5300-1

160-300°F (70-150°C) Epoxy Resin System

NEWPORT HIGH PERFORMANCE MATERIALS

MITSUBISHI CHEMICAL GROUP

Technical Data Sheet

Typical applications
Sporting goods
Medical
Marine
Industrial

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

Out life
45 days at 70°F (21°C)

Description
5300-1 is a 160°F (71°C) to 300°F (149°C) cure, toughened, controlled flow epoxy resin system. Versatile processing, excellent mechanical properties, and long out life make 5300-1 suitable for a variety of applications: including large scale structures where layup requirements can take days or weeks, or high through-put press mold at elevated temperature which requires short cycle time.

Benefits/features
- Excellent low temperature cure capability, as low as 160°F (71°C)
- Capable of fast cure at elevated temperature
- Excellent mechanical properties
- Good tack with controlled flow
- Versatile processing

Application
5300-1 can be supplied with most commercially available fibers (carbon, quartz, aramid, S-glass, E-glass, and other specialty fibers) in both woven form (designated as NB) as well as unidirectional tape (designated as NCT).

Woven fabrics are available in standard commercial widths up to 60 inches (1.5 m). Unitape widths up to 39 inches (1 m) are available in standard fiber weights range from 70 – 300 gsm (0.014 – 0.060 psf).

Recommended processing conditions
5300-1 can be cured at temperatures from 160°F (71°C) to 300°F (149°C) depending on part size and complexity. Suitable for vacuum bag, autoclave and press cure with low, medium and high pressures. Large scale structures can be cured as low as 160°F (71°C) with extended cure times. The recommended cure conditions are listed in the table below using a 3°F/min (1.7°C/min) ramp rate. Contact technical service to discuss specific applications.

Cure temperature °F (°C)	Cure time
160 (71)	16 hrs
180 (82)	8 hrs
212 (100)	1 hr

Cure temperature °F (°C)	Cure time
250 (121)	20 – 30 mins
275 (135)	10 - 20 mins
300 (149)	5-10 (max.) mins

Parts requiring a high T_g may need a post cure. Please contact your account manager or MCCFC technical support to discuss specific applications.

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

Property	Value
Gel time @ 230°F (110°C), minutes	9-13
Gel time @ 275°F (135°C), minutes	2-4
Specific gravity	1.21
T_g @ (DMA, E'), °F (°C)	293* (145*)

*Cured @ 180°F (82°C) – 4 hours, with a post cure @ 250°F (121°C) – 1 hour

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

34-700 CARBON UNITAPE

35%RC, vacuum bag cured, 16 hours at 160°F, normalized to 60%FV

Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D-3039	380 (2630)
0° Tensile modulus, Msi (GPa)		19.3 (133)
90° Tensile strength, ksi (MPa)		6.5 (44.8)
90° Tensile modulus, Msi (GPa)		1.21 (8.34)
0° Compression strength, ksi (MPa)	ASTM D-695 mod	230 (1590)
0° Compression modulus, Msi (GPa)		17.5 (121)
90° Compression strength, ksi (MPa)		25.4 (175)
90° Compression modulus, Msi (GPa)		1.39 (9.58)
0° Flexural strength, ksi (MPa)	ASTM D-790	217 (1500)
0° Flexural modulus, Msi (GPa)		18 (124)
90° Flexural strength, ksi (MPa)		15.8 (109)
90° Flexural modulus, Msi (GPa)		1.25 (8.62)
±45° Shear strength @ 5% strain, ksi (MPa)	ASTM D-3518	9.1 (62.7)
±45° Shear modulus, Msi (GPa)		0.61 (4.21)
Short beam shear strength, ksi (MPa)	ASTM D-2344	12.1 (83.4)

MITSUBISHI CHEMICAL GROUP

Technical Data Sheet

TR30S 3K PLAINWEAVE CARBON FABRIC

42%RC, press cured, 30 minutes at 250°F, 60 psi, normalized to 60%FV

PropertyA	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D-3039	132 (910)
0° Tensile modulus, Msi (GPa)		10.0 (69.0)
90° Tensile strength, ksi (MPa)*		92.0 (634)
90° Tensile modulus, Msi (GPa)*		7.58 (52.3)
0° Compression strength, ksi (MPa)	ASTM D-695 mod	119 (820)
0° Compression modulus, Msi (GPa)		9.21 (63.5)
90° Compression strength, ksi (MPa)*		87.1 (601)
90° Compression modulus, Msi (GPa)*		6.97 (48.1)
0° Flexural strength, ksi (MPa)	ASTM D-790	152 (1050)
0° Flexural modulus, Msi (GPa)		9.28 (64.0)
90° Flexural strength, ksi (MPa)*		108 (745)
90° Flexural modulus, Msi (GPa)*		6.54 (45.1)
Short beam shear strength, ksi (MPa)*	ASTM D-2344	10.5 (72.4)
Tg by DMA (E'), °C	ASTM D-7028	150

**Results as tested*

7781 E-GLASS FABRIC

40%RC, press cured, 30 minutes at 250°F, 60 psi, normalized to 60%FV

Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D-3039	96.8 (667)
0° Tensile modulus, Msi (GPa)		4.78 (33.0)
0° Compression strength, ksi (MPa)	ASTM D-695 mod	111 (765)
0° Compression modulus, Msi (GPa)		4.88 (33.6)
0° Flexural strength, ksi (MPa)	ASTM D-790	135 (931)
0° Flexural modulus, Msi (GPa)		4.76 (32.8)
Short beam shear strength, ksi (MPa)*	ASTM D-2344	10.5 (72.4)
±45° In plane shear strength, ksi (MPa)*	ASTM D-3518	17.3 (119)
±45° In plane shear strength, ksi (MPa)* *5% shear strain*		8.95 (61.7)
±45° In plane shear strength, ksi (MPa)* *0.2% offset yield*		5.80 (40.0)
±45° In plane shear modulus, Msi (GPa)*		0.49 (3.38)
Tg by DMA (E'), °C*	ASTM D-7028	154

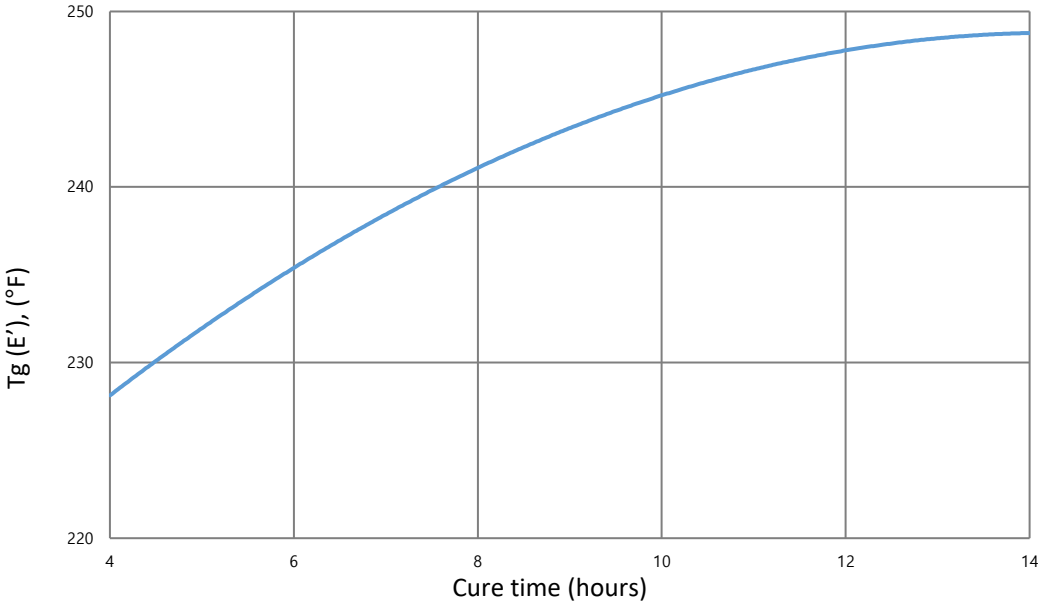
**Results as tested*

MITSUBISHI CHEMICAL GROUP

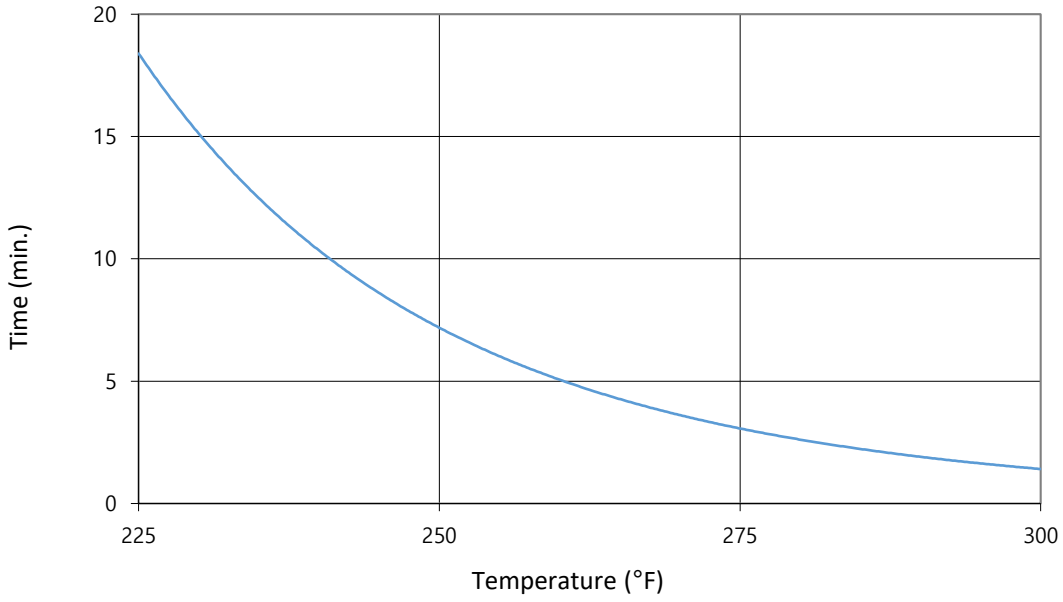
Technical Data Sheet

Tg vs. Cure time

@180°F (82°), no post cure



Gel time vs. temperature



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 GROUP

MITSUBISHI CHEMICAL GROUP

Technical Data Sheet

5300-1 - 062123