

307



250-300°F (121-149°C) Cure Epoxy Resin System

Typical applications

UAV spars
Marine masts
Wind blade spar-caps

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

307 is a 250-300°F (121-149°C) cure, highly toughened, controlled flow epoxy resin system specifically designed for thick parts. Versatile processing, excellent mechanical properties, and long out time make 307 suitable for a variety of applications.

Benefits/features

- Low exotherm
- Scorch-resistant
- High toughness
- Excellent mechanical properties

Application

The low exotherm properties of 307 make it an ideal product for UAV spars, marine masts, wind blade spar-caps, and other applications where very thick parts are required. It is well suited for low pressure, vacuum bag molding techniques.

307 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

307 is typically cured at 250-300°F (121-149°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 90-120 minutes, cool to <140°F (60°C).



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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	11-18 minutes
Specific gravity	1.22
T _g (DMA, E'), °C (°F)	115 (239)
Tensile strength, ksi (MPa)	11.2 (77.2)
Tensile modulus, Msi (GPa)	0.429 (2.95)
Compressive strength, ksi (MPa)	16.9 (116)
Compressive modulus, Msi (GPa)	0.449 (3.09)

Outgassing properties tested in accordance with ASTM E595

Property	NCT307 34-700 150gsm 37%RC
Average value TML (Total mass loss)	0.28%
Average value WVR (Water vapor recovered)	0.09%
Percent CVC (Collected volatile condensable materials)	<0.01

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

HS40 Uni carbon, 145gsm, 35%RC, autoclave cured, 60psi, 120min at 275°F, norm. to 60%FV

Property	Test method	-100°F (-73°C)	RT	160°F (71°C)
0° Tensile strength, ksi (MPa)	ASTM D3039	270 (1860)	347 (2390)	318 (2190)
0° Tensile modulus, Msi (GPa)		36.1 (249)	39.6 (273)	-
0° Compressive strength, ksi (MPa)	ASTM D695mod	189 (1310)	151 (1040)	165 (1130)
0° Flexural strength, ksi (MPa)	ASTM D790	208 (1430)	188 (1300)	152 (1040)
0° Flexural modulus, Msi (GPa)		30.5 (211)	30.6 (211)	30.6 (200)
Short beam shear strength, ksi (MPa)	SACMA 8R-94	14.2 (97.9)	10.9 (75.1)	9.54 (65.7)

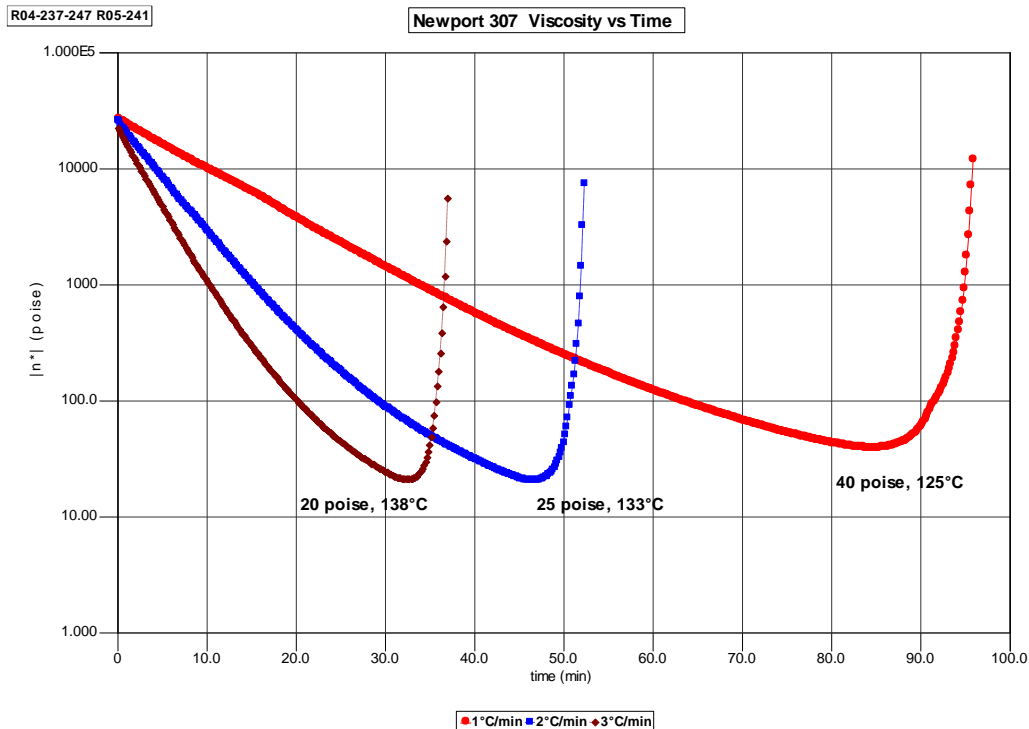
MR60H Uni carbon, 300gsm, 38%RC, autoclave cured, 50psi, 130min at 275°F, norm. to 60%FV

Property	Test method	RT
0° Tensile strength, ksi (MPa)	ASTM D3039	426 (2930)
0° Tensile modulus, Msi (GPa)		23.4 (161)
Poisson's ratio		0.29
0° Compressive strength, ksi (MPa)	ASTM D695mod	224 (1540)
0° Compressive modulus, ksi (MPa)		21.2 (146)
0° Flexural strength, ksi (MPa)	ASTM D790	214 (1470)
0° Flexural modulus, Msi (GPa)		21.5 (148)
Short beam shear strength, ksi (MPa)	ASTM D2344	12.3 (84.8)

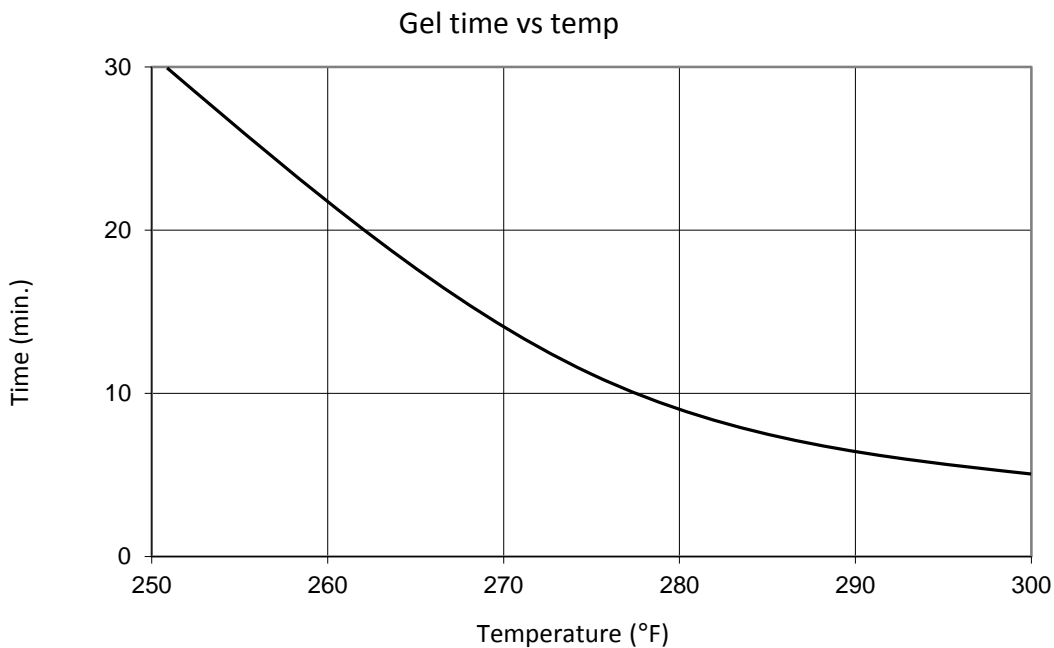


Viscosity profile

TA - AR2000 parallel plate rheometer



Gel curve



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 suggestion for use or material supplied shall be considered a recommendation or inducement to violate any law or infringe any patent.

CORPORATE OFFICE
Composite Materials Div.
1822 Reynolds Ave.
Irvine, CA 92614

Tel: (949) 253-5680
Fax: (949) 253-5692
<http://www.mrcfac.com>
compositesales@mrcfac.com

THE KAITEKI COMPANY
Mitsubishi Chemical Holdings Group



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