

SR 1331 / SH 166 / SX AC1MI 3K Epoxy Resin Systems

Profile:

3K hot curing anhydride epoxy system with extremely long pot life and very low viscosity.

The gel time can be adjusted by addition of accelerator.

Applications:

Pultrusion, filament winding...

Epoxy resin SR 1331

Appearance		Viscous liquid	
Chemical nature		Epoxy resin	
Storage		Can crystallize at low temperature or after a long storage. Shelf life : 2 years @ 18 – 25°C	
Colour		Clear to light yellow	
Colour Gardner scale		Gardner < 2	
Density	@ 20 °C	1,170 ± 0,005	Pyknometer NF EN ISO 2811-1
Refractive index	@ 25 °C	1,572 + 0,003	
Flash point		> 250 °C	DIN 51 584
Viscosity (m.Pas)	@ 20 °C	23 200 ± 4 650	Rheometer
	@ 25 °C	9 650 ± 1 930	CP 50 mm
	@ 30 °C	4 510 ± 900	Shear rate : 10 s ⁻¹
	@ 40 °C	1 290 ± 260	

Hardener SH 166

Appearance		Fluid liquid	
Chemical nature		Anhydride Hardener	
Storage		The liquid deteriorates in the presence of moisture. Close packaging after use.	
Colour		Clear to light yellow	
Colour Gardner scale		Gardner < 2	
Density	@ 25 °C	1.230 ± 0.020	Pyknometer NF EN ISO 2811-1
Refractive index	@ 25 °C	1.497 + 0.003	
Flash point (°C)		195	DIN 51 584
Viscosity (mPa.s)	@ 20 °C	97 ± 20	Rheometer
	@ 25 °C	68 ± 15	CP 50 mm
	@ 30 °C	50 ± 10	Shear rate : 10 s ⁻¹
	@ 40 °C	28 ± 6	

Accelerator SX AC 1MI

Appearance	Fluid liquid		
Chemical nature	1-methyl imidazole		
Colour	Clear liquid		
Colour Gardner scale	Gardner < 8		
Density	@ 25 °C	1,000 ± 0,02	Pyknometer NF EN ISO 2811-1
Refractive index	@ 25 °C	1,495 ± 0,003	
Flash point (°C)		93	DIN 51 584
Viscosity (mPa.s)	@ 25 °C	< 50	Rheometer CP 50 mm Shear rate : 10 s ⁻¹

SR 1331 / SH 166 / SX AC 1MI Mixes :

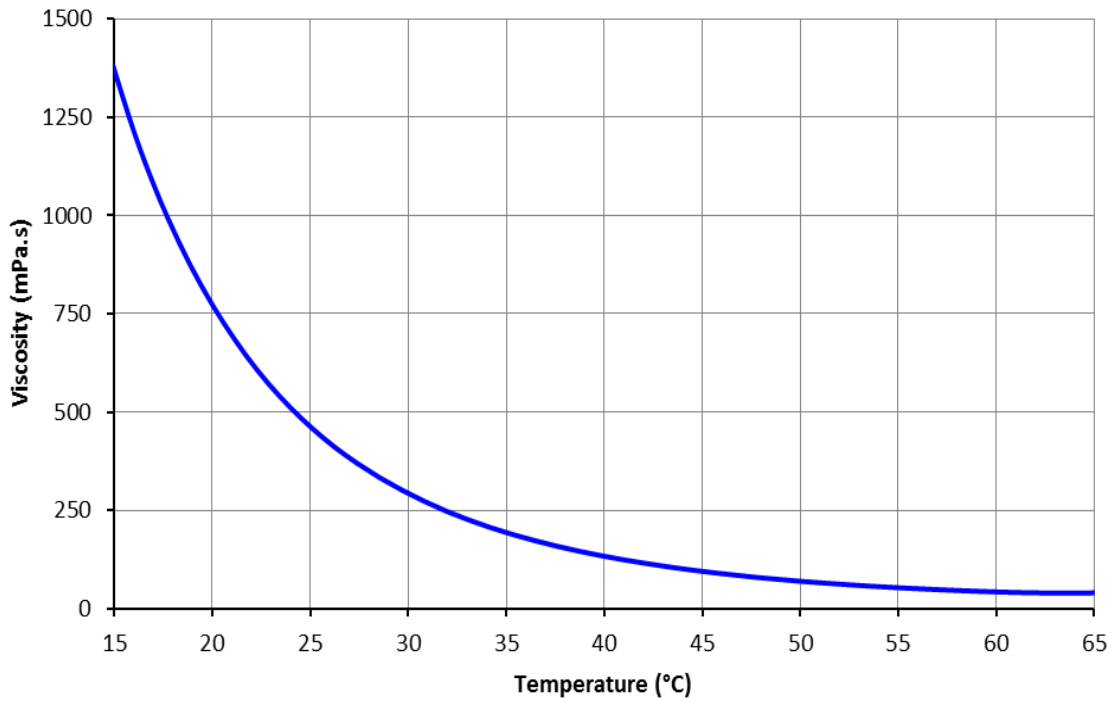
		Part by weight	Part by volume
Mix Ratio	SR 1331 SH 166 SX AC 1MI	100 90 0,5 – 2,0	100 86 0,6 - 2,3
Initial viscosities (mPa.s)	@ 25 °C @ 30 °C @ 40 °C @ 60 °C		460 ± 90 275 ± 55 135 ± 25 42 ± 8

System Reactivity as a Function of Accelerator PPW

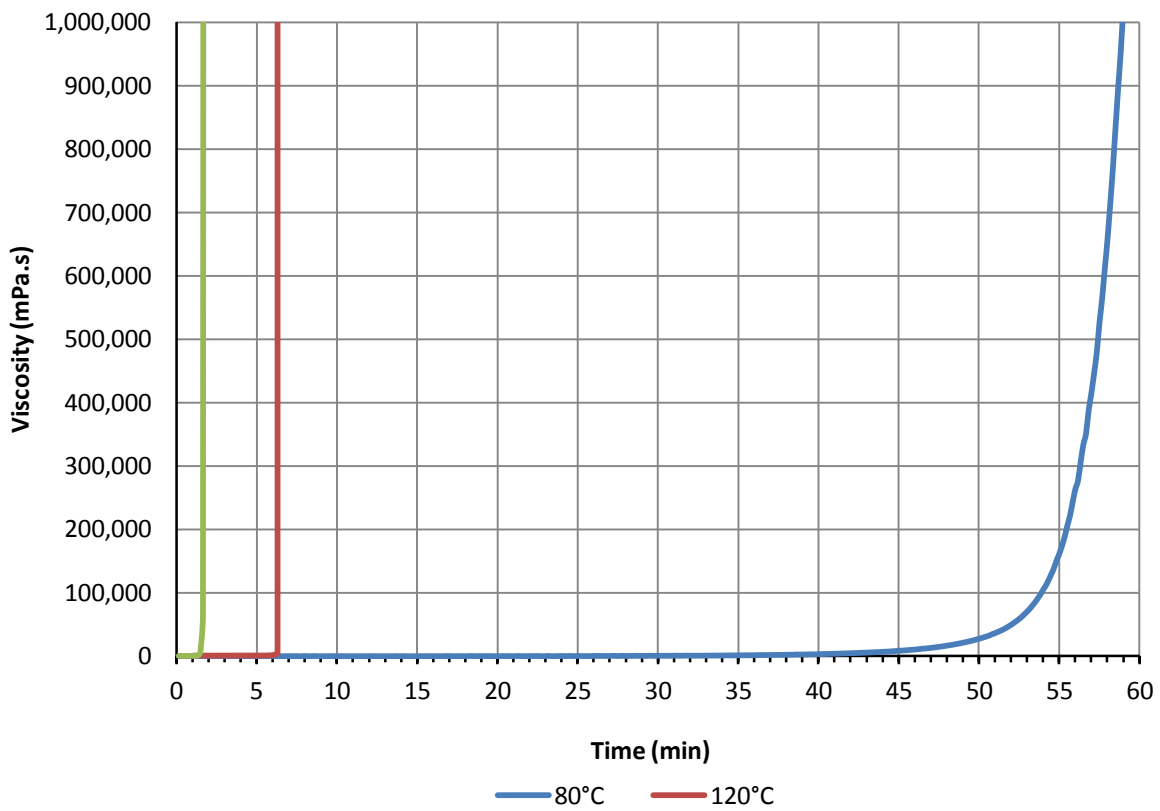
	SR 1331 SH 166 SX AC 1MI	100 90 0,5	100 90 1	100 90 2
Initial mix viscosity (mPa.s)	25°C 40°C 60°C		460 135 40	
Gel time on 1mm layer (min)	80°C 120°C 140°C	220 22 8	135 10 4	56 6,5 2
Curing cycle recommended		4h @ 80°C + 8h @ 140°C		

Rheometre PP 50 mm
shear rate: 10 s⁻¹


Initial Mix Viscosities: 15 to 65°C



Viscosity build-up with 2 pbw of SX AC1MI @ 80°C, 120°C and 140°C



Mechanical Properties of Pure Resin

		SR 1331 / SH 166 / SX AC1MI
Cure Schedule		4h @ 80°C + 8h @ 140°C
Tensile		
Modulus of elasticity	N/mm ²	3250
Maximum resistance	N/mm ²	87
Resistance at break	N/mm ²	85
Elongation at maximum resistance	%	5,0
Elongation at break	%	6,0
Flexion		
Modulus of elasticity	N/mm ²	3650
Maximum resistance	N/mm ²	131
Charpy impact strength		
Resilience	KJ/m ²	NC
Glass Transition / DSC		
Tg 1	°C	147
Tg 1 max	°C	154

Tests carried out on samples of pure cast resin, without prior degasing, between steel plates.

Measures undertaken according to Afnor normes:

Tension: NF T 51-034

Flexion : NF T 51-001

Choc Charpy: NF T 51-035

Transition vitreuse: ISO 11357-2: 1999 -5°C / 180 °C under nitrogen

Tg1 ou Onset: 1st point à 20 °C/mn

Tg1 maximum ou Onset : second run