SR 8200 / SD 477x
Epoxy Resin Systems

SR 8200: Epoxy matrix

Hardeners:
Without REACH classified Toxic raw material (T)
SD 4775: Intermediate, medium hardener (experimental ref: ED 1417.7)
SD 4771: Ultra slow hardener (experimental ref ED 1417.5)

Profile:
Cure at ambiant temperature and post cure at 40 to 100 °C

Applications:
Hand laminating, infusion, adhesive, tooling, casting, laminates…

Epoxy Resin SR 8200:

Appearance		Viscous liquid
Chemical nature		Epoxy resin. Reaction product between bisphénol and epichlorhydrine.
Storage		Cristalization free Shelf life : 2 years @ 18 – 25°C
Colour / Gardner ASTM D 1544 Disc 4/30		Clear to yellow, Gardner < 2
Density (Kg/l) Picnometer NF EN ISO 2811-1	@ 20 °C	1.175 ± 0.005
Refractive index DIN 51423-2	@ 25 °C	1.565 ± 0.002
Viscosities (m.Pas ± 20 %) Rheometer CP 50 mm Shear rate 10 s^{-1}	@ 15 °C @ 20 °C @ 25 °C @ 30 °C @ 40 °C	5 600 ± 1 150 2 900 ± 600 1 600 ± 350 900 ± 200 350 ± 100

Base Hardeners SD 477x :

		SD 4775	SD 4771
Aspect / color		Clear Liquid	Clear to red Liquid
Gardner ASTM D 1544 Disc 4/30		5 maximum	12 maximum
Reactivity levels		Medium	Ultra slow
Viscosities (m.Pas ± 20 %) Rheometer CP 50 mm Shear rate 10 s^{-1}	@ 15 °C	285 ± 60	13 ± 3
	@ 20 °C	190 ± 40	11 ± 2.5
	@ 25 °C	130 ± 30	9 ± 2
	@ 30 °C	95 ± 20	7 ± 1.5
	@ 40 °C	55 ± 10	5 ± 1
Density (g/cm^3 ± 0.005) Picnometer NF EN ISO 2811-1	@ 20 °C	1.010 ± 0.005	0.947 ± 0.005

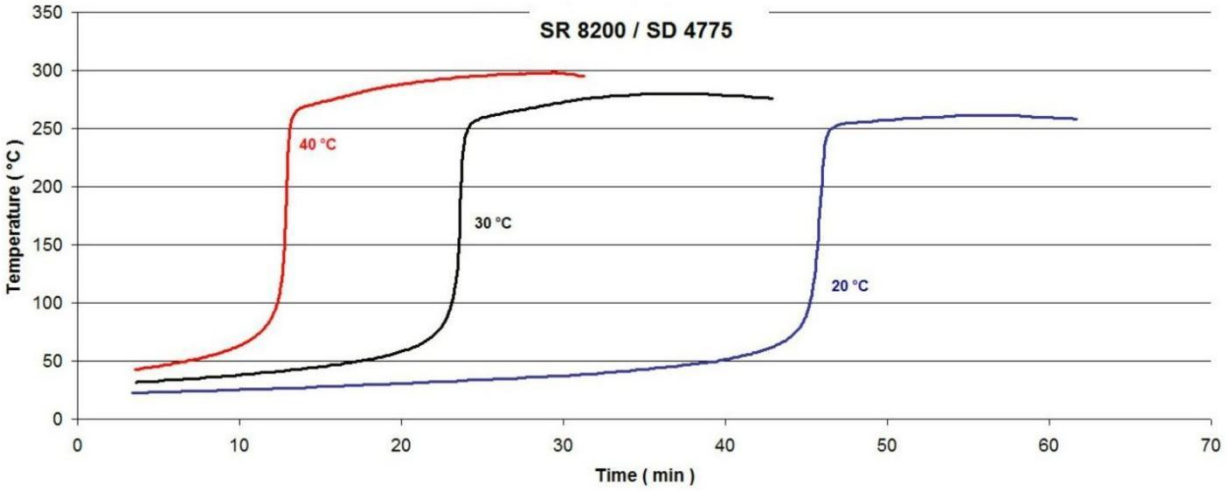
SR 8200 / SD 477x Mixes :

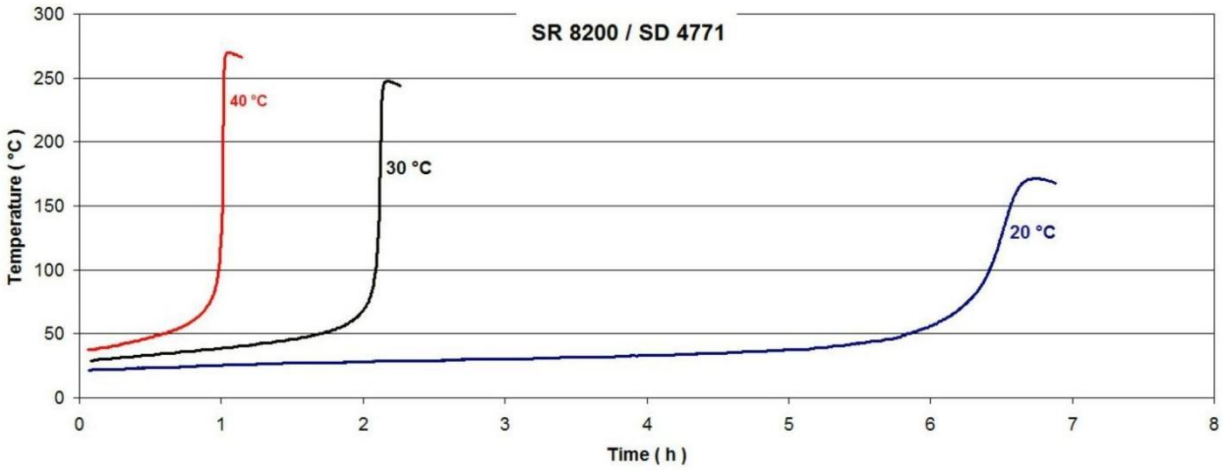
		SR 8200 / SD 4775	SR 8200 / SD 4771
Mixing ratio: Quantity by weigh		**100 g / 28 g**	**100 g / 28 g**
Quantity by volume		**100 ml / 33 ml**	**100 ml / 35 ml**
Viscosities (m.Pas ± 20 %) Rheometer CP 50 mm Shear rate 10 s^{-1}	@ 20 °C	1 000 ± 200	540 ± 110
	@ 30 °C	500 ± 100	200 ± 40
	@ 40 °C	290 ± 60	90 ± 20

Reactivities On 500 g Mix SR 8200 / SD 477x :

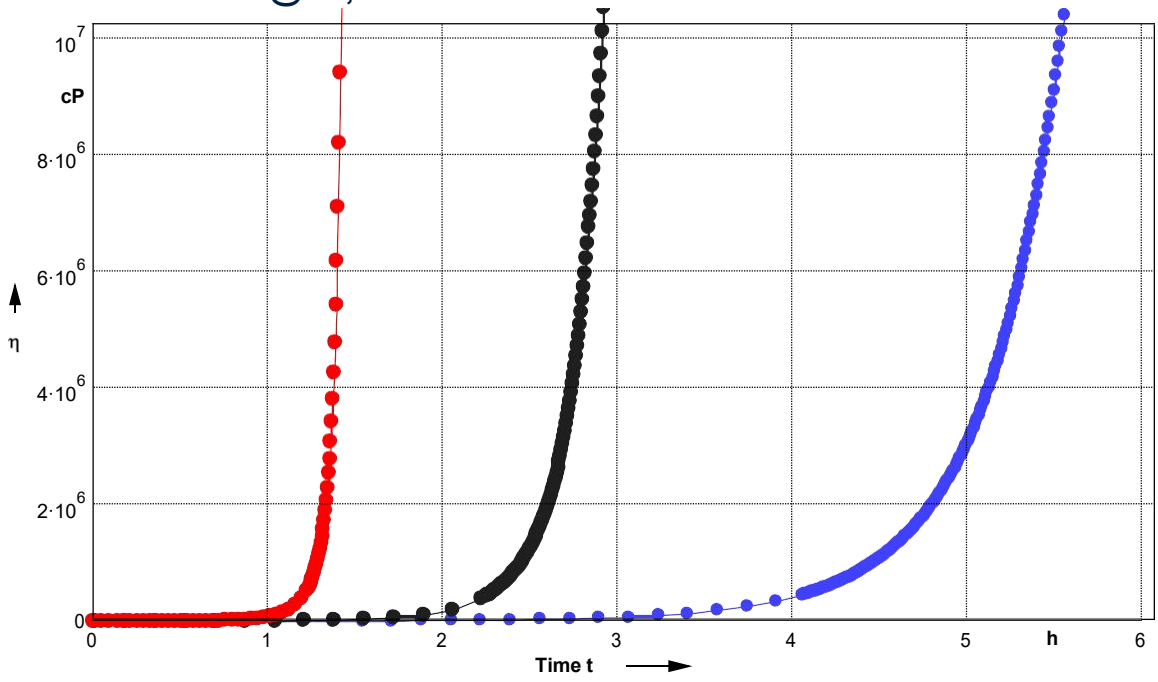
		8200 / 4775	8200 / 4771
Exothermic temperature (°C) :	@ 20 °C	262	172
	@ 30 °C	280	248
	@ 40 °C	298	270
Time taken to achieve exotherm :	@ 20 °C	55’	6h40
	@ 30 °C	35’	2h10
	@ 40 °C	29’	1h00
Time taken to reach 50 °C :	@ 20 °C	39’	5h50
	@ 30 °C	17’	1h40
	@ 40 °C	6’	34’

Exotherms 500 g mix:





Reactivity – 1 mm film viscosity evolution with the temperature
SR 8200 / SD 4775 @ 20, 30 and 40 °C



η Viscosity SR 8200 / SD 4775 100 / 28 g à 20 °C
η Viscosity SR 8200 / SD 4775 100 / 28 g à 30 °C
η Viscosity SR 8200 / SD 4775 100 / 28 g à 40 °C

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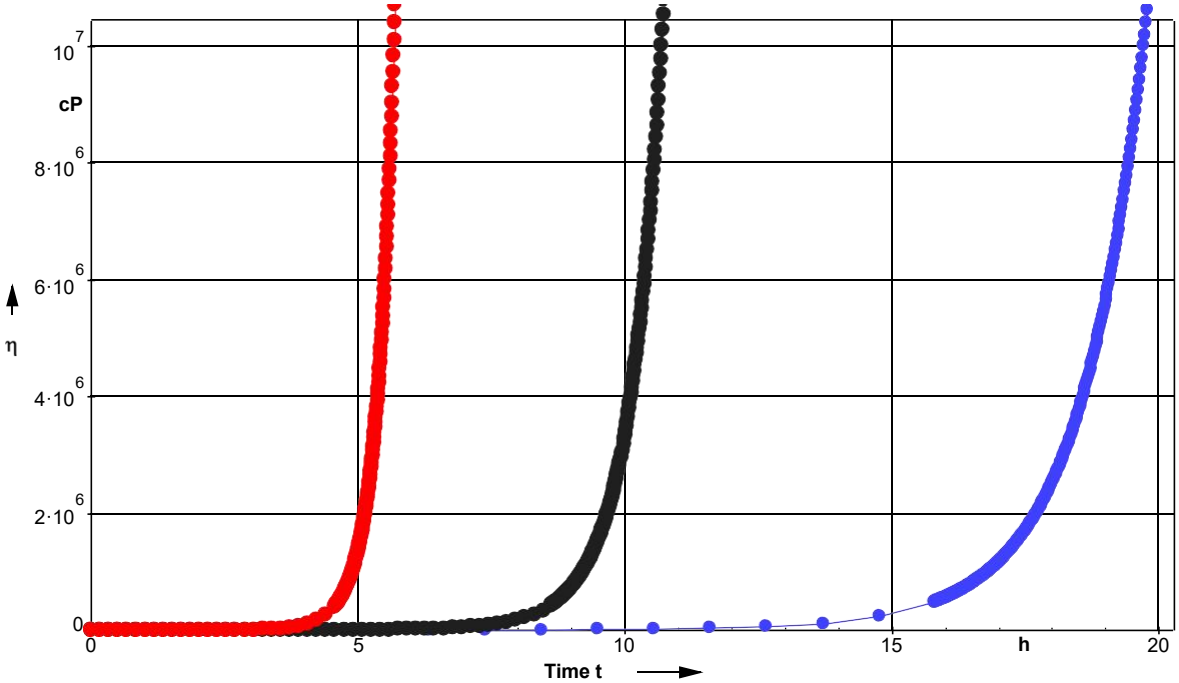
SR 8200 / SD 4771 @ 20, 30 and 40 °C



η Viscosity SR 8200 / SD 4771 100 / 28 g à 20 °C
η Viscosity SR 8200 / SD 4771 100 / 28 g à 30 °C
η Viscosity SR 8200 / SD 4771 100 / 28 g à 40 °C

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Mechanical Properties Of Pure Resin

Systems		SR 8200 / SD 4775			SR 8200 / SD 4771		
Cure		24 hrs 40 °C	8 hrs 60 °C	4 hrs 80 °C	24 hrs 40 °C	12 hrs 60 °C	6 hrs 80 °C
Tension							
Modulus of elasticity	N/mm²	3 600	3 300	3 200	3 500	3 300	3 100
Maximum resistance	N/mm²	81	83	84	74	73	75
Resistance at break	N/mm²	81	83	83	74	69	71
Elongation at max. resistance	%	3.2	4.7	4.9	2.6	3.8	4.6
Elongation at break	%	3.2	5.1	5.3	2.6	4.1	6.2
Flexion							
Modulus of elasticity	N/mm²	3 400	3 200	3 000	3 500	3 300	3 100
Maximum resistance	N/mm²	124	123	121	121	124	120
Elongation at max. resistance	%	4.7	5.6	6.3	4.2	5.0	5.6
Charpy impact strength							
Resilience	KJ/m²	20	22	18	13	31	29
Glass Transition							
Tg 1 Onset	°C	69	86	96	65	78	88
Tg 1 Onset maximum	°C			91			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
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