

PH 840

ESTABLISHED RAIL INTERIOR PHENOLIC PREPREG

- ↗ Excellent Fire, Smoke & Toxicity (FST) behaviour
- ↗ Excellent mechanical behaviour
- ↗ Good surface finish
- ↗ Autoclave-free processes possible
- ↗ Short curing time 15 min at 160°C / 320°F
- ↗ Long shelf and shop life

INTRODUCTION

PH 840 is a halogen-free modified phenolic system, designed for laminate with bright colour and good surface quality.

This prepreg material has been developed for industrial and rail applications with high specific mechanical properties and excellent FST (low heat-release and smoke-density) behaviour.

PH 840 can be cured between 120°C and 160°C (248°F and 320°F). Monolithic and sandwich structures can be easily manufactured with this prepreg. The curing can be performed by press, vacuum and autoclave moulding with a pressure of at least 0.7 bar / 10 psi. Suitable for composite structures experiencing in-service temperatures of -55°C up to +80°C.

PH 840 prepreg is suitable for:

- ↗ Rail industries
- ↗ Industrial industries
- ↗ Marine and automotive applications

PRODUCT INFORMATION

PH 840 phenolic prepreg is available in a range of product formats. Please consult your local sales contact for further information. Full contact details can be found at www.gurit.com.

PROPERTY	PHG840-300-42	PHG840-M850-37	PHG840-600-40	TEST STANDARD
Resin	Phenolic	Phenolic	Phenolic	-
Prepreg Weight	525 ± 30 g/m ²	1350 ± 50 g/m ²	1000 ± 50 g/m ²	EN2329
Volatile	< 6.0 %	< 6.0 %	< 6.0 %	EN 2330 (180°C/10min)
Resin Flow	> 10 % (3 plies, 135°C, 8 min, 4 bar)	> 10 % (3 plies, 135°C, 8 min, 4 bar)	> 10 % (3 plies, 135°C, 8 min, 4 bar)	EN 2332
Tackiness	T0, T1, T2	T0, T1, T2	T0, T1, T2	-
Fibre Material	E-Glass	E-Glass	E-Glass	-
Fabric Weight	296 g/m ² ± 5 %	850 g/m ² ± 5 %	600 g/m ² ± 5 %	EN 2331
Weave Style	8H Satin	Non-Crimp-Fabric	HD Special	-
Service Temperature (Cured State)	-55°C to +80°C (-67°F to 176°F)	-55°C to +80°C (-67°F to 176°F)	-55°C to +80°C (-67°F to 176°F)	-
Resin Content	42 ± 3 %	37 ± 3 %	40 ± 3 %	EN 2331
Typical Roll Length	50 m / 55 yd	40 m / 44 yd	40 m / 44 yd	-
Typical Roll Width	1 & 1.27 m / 39 & 50 in	1.27 m / 40 in	1.27 m / 40 in	-

PREPREG PROPERTIES

TRANSPORT & STORAGE

When stored sealed & out of direct sunlight.

All prepreg materials should be stored in a freezer when not in use to maximise their useable life, since the low temperature reduces the reaction of resin and catalyst to virtually zero. However, even at -18°C (0°F), the temperature of most freezers, some reaction will still occur. In most cases after some years, the material will become unworkable.

STORAGE TEMP		UNIT	VALUE
-18°C	0°F	months	24
+21°C	+70°F	days	30

HEALTH AND SAFETY

Please refer to product SDS for up to date information specific to this product.

QUALIFICATIONS / FIRE PERFORMANCE

PRODUCT	FIRE PERFORMANCE / QUALIFICATIONS
PHG840-300-42	<ul style="list-style-type: none"> ↪ BS 476-6 and 7 Class 1 ↪ BS 6853 R. 025
PHG840-M850-37	<ul style="list-style-type: none"> ↪ NF-F 16-101/102 (M1, F1) ↪ UNE 23-721 (M1)
PHG840-600-40	<ul style="list-style-type: none"> ↪ DIN 5510 S4, SR2, ST2 ↪ DIN EN 45545 HL3

CURING CONDITIONS

PROPERTY	STANDARD CYCLE				TEST STANDARD
Recommended curing process	Press / Autoclave / Vacuum Bag				-
Spec. Pressure	0.7 bar / 10 psi				-
Heat-up	2 - 5°C/min / 3.6 - 9.0°F/min				-
Temperature	120°C / 248°F	130°C / 266°F	140°C / 284°F	160°C / 320°F	-
Cure Time	90 min	60 min	30 min	15 min	-
Cool-down	2 - 5°C/min / 3.6 - 9.0°F/min				-
Remove material at	< 80°C / 176°F				-

LAMINATE PROPERTIES

All data presented in this datasheet is based on the mechanical testing of a single batch of material.

MECHANICAL PROPERTIES AT ROOM TEMPERATURE (21°C / 70°F)

PROPERTY	SYMBOL	PHG840-300-42		PHG840-M850-37		PHG840-600-40		TEST STANDARD
0° Flexural Strength	X _F	450 MPa	65 ksi	480 MPa	70 ksi	400 MPa	58 ksi	ISO 178
0° Flexural Modulus	E _{F11}	22 GPa	3.19 msi	20 GPa	2.90 msi	20 GPa	2.90 msi	ISO 178
±45° Flexural Strength	X _F	450 MPa	65 ksi	180 MPa	26 ksi	400 MPa	58 ksi	ISO 178
±45° Flexural Modulus	E _{F12}	22 GPa	3.19 msi	12 GPa	1.74 ksi	20 GPa	2.90 msi	ISO 178
0° Interlaminar Tensile Shear Strength	X _{ILTSS}	18 MPa	2.61 ksi	18 MPa	2.61 ksi	20 MPa	2.90 msi	AITM 1.0019
±45° Interlaminar Tensile Shear Strength	X _{ILTSS}	18 MPa	2.61 ksi	14 MPa	2.03 ksi	20 MPa	2.90 msi	AITM 1.0019
Glass Transition Temp. (30 mins at 140°C)	T _g	> 125°C	> 257°F	> 125°C	> 257°F	> 125°C	> 257°F	ISO 6721 (DMA)
Glass Transition Temp. (15 mins at 160°C)	T _g	> 160°C	> 320°F	> 160°C	> 320°F	> 160°C	> 320°F	ISO 6721 (DMA)

MECHANICAL PROPERTIES AT 80°C (176°F)

PROPERTY	SYMBOL	PHG840-300-42		PHG840-M850-37		PHG840-600-40		TEST STANDARD
0° Flexural Strength	X _T	300 MPa	44 ksi	tbd	tbd	tbd	tbd	ISO 178
0° Flexural Modulus	E _{T11}	19 GPa	2.76 msi	tbd	tbd	tbd	tbd	ISO 178
0° Interlaminar Tensile Shear Strength	X _{ILTSS}	16 MPa	2.32 ksi	tbd	tbd	tbd	tbd	AITM 1.0019

BURN BEHAVIOUR

PROPERTY	PHG840-300-42	PHG840-M850-37	PHG840-600-40	TEST STANDARD
Flammability vertical, 60s flaming – Burn length	60 mm	60 mm	60 mm	AITM 2.0002A
Flammability vertical, 60s flaming – After flame time	5 s	5 s	5 s	AITM 2.0002A
Flammability vertical, 60s flaming – After flame time of drips	0 s	0 s	0 s	AITM 2.0002A
Max. specific optical smoke density within 4 min (flaming mode)	5 Ds	5 Ds	5 Ds	AITM 2.0007A
Heat Release	25 kW/m ²	25 kW/m ²	25 kW/m ²	AITM 2.0006
Heat Release Rate	25 kW.min/m ²	25 kW.min/m ²	25 kW.min/m ²	AITM 2.0006

NOTICE

All advice, instruction or recommendation is given in good faith but the Company only warrants that advice in writing is given with reasonable skill and care. No further duty or responsibility is accepted by the Company. All advice is given subject to the terms and conditions of sale (the Conditions) which are available on request from the Company or may be viewed at the Company's Website: www.gurit.com/terms-and-conditions.aspx.

The Company strongly recommends that Customers make test panels and conduct appropriate testing of any goods or materials supplied by the Company to ensure that they are suitable for the Customer's planned application. Such testing should include testing under conditions as close as possible to those to which the final component may be subjected. The Company specifically excludes any warranty of fitness for purpose of the goods other than as set out in writing by the Company. The Company reserves the right to change specifications and prices without notice and Customers should satisfy themselves that information relied on by the Customer is that which is currently published by the Company on its website. Any queries may be addressed to the Technical Services Department.

Gurit are continuously reviewing and updating literature. Please ensure that you have the current version, by contacting Gurit Marketing Communications or your sales contact and quoting the revision number in the bottom right-hand corner of this page.

E contact@gurit.com

W www.gurit.com