

SR

250-275°F (120-135°C) Cure Epoxy Resin System

Typical applications

Sporting goods
Marine
Medical
Industrial manufacturing

Shelf life

6 months at 40°F (4°C)
12 months at 0°F (-18°C)

Out life

30 days at 70°F (21°C)

Description

SR is a 250-275°F toughened, controlled flow, epoxy resin system. It's versatility and exceptional out-life properties, along with low volatile content, makes it suitable for a wide variety of sporting goods, commercial, and industrial applications.

Benefits/features

- Excellent mechanical properties
- Moderate tack
- Controlled flow
- Flexible processing
- Toughened

Application

SR can be supplied with most commercially available fibers (carbon, quartz, aramid, S-glass, E-glass, etc.) in both woven form, as well as unidirectional tape.

Woven fabrics are available in standard commercial widths up to 50 inches. Unitape widths up to 50 inches are available in 45K Large Tow, 24K Tow Carbon Fiber, and 12K Standard Modulus, Intermediate Modulus, and High Modulus Carbon Fibers.

Recommended processing conditions

SR is typically cured at 250-275°F (120-135°C) depending on part size and complexity. Processing methods include autoclave, vacuum bag, and press curing.

Oven Cure by Vacuum Bag

Apply full vacuum and ramp temperature at 6°F per minute to 175-200°F.
Debulk at 175-200°F for 20 minutes.
Ramp to 275°F minimum part temperature at 6°F per minute.
Hold at 275°F for 60 minutes minimum.
Cool part to below 150°F before removing.

Autoclave Cure

Apply vacuum to 22 "Hg. Apply 40 psi pressure.
Ramp temperature at 6°F per minute to 250-285°F.
Hold at 250°F for 120 minutes or 285°F for 60 minutes.
Cool part to below 150°F before removing

Molding Cure

Insert cutting mold holding part into a 175-200°F preheated chamber.
Add pressure (or vacuum) and hold part at 175-200°F for 20-30 minutes.
Ramp to 250°F minimum part temperature and hold for 120 minutes.*
Cool mold and part to below 150°F before demolding.

*Additional time must be provided for the heat lag caused by tooling mass effects.





Neat resin [values are average and do not constitute a specification]

Property	Value
Gel time @ 275°F (135°C), minutes	6 – 12
Specific gravity	1.2
T _g (DMA, E'), °F (°C)	257 (125)
Tensile Strength, ksi (Msi)	11.4 (0.45)
Ult Tensile Strength, %	3.4
Flexural Strength, ksi (Msi)	17 (0.5)

Mechanical data [values are average and do not constitute a specification]

24K STANDARD MODULUS CARBON UNITAPE

34-700 24K, 42% Resin Content, Normalized to 60% FV

Property	Test method	RT
0° Tensile strength, ksi (MPa)		362 (2490)
0° Tensile modulus, Msi (GPa)	ASTM D3039	18.9 (130)
Poisson's Ratio (0°)		0.31
0° Compressive strength, ksi (MPa)	ASTM D695 Mod	192 (1320)
0° Compressive modulus, Msi (GPa)		17.8 (122)
0° Flexural strength, ksi (MPa)	ASTM D790	205 (1410)
0° Flexural modulus, Msi (GPa)		17.8 (122)
Short beam shear strength, ksi (MPa)	ASTM D2344	12.3 (84.8)
T _g by DMA (E'), °C		120

12K INTERMEDIATE MODULUS CARBON UNITAPE

IM4 12K, 120 GSM Fiber Area Weight at 30% Resin Content

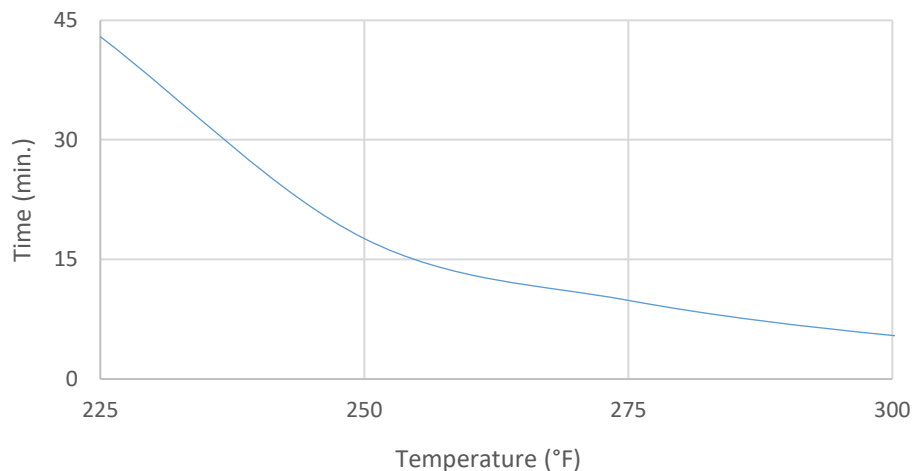
Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D3039	295 (2040)
0° Tensile modulus, Msi (GPa)		24.5 (169)
0° Compressive strength, ksi (MPa)	SACMA 1R-94	218 (1510)
0° Compressive modulus, Msi (GPa)		21.8 (150)
0° Flexural strength, ksi (MPa)	ASTM D790	293 (2020)
0° Flexural modulus, Msi (GPa)		21.5 (148)
Short beam shear strength, ksi (MPa)	SACMA 8R-94	12.3 (84.8)

12K HIGH MODULUS CARBON UNITAPE

MS40 12K, 120 GSM Fiber Area Weight at 30% Resin Content

Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D3039	322 (2220)
0° Tensile modulus, Msi (GPa)		32.5 (224)
0° Compressive strength, ksi (MPa)	SACMA 1R-94	165 (1140)
0° Compressive modulus, Msi (GPa)		23.0 (159)
0° Flexural strength, ksi (MPa)	ASTM D790	255 (1760)
0° Flexural modulus, Msi (GPa)		25.5 (176)
Short beam shear strength, ksi (MPa)	SACMA 8R-94	11.5 (79.3)

Gel Time vs temperature



The information contained herein has been obtained under controlled laboratory conditions and are typical or average values and do not constitute a specification, guarantee, or warranty. Results may vary under different processing conditions or in combination with other materials. The data is believed to be reliable but all suggestions or recommendations for use are made without guarantee. You should thoroughly and independently evaluate materials for your planned application and determine suitability under your own processing conditions before commercialization. Furthermore, no suggestions for use or material supplied shall be considered a recommendation or inducement to violate any law or infringe any patent.

CORPORATE OFFICE
 Composite Materials Division
 1822 Reynolds Avenue
 Irvine, CA 92614

Tel: (949) 253-5680
 Fax: (949) 253-5692
www.mccfc.com
 compositesales@mccfc.com

THE KAITEKI COMPANY
 Mitsubishi Chemical Holdings Group