4030

NEWPORT HIGH PERFORMANCE MATERIALS

250-300°F (120-150°C) Cure Epoxy Resin System

Meets FAR 25.853 Appendix F – Parts I, IV, and V

Typical applications
Aerospace
Aircraft interiors

Out life
30 days at 70°F (21°C)

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

Description
4030 is a 250°F (120°C) to 300°F (150°C) cure, toughened epoxy resin system designed for use in applications requiring a high level of flame retardancy. With no odor and VOC-free processing, it is an ideal replacement for traditional phenolic systems. 4030 has mechanical properties comparable to traditional epoxy systems, a limitation of most fire retardant thermoset polymers.

Benefits/features
- Flame retardant
- Excellent mechanical properties
- Meets FAR 25.853 Appendix F, Part I (a)(1)(i), and (a)(2)(iii) flammability requirements
- Meets FAR 25.853 Appendix F, Part IV heat release requirements
- Meets FAR 25.853 Appendix F, Part V smoke emission requirements

Variants
- 4030-5: Snap cure (press cure, 15 min. at 250°F, 60 min. post cure at 300°F)
- 4030-D: Decreased tack

Application
4030 is suitable for a wide range of flame retardant applications, but is specifically formulated for aircraft interior applications where flame retardancy, smoke density, and heat release requirements must be met.

4030 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
4030 can be cured at temperatures from 250°F (120°C) to 300°F (150°C), depending on part size and complexity. Low, medium, and high pressure molding techniques may be used for curing. 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	5 – 8
Specific gravity	1.47
T_g (DMA, E'), °F (°C)	266 (130)

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

Property	Test method	NCT4030 34-700 G300
Average value TML (total mass loss)	ASTM E-595	0.12%
Average value WVR (water vapor regain)		0.06%
Percent CVCM (collected volatile condensable materials)		<0.01%

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

7781 E-GLASS FABRIC

38%RC, autoclave cured, 60 psi, 90 minutes at 275°F, normalized to 60%FV

Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D3039	65.1 (448)
0° Tensile modulus, Msi (GPa)		4.76 (32.8)
Poisson's ratio		0.125
0° Compressive strength, ksi (MPa)	ASTM D695 mod	117 (806)
0° Compressive modulus, Msi (GPa)		5.01 (34.5)
0° Flexural strength, ksi (MPa)	ASTM D790	120 (827)
0° Flexural modulus, Msi (GPa)		7.13 (49.1)
Short beam shear strength, ksi (MPa)	ASTM D2344	8.05 (55)

34-700 CARBON UNITAPE

36%RC, autoclave cured, 60 psi, 90 minutes at 275°F, normalized to 60%FV

Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D3039	345 (2370)
0° Tensile modulus, Msi (GPa)		21.2 (146)
Poisson's ratio		0.273
90° Tensile strength, ksi (MPa)		7.99 (55.1)
90° Tensile modulus, Msi (GPa)		1.45 (10.0)
0° Compressive strength, ksi (MPa)	ASTM D695 mod	245 (1680)
0° Compressive modulus, Msi (GPa)		19.0 (131)
90° Compressive strength, ksi (MPa)		38.7 (266)
90° Compressive modulus, Msi (GPa)		1.56 (10.7)
0° Flexural strength, ksi (MPa)	ASTM D790	250 (1720)
0° Flexural modulus, Msi (GPa)		20.4 (140)
90° Flexural strength, ksi (MPa)		12.5 (86.2)
90° Flexural modulus, Msi (GPa)		1.50 (10.3)
Short beam shear strength, ksi (MPa)	ASTM D2344	14.7 (101)
±45° IPS Strength @5% strain, ksi (MPa)	ASTM D3518	10.8 (74.4)
±45° IPS Modulus, Msi (GPa)		0.696 (4.80)

MITSUBISHI CHEMICAL CARBON FIBER AND COMPOSITES

Technical Data Sheet

TR50S CARBON UNITAPE

36%RC, autoclave cured, 60 psi, 90 minutes at 275°F, normalized to 60%FV

Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D3039	345 (2370)
0° Tensile modulus, Msi (GPa)		21.8 (150)
Poisson's ratio		0.255
90° Tensile strength, ksi (MPa)		8.10 (55.0)
90° Tensile modulus, Msi (GPa)		1.45 (10.0)
0° Compressive strength, ksi (MPa)	ASTM D695mod	250 (1720)
0° Compressive modulus, Msi (GPa)		19.3 (133)
90° Compressive strength, ksi (MPa)		39.3 (271)
90° Compressive modulus, Msi (GPa)		1.54 (10.6)
0° Flexural strength, ksi (MPa)	ASTM D790	280 (1930)
0° Flexural modulus, Msi (GPa)		19.9 (137)
90° Flexural strength, ksi (MPa)		19.0 (131)
90° Flexural modulus, Msi (GPa)		1.50 (10.3)
Short beam shear strength, ksi (MPa)	ASTM D2344	16.3 (112)
±45° IPS Strength @5% strain, ksi (MPa)	ASTM D3518	10.7 (73.7)
±45° IPS Modulus, Msi (GPa)		0.700 (4.82)

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

34-700 CARBON UNITAPE

38-40%RC, autoclave cured, 60 psi, 90 minutes at 275°F

FAR 25.853 Appendix F			
Part I a1i and a2iii			
60-Second vertical flame test	Requirements		Results
Self-extinguish, time after flame removal	15 sec. max		<1 sec.
Average burn length	6" max		2.7"
Self-extinguish drip time	3 sec. max		0 sec.
45° Flame test	Requirements		Results
Self-extinguish, time after flame removal	15 sec. max		2.4 sec.
Average afterglow time	10 sec. max		0 sec.
Flame penetration	none		none
Part IV (OSU Heat release rate)			
Results at various thicknesses	Requirements	0.017"	0.034"
Heat release rate @2 min. (kW-min/m^2)	65 max	33	53
Peak heat release rate (kW/m^2)	65 max	48	56
Time to peak heat (sec)	n/a	23	37
Part V (Smoke emission)			
Results at various thicknesses	Requirements	0.019"	0.039"
4 minutes, optical density (D max)	200 max.	64	116

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CARBON FIBER AND COMPOSITES

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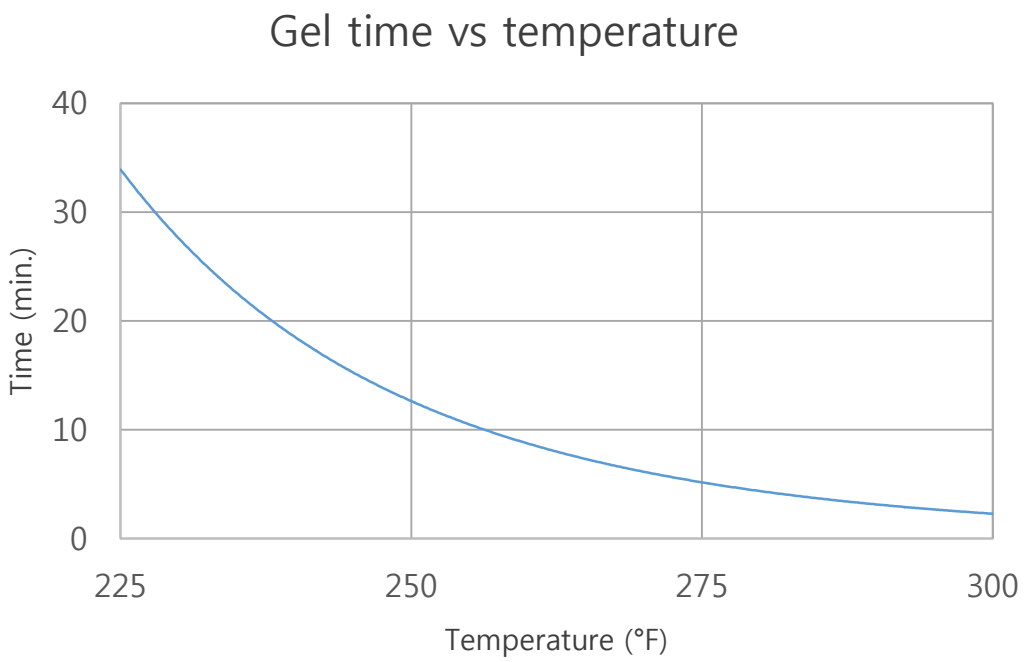
Toxicity data [values are average and do not constitute a specification]

TR50S CARBON UNITAPE

42%RC, carbon laminate 0.060" (0.15 cm) thickness per Boeing Document No. D6-51377

	Test method	CO	HCN	HF	HCl	SO_2	NO_x
Results (ppm)	BSS 7239 Rev. A	40	2	ND	ND	ND	2
Max. allowed (ppm)		3500	150	200	500	100	100

ND = None detected



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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