticity	N/mm ²	4000	3700	3600	3500
Maximum resistance	N/mm ²	128	133	138	140
Elongation at maximum resistance	%	3.1	4.9	5.4	5.5
Elongation at break	%	3.4	6.0	7.3	7.5
Charpy Impact strength					
Resilience	kJ/m ²	12	14	14	14
Glass transition					
Tg1	°C	56	70	82	87
Tg1 max.	°C				90

		SR 1700 / SD 2803			
Cure schedule		10 days at 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
Tensile					
Modulus of elasticity	N/mm ²	3900	3400	3400	3350
Maximum resistance	N/mm ²	65	70	90	85
Resistance at break	N/mm ²	65	70	87	84
Elongation at maximum resistance	%	2.5	2.7	4.2	4.4
Elongation at break	%	2.5	2.7	5.1	5.2
Flexion					
Modulus of elasticity	N/mm ²	3900	3450	3550	3600
Maximum resistance	N/mm ²	110	118	137	138
Elongation at maximum resistance	%	3.1	4.9	5.4	5.8
Elongation at break	%	3.3	9.6	8.0	7.5
Charpy Impact strength					
Resilience	kJ/m ²	11	13	15	15
Glass transition					
Tg1	°C	55	70	89	99
Tg1 max.	°C				101

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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 on pure cast resin

		SR 1700 / SD 2801		
Cure schedule		24 h 23 °C + 24 h 40 °C	24 h 23 °C + 16 h 60 °C	24 h 23 °C + 8 h 80 °C
Tensile				
Modulus of elasticity	N/mm ²	3050	3200	3100
Maximum resistance	N/mm ²	65	78	80
Resistance at break	N/mm ²	64	76	80
Elongation at maximum resistance	%	3	3.7	4.4
Elongation at break	%	3	4.1	4.6
Flexion				
Modulus of elasticity	N/mm ²	3248	3460	3320
Maximum resistance	N/mm ²	108	121	123
Elongation at maximum resistance	%	4.6	5.1	5.5
Elongation at break	%	6.3	6	6.9
Charpy Impact strength				
Resilience	kJ/m ²	18	16	15
Glass transition				
Tg1	°C	67	83	97
Tg1 max.	°C			98

		SR 1700 / SD 7820				
Cure schedule		14 days at 23 °C	24 h 23 °C + 24h 40 °C	24 h 23 °C + 16 h 60 °C	24 h 23 °C + 8 h 80 °C	24h 23°C + 16h 60°C + 2h 80°C + 2h 100°C + 2h 120°C + 4 h 140 °C
Tensile						
Modulus of elasticity	N/mm ²	3550	3200	3200	3100	3050
Maximum resistance	N/mm ²	30	62	86	93	76
Resistance at break	N/mm ²	30	62	84	93	76
Elongation at maximum resistance	%	0.9	2.1	3.8	5.4	4
Elongation at break	%	0.9	2.1	4.1	6.4	4
Flexion						
Modulus of elasticity	N/mm ²	3600	3600	3500	3380	3000
Maximum resistance	N/mm ²	68	113	136	137	120
Elongation at maximum resistance	%	1.8	3.4	5.4	6.5	7
Elongation at break	%	1.8	3.4	6.9	8.0	7
Charpy Impact strength						
Resilience	kJ/m ²	2	21	25	23	12
Glass transition						
Tg1	°C	50	67	88	108	134
Tg1 max.	°C				140	140

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

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