

Creating Material Change



Thermally Enhanced Prepreg Technical Data Sheet



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Thermally Enhanced Prepreg

Haydale has an established global supply chain creating a competitive manufacturing process for nanomaterial enhanced composite prepreg, demonstrating enhanced thermal management by improving thermal conductivity.

One of the applications in which the material is proving successful is for composite tooling, which is widely used in the manufacture of composite component parts because of the significant reduction in mismatch in the coefficient of thermal expansion (CTE) between materials when compared to metal tooling. Haydale has successfully embedded HDPlas[®] functionalised nanomaterials into polymers and has produced prepreg with enhanced thermal conductivity.

Product highlights:

- 30% increase in thermal conductivity
- More homogeneous cure
- Provides options for the thermal management of components

Product code:	GA-THM
Cured ply thickness:	0.2mm
Fibres:	T300 2x2T 200gsm
Resin weight (nom):	45%
Tg, Storage Modulus Onset (DMA):	224°C
Tg. Delta Peak:	246°C
Fibre volume fraction:	57%
Prepreg width:	1250mm

Cure Temperature		Cure Time	Tg Onset
45°C	Minimum	50 hours	55°C
55°C		18 hours	65°C
60°C		10 hours	70°C
70°C	Maximum	5 hours	80°C
200°C	Post cure	8 hours	224°C

Curing schedule is meant to be a guide only and is subject to local conditions, to avoid exotherm particular care must be taken with thick laminates. Ramp rates must not exceed 1.0°C per minute during initial cure. Ramp rates must not exceed 0.3°C per minute during post cure (free standing). For optimum thermal conductivity performance, autoclave cure is required.

Property Tested	Method Standard	Units	Value	Comments
Thermal Conductivity	ASTM D7984	W/mK	0.76	Layup: [0/90]4s
Flexural Strength	ISO 178:2010	MPa	699.6	Layup: [0/90]4s
Flexural Modulus		GPa	49.6	Layup: [0/90]4s
Flexural Strain		%	1.51	Layup: [0/90]4s
Combined Loading Compression (CLC) Strength	ASTM D6641	MPa	616.9	Layup: [0/90]4s
Short Beam Shear	ASTM D2344	MPa	43.8	Layup: [0/90]4s

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Contact us: T: +44(0)1509 210027 E: info@haydale.com