
Flame Retardant/Low Heat Release Hot Melt Towpreg HMT4030

Description:

Newport-FTP™ HMT4030 is a 250°F (121°C) to 300°F (149°C) cure, hot melt towpreg with flame retardant, modified epoxy resin system designed for use in applications requiring a high level of flame retardancy. HMT4030 meets the requirements of FAR 25.853 Appendix F, Parts I, IV, V.

Application:

With good toughness and impact resistance HMT4030 is well suited for filament winding process and/or fiber placement process in variety of structural applications such as aerospace, marine, automotive, industrial and sporting goods markets.

HMT4030 can be supplied with most of commercial carbon or other fibers.

Benefits/Features:

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- Environmental friendly (solvent free, no release paper or cover film)
 - Long out time, > 30 days at 70°F (21°C)
 - Moderate tack
 - Excellent mechanical properties
 - Excellent flame retardancy, meets FAR 25.853 I and IV V regulation
 - Available on a wide range of standard, intermediate, and high modulus carbon fibers
 - Compatible with all Newport 250°F (121°C) to 300°F (149°C) cure epoxy systems

Recommended Processing Conditions:

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- Newport-FTP™ HMT4030 can be cured at temperatures from 250°F (121°C) to 300°F (149°C) depending on part size and complexity.
 - Low, medium, and high pressure molding techniques may be used to cure Newport HMT4030 resin.
 - Recommended cure cycle is 50 – 100 psi (345 – 690 kPa), 3°F/min (1.7°C/min) ramp to 275°F (135°C), hold for 60-90 minutes, cool to <140°F (60°C).

Physical Properties:

Gel Time	5 - 9 minutes at 275°F
Specific Gravity	1.42 g/cc
E-Glass Composite Tg (DMA E') ^{*1}	141°C (286°F)
Carbon Composite Tg (DMA E') ^{*2}	
Dry Tg	135°C (275°F)
Wet Tg ^{*3}	77°C (171°F)
Wet Tg ^{*4}	131°C (268°F)
Wet Tg ^{*5}	129°C (264°F)

^{*1} With PPG E-Glass 1062, 33%RC

^{*2} With TR50S-15K Carbon, 33% RC

^{*3} After water soaking at 160°F·85RH% until equilibrium

^{*4} After 1000 hours soaking in 73°F jet A fuel

^{*5} After 1000 hours soaking in 160°F MIL-H-5606 hydraulic fluid

Mechanical Properties:

The mechanical properties listed in the following tables are average values obtained from HMT4030 with Mitsubishi Rayon TR50S-15K standard modulus carbon fiber and PPG Fiber Glass 1062 E-Glass 1145Tex. All values are based on using an autoclave cure at 275°F (135°C) for 90 minutes under 80 psi (551 kPa) pressure. Results are normalized to 60% fiber volume, except cast resin strength/modulus, 0° SBS strength.

HMT4030 Cast Resin	Test Method	Results (Room Temp.)
Tensile strength, ksi	ASTM D-638 Type I	7.54
Tensile modulus, Msi		0.627

* Values are average and do not constitute a specification

HMT4030 TR50S-15K	Test Method	Results (Room Temp.)
0° Tensile strength, ksi	ASTM D-3039	340
0° Tensile modulus, Msi		24.0
0° Compression strength, ksi	ASTM D-695 mod.	270
0° Compression modulus, Msi		21.0
0° Flexural strength, ksi	ASTM D-790	275
0° Flexural modulus, Msi		22.0
0° Short Beam Shear str., ksi	ASTM D-2344	14.0

• Values are average and do not constitute a specification


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HMT4030 E-Glass	Test Method	Results (Room Temp.)
0° Tensile strength, ksi	ASTM D-3039	170
0° Tensile modulus, Msi		6.7
0° Compression strength, ksi	ASTM D-695 mod.	200
0° Compression modulus, Msi		7.5
0° Flexural strength, ksi	ASTM D-790	190
0° Flexural modulus, Msi		6.9
+/-45° In plane shear strength, ksi	ASTM D-3518	15.7
+/-45° In plane shear modulus, Msi		0.668
0° Short Beam Shear str., ksi	ASTM D-2344	14.7

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Flame Retardant properties of HMT4030 TR50S-15K 33% laminates

FAR 25.853 Appendix F Part I (a)(1)(ii) 12sec.		
Specimen thickness: 0.040"	Results	Test requirement
Self- extinguish, time after flame removal	11 sec.	15 sec. max
Average burn length	1.6"	8" max.
Self-extinguish drip time	None	5sec. max

FAR 25.853 Appendix F Part IV (OSU Heat Release Rate)		
Specimen thickness: 0.040"	Results	Test requirement
Heat release rate @2 min. (kW-min/m ²)	44	65 max.
Peak heat release rate (kW/m ²)	43	65 max.
Time to peak heat (sec)	41	--

FAR 25.853 Appendix F Part V (Smoke Emission)		
Specimen thickness: 0.112"	Results	Test requirement
Specific optical density	134.0	200 Ds max.
Time of peak smoke density	240	--

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Towpreg Storage:

- Material can be stored at 40°F (4°C) for 6 months.
- Material can be stored at 0°F (-18°C) for 12 months.
- Out time is 30 days at room temperature 70°F (21°C).

Contact Newport about any specialty fibers or requirements.

For orders, pricing, availability, technical assistance or other inquiries please contact:

CORPORATE OFFICES
Mitsubishi Rayon Carbon Fiber and Composites, Inc.
Composite Materials Division
1822 Reynolds Ave. Irvine CA 92614
Tel: (949) 253-5680
Fax: (949) 253-5692
Sales@mrcfac.com
<http://www.mrcfac.com>

Suzanne Potter,	Sales Administrator,	suzanne.potter@mrcfac.com
Mike Pierce,	Senior Sales Manager,	mike.pierce@mrcfac.com
Max Thouin,	Sales Engineer	max.thouin@mrcfac.com
Nick Nohara	R&D Engineer	atsushi.nohara@mrcfac.com

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