

# Creating Material Change



## Thermally Enhanced Prepreg Technical Data Sheet



*Innovation underpins everything we do*  
[www.haydale.com](http://www.haydale.com)     HaydaleGraphene

# 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<sup>®</sup> 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

Description: C(t)200T-T300-45%RW  
 Resin formulation: DF448  
 Cured ply thickness: 0.2mm  
 Fibres: T300 2x2T 200gsm  
 Resin weight (nom): 45%  
 Tg, Storage Modulus Onset (DMA): 218°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	218°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).

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

The content supplied in this technical data sheet ("Information") supersedes all previous versions supplied . Version 3.2, May 2019

The Information should be used solely as guidance for the safe handling, storage, processing and/or use of the Product and is only typical of the methods described. The Haydale Group (Haydale Group means Haydale Limited, as a subsidiary of Haydale Graphene Industries plc., and any subsidiary or holding company from time to time and any subsidiary from time to time of any holding company of Haydale Limited) gives no express or implied warranty or guarantee or representation as to the behaviour of the Product described herein during any handling or storage or processing or use of the Product. To the extent permissible by law the Haydale Group shall under no circumstances whatever be liable whether in contract, tort (including negligence), breach of statutory duty, or otherwise, for any damage, including loss of profit, or any indirect or consequential loss arising under or in connection with any handling or storage or processing or use of the Product.



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