304-1

NEWPORT HIGH PERFORMANCE MATERIALS

250-300°F (120-150°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
304-1 is a 250°F (120°C) to 300°F (150°C) cure, highly toughened, controlled flow epoxy resin system. Versatile processing, excellent mechanical properties, and long out time make 304-1 suitable for a variety of applications where strength and toughness are required.

Benefits/features
- High toughness
- High impact resistance
- Controlled flow
- Moderate tack

Application
304-1 can be supplied with most commercially available fibers (carbon, quartz, aramid, S-glass, E-glass, etc.) 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 ranging from 70 – 300 gsm (0.014 – 0.060 psf).

Recommended processing conditions
304-1 can be cured at temperatures from 250-300°F (120-150°C) depending on part size and complexity. Low, medium, and high pressure molding techniques may be used to cure 304-1. Recommended cure cycle is 50 psi (345 kPa), 3°F (1.7°C)/min ramp to 275°F (135°C), hold for 60 minutes, cool to <140°F (60°C).

Contact your account manager or MCCFC technical support to discuss specific applications.

MITSUBISHI CHEMICAL CARBON FIBER AND COMPOSITES

Technical Data Sheet

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

Property	Value
Gel time @ 275°F (135°C), minutes	3 – 5
Specific gravity	1.20
T_g (DMA, E'), °C (°F)	120 (248)

Outgassing properties tested in accordance with ASTM E595

Property	NCT304-1 34-700 300gsm
Average value TML (Total mass loss)	0.27%
Average value WVR (Water vapor recovered)	0.09%
Percent CVCM (Collected volatile condensable materials)	0.01%

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

TR50S CARBON UNITAPE

37%RC, autoclave cured, 80 psi, 90 minutes at 275°F, results as tested

Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D3039	421 (2903)
0° Tensile modulus, Msi (GPa)		21 (145)
90° Tensile strength, ksi (MPa)		12 (83)
90° Tensile modulus, Msi (GPa)		1.1 (7.6)
Poison's ratio		0.27
0° Compressive strength, ksi (MPa)	ASTM D695mod	243 (1675)
0° Compressive modulus, Msi (GPa)		19 (131)
90° Compressive strength, ksi (MPa)		30 (207)
90° Compressive modulus, Msi (GPa)		1.3 (8.9)
0° Flexural strength, ksi (MPa)	ASTM D790	239 (1648)
0° Flexural modulus, Msi (GPa)		19 (131)
Short beam shear strength, ksi (MPa)	ASTM D2344	14 (97)
±45° IPS strength, ksi (Mpa)	ASTM D3518	19 (131)
±45° IPS modulus, ksi (Mpa)		0.5 (3.4)

MITSUBISHI CHEMICAL CARBON FIBER AND COMPOSITES

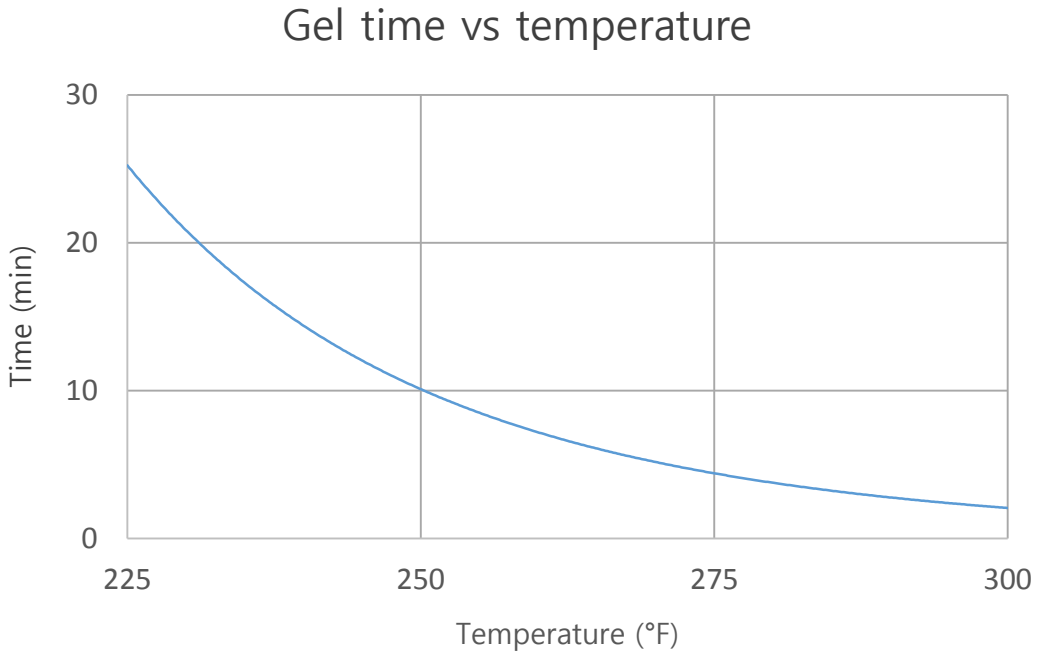
Technical Data Sheet

TR30S 3K PLAINWEAVE CARBON FABRIC

33%RC, press cured, 50 psi, 60 minutes at 275°F, results as tested

Property	Test method	RT	160°F (71°C)	200°F (93°C)	RT wet*	160°F (71°C) wet*
0° Tensile strength, ksi (MPa)	ASTM D638 Type I	85 (586)	78 (538)	75 (517)	78 (540)	71 (490)
0° Tensile modulus, Msi (GPa)		9.0 (62)	8.9 (61)	8.8 (61)	8.9 (61)	8.2 (57)
Poison's ratio		0.049	--	--	--	--
0° Compressive strength, ksi (MPa)	SACMA 1R-94	68 (1570)	56 (386)	54 (372)	55 (379)	38 (262)
0° Compressive modulus, Msi (GPa)		8.0 (142)	7.4 (51)	7.1 (49)	7.3 (50)	7.0 (48)
0° Flexural strength, ksi (MPa)	ASTM D790	115 (793)	99 (683)	82 (565)	100 (689)	69 (476)
0° Flexural modulus, Msi (GPa)		7.4 (51)	7.1 (49)	6.9 (48)	7.3 (50)	6.1 (42)
Short beam shear strength, ksi (MPa)	SACMA 8R-94	9.3 (64)	6.7 (46)	5.9 (41)	6.7 (46)	4.0 (28)

*Wet = 14-day water immersion at 160°F



MITSUBISHI CHEMICAL CARBON FIBER AND COMPOSITES

Technical Data Sheet

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