

PH 831

HI-HO CRUSH CORE PHENOLIC PREPREG

- ↗ Crush-core prepreg for short curing cycles
- ↗ Self-adhesive resin system for sandwich panel application
- ↗ Non-halogenated resin formulation
- ↗ Excellent FST behaviour
- ↗ Good surface quality
- ↗ Long shelf and shop life

INTRODUCTION

PH 831 phenolic is a halogen-free and self-adhesive modified phenolic system designed for very good surface quality and excellent heat-release and smoke density properties.

Both 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.

The prepreg is especially suitable for curing of sandwich panels in an isothermal press cycle without heating and cooling stages. This hot-in/hot-out (HI-HO) crush-core process is a fast manufacturing method with curing cycles less than 10 minutes and is mainly used to produce curved interior sandwich panels such as sidewalls or ceilings.

PH 831 prepreg is suitable for:

- ↗ Aviation and aerospace industries
- ↗ Machine industries
- ↗ Marine and automotive applications

PRODUCT INFORMATION

PH 831 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	PHG831-44-40	PHG831-48-40	PHG831-68-40	TEST STANDARD
Resin	Phenolic	Phenolic	Phenolic	-
Prepreg Weight	180 ± 20 g/m ²	275 ± 20 g/m ²	490 ± 20 g/m ²	EN2329
Volatile	< 8.0 %	< 8.0 %	< 8.0 %	EN 2330 (180°C/10min)
Resin Flow	> 15 % (4 plies, 140°C, 10 min, 4 bar)	> 15 % (4 plies, 140°C, 10 min, 4 bar)	> 15 % (4 plies, 140°C, 10 min, 4 bar)	EN 2332
Tackiness	T0 / None	T0 / None	T0 / None	-
Fibre Material	E-Glass	E-Glass	E-Glass	-
Fabric Weight	105 g/m ² ± 5 %	163 g/m ² ± 5 %	296 g/m ² ± 5 %	EN 2331
Weave Style	1x3 Crowfoot	2x2 Twill	8H Satin	-
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	40 ± 3 %	40 ± 3 %	40 ± 3 %	EN 2331
Typical Roll Length	50 m / 55 yd	50 m / 55 yd	50 m / 55 yd	-
Typical Roll Width	1.27 m / 50 in	1.27 m / 50 in	1.27 m / 50 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	6
+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	QUALIFICATIONS	FIRE PERFORMANCE
PHG831-44-40	↪ DAN 407-01) ABS 5047-01 / AIMS 05-10-009	↪ FAR 25.853 Flame Test (self-extinguishing) ↪ ABD 0031
PHG 831-44-40 T0 (Crushed Core Process)	↪ PHG 831-44-40 T0 (Crushed Core Process)	↪
PHG 831-48-37	↪ (DAN 407-03) ABS 5047-03 / AIMS 05-10-018	↪
PHG831-48-40	↪ ABS 5047-03 ↪ AIMS 05-10-018-05 (certification)	↪ FAR 25.853 Flame Test (self-extinguishing) ↪ ABD 0031
PHG 831-68-40 T0 (Crushed Core Process)	↪ ABS 5047-41 / AIMS 05-10-003	↪
PHG831-68-40	↪ (DAN 407-07) ABS 5047-07 / AIMS 05-10-001	↪ FAR 25.853 Flame Test (self-extinguishing) ↪ ABD 0031

CURING CONDITIONS

PROPERTY	CRUSH CORE	STANDARD CYCLE		TEST STANDARD
Recommended curing process	Press / Autoclave / Vacuum Bag			-
Spec. Pressure	12.5 bar / 181 PSI	0.7 bar / 10 PSI		-
Heat-up	None (hot-in)	3°C/min from 60°C / 140°F (max)		-
Temperature	160°C / 320°F	110°C / 230°F	135°C / 275°F	-
Cure Time	10 min	90 min	30 min	-
Cool-down	None (hot-out)	4°C/min to 60°C (140°F)		-
Remove material at	160°C / 320°F	> 60°C / 140°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	PHG831-44-40		PHG831-48-40		PHG831-68-40		TEST STANDARD
0° Flexural Strength	X _F	500 MPa	73 ksi	510 MPa	74 ksi	480 MPa	70 ksi	ISO 178
0° Flexural Modulus	E _{F11}	22 GPa	3.19 msi	23 GPa	3.34 msi	22 GPa	3.19 msi	ISO 178
0° Tensile Strength	X _T	-	-	-	-	-	-	ISO 527-4
0° Interlaminar Tensile Shear Strength	X _{ILTSS}	19 MPa	2.76 ksi	19 MPa	2.76 ksi	19 MPa	2.76 ksi	AITM 1.0019
Climbing Drum Peel*	σ _{PEEL}	50 N/75 mm*		50 N/75 mm*		50 N/75 mm*		EN 2243-3
Bending Load	F _{BENDING}	400 N*		600 N*		800 N*		AITM 1.0018
Glass Transition Temperature	T _g	180°C	320°F	180°C	320°F	180°C	320°F	ISO 6721 (DMA)

*sandwich structure: 2 plies per side; core 3.2-48kg/m³ 9.4mm (honeycomb)

MECHANICAL PROPERTIES AT 80°C (176°F)

PROPERTY	SYMBOL	PHG831-44-40		PHG831-48-40		PHG831-68-40		TEST STANDARD
0° Flexural Strength	X _T	350 MPa	51 ksi	340 MPa	49 ksi	390 MPa	57 ksi	ISO 178
0° Flexural Modulus	E _{T11}	18 GPa	2.61 msi	18 GPa	2.61 msi	20 GPa	2.90 msi	ISO 178
0° Tensile Strength	X _T	330 MPa	48 ksi	310 MPa	45 ksi	260 MPa	38 ksi	ISO 527-4

BURN BEHAVIOUR

PROPERTY	PHG831-44-40	PHG831-48-40	PHG831-68-40	TEST STANDARD
Flammability vertical, 60s flaming – Burn length	< 100 mm	< 100 mm	< 100 mm	AITM 2.0002A
Flammability vertical, 60s flaming – After flame time	0 s	0 s	0 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	< 30 kW.min/m ²	< 30 kW.min/m ²	< 30 kW.min/m ²	AITM 2.0006
Determination of the toxic components on combustion products	-	-	-	AITM 3.0005 (flaming mode)

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.

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