

PN 900

235 °C TG CYANATE ESTER PREPREG

- ▮ Modified cyanate ester resin system
- ▮ Excellent balance between mechanical and FST properties
- ▮ Volatile content < 1%
- ▮ Fulfils numerous FST requirements
- ▮ High quality surface finish
- ▮ Self-adhesive to honeycomb
- ▮ Adjustable tack
- ▮ Post curing possible to achieve a Tg of 235°C (455°F)

INTRODUCTION

PN 900 resin is based on polymerized aromatic cyanate ester compounds, which show a high thermal and chemical stability after curing at elevated temperatures above 125°C (257°F) and at least 0.7 bar / 10 psi.

The prepreg has a low volatile content, no toxic additives and exhibits a very low emission rate of volatiles during the curing process.

Composite structures are self-extinguishing under fire conditions and fulfil international aerospace fire protection regulations regarding flammability, smoke density and toxicity (FST). They also show high mechanical properties with relatively low influence of moisture.

Due to the specific nature of the polymerization process, PN 900 provides non-porous laminates using a variety of manufacturing techniques like press and autoclave moulding with bladder or plaster tools in-situ leakage-free composite components as demanded in aircraft airduct manufacturing.

For increased thermal and chemical stability, the components can be subjected to a stepwise free-standing post-cure up to 220°C (428°F) to achieve a glass transition temperature of 235°C (455°F).

PRODUCT INFORMATION

PN 900 cyanate ester 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	PN 900-44-43	PN 900-68-43	PN 900-C582-43	TEST STANDARD
Resin	Cyanate Ester blend	Cyanate Ester blend	Cyanate Ester blend	-
Prepreg Weight	185 ± 10g/m ²	520 ± 10g/m ²	315 ± 10g/m ²	EN 2329
Volatile	< 1.0 %	< 1.0 %	< 1.0 %	EN 2330
Resin Flow	> 10 %	> 10 %	> 10 %	EN 2332
Tackiness	medium to high	medium to high	medium to high	-
Fibre Material	E-glass	E-glass	50% 3k HTA 50% EC9 68 tex	-
Fabric Weight	105 g/m ² ± 5%	295 g/m ² ± 5%	185 g/m ² ± 5%	EN 2331
Weave Style	1x3 Crowfoot	8H satin	2x2 Twill	-
Service Temperature (Cured State)	-55°C to +200°C (-67°F to 392°F)			-
Resin Content	43.0 ± 3%	43.0 ± 3%	43.0 ± 3%	EN 2331
Typical Roll Length	50 m / 55 yd	50 m / 55 yd	50 m / 55 yd	-
Typical Roll Width	1.0 m / 39 in	1.0 m / 39 in	1.0 m / 39 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	15

HEALTH AND SAFETY

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

QUALIFICATIONS / FIRE PERFORMANCE

PRODUCT	QUALIFICATIONS	FIRE PERFORMANCE
PN 900-C582-43	<ul style="list-style-type: none"> → ABS 5736-01 → AIMS 05-10-036 (certification) 	<ul style="list-style-type: none"> → FAR 25.853 Flame Test (self-extinguishing) → ABD 0031
PN 900-68-43	<ul style="list-style-type: none"> → ABS 5047-70 → AIMS 05-10-020 (certification) 	<ul style="list-style-type: none"> → FAR 25.853 Flame Test (self-extinguishing) → ABD 0031
PN 900-44-43	<ul style="list-style-type: none"> → ABS 5047-70 → AIMS 05-10-020 (certification) 	<ul style="list-style-type: none"> → FAR 25.853 Flame Test (self-extinguishing) → ABD 0031
PN 900-G205-43	<ul style="list-style-type: none"> → ABS 5047-72 → AIMS 05-10-030 (certification) 	<ul style="list-style-type: none"> → FAR 25.853 Flame Test (self-extinguishing) → ABD 0031
PN 900-68-40	<ul style="list-style-type: none"> → AIMS 05-10-020 → BMS 8-363 → DMS 2296, DMS 2297, DMS 2441 	<ul style="list-style-type: none"> → FAR 25.853 Flame Test (self-extinguishing) → ABD 0031

CURING CONDITIONS

PROPERTY	STANDARD CURE		TEST STANDARD
Cure Process	Press / Autoclave / Vacuum-Bag		-
Cure Pressure	0.7 – 4 bar / 10 – 58 psi		-
Heat-up Ramp Rate	Max 3°C / 5.4°F per min		-
Dwell Temperature	125°C / 257°F	135°C / 275°F	-
Dwell Time	120 min	70 min	-
Free-Standing Post-Cure	Step 1: 120 minutes at 180°C / 356°F Step 2: 120 minutes at 220°C / 428°F		-
Cool-down Ramp Rate	4°C per min / 7.2°F per min		-
Remove material at	< 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	PN 900-44-43		PN 900-68-43		PN 900-C582-43		TEST STANDARD
0° Flexural Strength	X _F	540 MPa	78.3 ksi	600 MPa	87.0 ksi	750 MPa	108.7 ksi	ISO 178
0° Flexural Modulus	E _{F11}	21 GPa	3.05 msi	22 GPa	3.19 msi	35 GPa	5.08 msi	ISO 178
0° Tensile Strength	X _T	400 MPa	58.0 ksi	450 MPa	65.3 ksi	600 MPa	87.0 ksi	ISO 527-4
0° Tensile Modulus	E _{T11}	20 GPa	2.9 msi	21 GPa	3.1 msi	40 GPa	5.8 msi	ISO 527-4
0° Compressive Strength	X _C	400 MPa	58.0 ksi	450 MPa	65.3 ksi	550 MPa	79.8 ksi	EN 2850
0° Compressive Modulus	E _{C11}	20 GPa	2.9 msi	20 GPa	2.9 msi	42 GPa	6.1 msi	EN 2850
0° Interlaminar Tensile Shear Strength	X _{ILTSS}	30 MPa	4.4 ksi	32 MPa	4.6 ksi	25 MPa	3.6 ksi	AITM 1.0019
Interlaminar Shear Strength	X _{ILSS}	-	-	40 GPa	5.8 msi	-	-	DMS 2144
Bearing Strength	X _{BEARING}	-	-	500 MPa	72.5 ksi	-	-	EN 2243-3
Climbing Drum Peel	σ _{PEEL}	80 N/75 mm		105 N/75mm		120 N/75mm		EN 2243-3
Bending Load	F _{BENDING}	600 N		1100 N		1200 N		AITM 1.0018

MECHANICAL PROPERTIES AT 95°C (203°F)

PROPERTY	SYMBOL	PN 900-44-43		PN 900-68-43		PN 900-C582-43		TEST STANDARD
0° Flexural Strength	X _F	500 MPa	72.5 ksi	550 MPa	79.8 ksi	710 MPa	103.0 ksi	ISO 178
0° Flexural Modulus	E _{F11}	20 GPa	2.90 msi	20 GPa	2.90 msi	33 GPa	4.79 msi	ISO 178
0° Tensile Strength	X _T	380 MPa	55.1 ksi	420 MPa	61.0 ksi	580 MPa	84.2 ksi	ISO 527-4
0° Compressive Strength	X _C	350 MPa	50.8 ksi	400 MPa	58.0 ksi	500 MPa	72.6 ksi	EN 2850
0° Interlaminar Tensile Shear Strength	X _{ILTSS}	25 MPa	3.6 ksi	30 MPa	4.4 ksi	22 MPa	3.2 ksi	AITM 1.0019
0° Interlaminar Shear Strength	X _{ILSS}	-	-	35 GPa	5.1 msi	-	-	DMS 2144
Bearing Strength	X _{BEARING}	-	-	390 MPa	56.6 ksi	-	-	EN 2243-3
Bending Load	F _{BENDING}	580 N		1000 N		1000 N		AITM 1.0018

MECHANICAL PROPERTIES AT 110°C (230°F)

PROPERTY	SYMBOL	PN 900-44-43		PN 900-68-43		PN 900-C582-43		TEST STANDARD
0° Flexural Strength		540 MPa	78.3 ksi	520 MPa	75.4 ksi	700 MPa	101.5 ksi	ISO 178
0° Flexural Modulus		18 GPa	2.61 msi	19 GPa	2.76 msi	30 GPa	4.35 msi	ISO 178
0° Tensile Strength		350 MPa	50.8 ksi	400 MPa	58.0 ksi	550 MPa	79.8 ksi	ISO 527-4
0° Interlaminar Tensile Shear Strength		21 MPa	3.1 ksi	27 MPa	3.9 ksi	19 MPa	2.8 ksi	AITM 1.0019
Bending Load		550 N		990 N		900 N		AITM 1.0018

BURN BEHAVIOUR

PROPERTY	PN 900-44-43	PN 900-68-43	PN 900-C582-43	TEST STANDARD
Flammability vertical, 60s flaming – Burn length	90 mm	100 mm	90 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	15 Ds	60 Ds	20 Ds	AITM 2.0007A
Heat Release	20 kW/m ²	30 kW/m ²	30 kW/m ²	AITM 2.0006
Heat Release Rate	20 kW.min/m ²	35 kW.min/m ²	35 kW.min/m ²	AITM 2.0006
Determination of the Toxic Components on Combustion Products	-	HCN 20 ppm	20 / 300 / 40 / 5 / 5 / 5 ppm (HCN / CO / NOX / SO ₂ / HF / HCl)	AITM 3.0005

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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