CM-Preg F-S10 296/1270 CP106 42

Glass fiber satin weave + BIOpreg

Name structure: CM-preg F(textile) - FiberReference FAW(gsm) / Width(mm) ResinReference ResinContent(%)

BIOpreg is an intermediate prepreg material manufactured with a PFA (Polyfurfuryl alcohol) based resin with > 80% biocontent derived from waste fibres produced during sugar cane processing. This modification was developed to achieve optimum balance of biocontent, visual aspect, flow, FST behaviour and mechanical performance.
The CP106 is a low free FA resin with a good tack and optimized resin flow especially suited for prepreg compression molding (PCM).
BIOpreg is extremely suitable to use with a wide range of fibres as an alternate to phenolic based systems.

This 7781 style satin weave prepreg is ideally suited to be used as a face skin for honeycombs sandwich panels:
Peel strength = 100 N/75mm (acc. to DIN EN 2243-3)

PRELIMINARY PRODUCT DATA SHEET

		SI *			IMPERIAL*	
		Test methods	Units	Indicative Values	Units	Indicative Values
Neat resin and processing	Laminate cure time / temperature / pressure	-	min | °C | bar	60 / 130 / 6	min | °F | psi	60 / 266 / 88
	Optimized part compression molding time / temperature / pressure	-	min | °C | bar	20 / 130 / 6	min | °F | psi	20 / 266 / 88
	Gel time at processing temperature (1)	-	min	02:20	min	02:20
	Post-curing temp / time / heating rate	-	°C | min | K/min	300 / 120 / 1	°F | min | K/min	570 / 120 / 1
	Post-cured Tg (2)	ISO 6721-11	°C	> 300	°F	> 570
	Density	ISO 1183-1	g/cm3	-	-	-
Prepreg properties	Fibre areal weight (FAW) (3)	DIN EN 2557	g/m2	296	lb/ft2	0.060
	Prepreg areal weight (3)	DIN EN 2557	g/m2	510	lb/ft2	0.102
	Consolidated ply thickness (4)	-	mm	0,25	in.	0.010
	Resin content (RC) (3)	DIN EN 2557	Wt%	42	Wt%	42
	Fibre content (5)	-	V%	52	V%	52
	Width	-	mm	1.270	in.	50
	Storage life at -18°C / 23°C [0°F / 73°F]	-	months / weeks	12 / 3	months / weeks	12 / 3
Laminate Properties **	Tensile strength, 0° / 90° (6)	ISO 527	MPa	345 / 330	psi	50,050 / 47,850
	Tensile modulus of elasticity, 0° / 90° (6)	ISO 527	GPa	19,4 / 19,5	ksi	2,815 / 2,835
	Tensile strain (elongation) at break, 0° / 90° (6)	ISO 527	%	1,9 / 2,0	%	1,9 / 2,0
	Poisson 's ratio 0° / 90°	ISO 527	-	0,10 / 0,08	-	0,10 / 0,08
	Compressive strength, 0° / 90° (7)	ISO 14126	MPa	430 / 355	psi	62,600 / 51,450
	Compressive modulus, 0° / 90° (7)	ISO 14126	GPa	25,4 / 26,7	ksi	3,690 / 3,880
	Flexural strength, 0° / 90° (8)	ISO 14125	MPa	655 / 525	psi	73,000 / 76,150
	Flexural modulus of elasticity, 0° / 90° (8)	ISO 14125	GPa	25,4 / 22,6	ksi	3,690 / 3,280
	In plane shear strength (9)	ISO 14129	MPa	44	psi	6,370
	In plane shear modulus (9)	ISO 14129	GPa	3,6	ksi	520
	Interlaminar shear strength ILSS 0° (10)	ISO 14130	MPa	33,5	psi	4,855
	Energy to max force / impact energy (11)	ISO 6603-2	J	-	ft-lb	-
	Maximum allowable service temperature	-	°C	-	°F	-
	Glass transition cured laminate storage onset / tanδ (2)	ISO 6721-11	°C	105 / 160	°F	221 / 320
	Thermal conductivity at 40/100/130°C [105/210/265°F] (12)	ASTM E1530-19	W/(K.m)	-	BTU / (K.in)	-
	Coefficient of linear thermal expansion 0°/90° (13) 80 to 150 °C [175 to 300°F]	ISO 11359-2	µm/(m.K)	-	µin./(in.°F)	-

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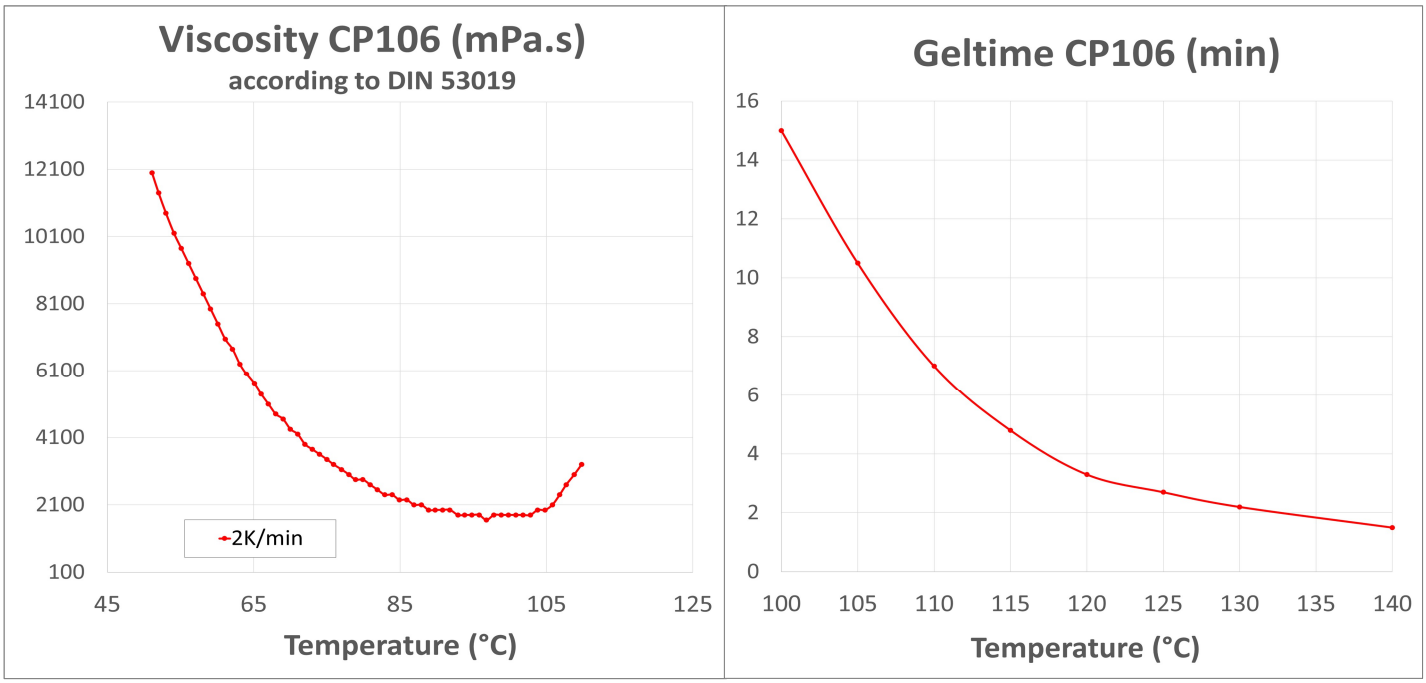
FST and flammability	*Single ply*	*Honeycomb sandwich* *2 prepreg plies each side*	
Flame resistance 60s	pass (T0.25mm)	pass (T10.2mm)	AITM2.002A / BSS 7230:F1 / FAR25.853 Appendix F part I a1-i
Smoke density Flaming mode	pass (T0.25mm)	pass (T10.2mm)	AITM-2.0007-A / BBS 7238 / FAR25.853 Appendix F part V
Heat release	pass (T0.25mm)	pass (T10.2mm)	AITM-2.0006 / BSS 7322 / FAR 25.853 Appendix F part IV
Toxicity - Flaming mode	pass (T0.25mm)	pass (T10.2mm)	AITM-3.0005 / BSS 7239

Above FST results are based on resin, not all reinforcement types are checked and final application lay-up needs to be validated

* This table, mainly to be used for comparison purposes, is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. **However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design.** See the remaining notes on the next page.

** Properties are determined on compression moulded laminates and data is not corrected to a certain volume fraction. Processing recommendations are based on a typical set-up, differences in tooling and presses can have effect on required processing settings and are to be validated. The intent is to give a starting point for processing the material via compression molding. *Laminate lay-up is done in such a way that orientation of each ply is the same. This means warp for each ply is stacked in the same direction [0°]n*



NOTES, SEE DATASHEET ON PAGE 1

-1 Gel time is determined on resin and follows the point where the resin no longer has enough tack to stick to a specific surface, in this case glass or metal

-2 Tg is determined via DMA testing and storage modulus onset point is used as Tg. Sample set-up modes are single cantilever and 3 point bending with span of 8-50mm [0,31"-1,97"]. Heating rate 2-3°C/min ; Amplitude 10-50µm and frequency 1-10 Hz. Sample geometry: Length 10-50mm.[0,394"-1,969"] ; width 3-10mm [0,118"-0,394"] ; Thickness = 1-3mm [0,039' - 0,118"]

-3 Fiber areal weight (FAW), prepreg areal weight and resin content (RC) are calculated based on prepreg areal weight and reinforcement areal weight. An average of at least three rectangular samples of 100 x 100mm [3,9" x 3,9"]. It is a mass based calculation.

-4 Consolidated ply thickness (CPT) also called cured ply thickness is the thickness of a single layer prepreg after consolidation.

-5 Fibre content (FC) can be used to calculate volume corrected property levels: V% corrected property = (property * desired V% correction) / fibre content.

-6 tensile properties were tested according to -4 type 2 method, only for UD types where -5 is applied. Bonded or friction tabs are used when needed. Sample size can vary dependent on the type of reinforcement (random, woven, UD). Typical size range: Length = 250mm [9,8"] ; Width = 15-25mm [0,59"-0,98"] ; Thickness = 1-2.5mm [0,039" -0,098"]. Test speed 2mm/min [0,078 inch/min] ; Gauge length of 50mm [1,79"].

-7 Sample geometry: Length = 140mm [5,51"] ; Width = 10mm [0,39"] ; Thickness 2-10mm [0,079"-0,394"]. Gauge length 12.7mm [0,5"] ; test speed of 1mm/min [0,039inch/min]

-8 Procedure A is applied with 3 point bending set-up and a test speed 1.7 mm/min [0,067 inch/min], for UD-0° testing 5,5mm/min [0,217inch/min] is used. Load member radius of 5mm [0,314"] and support radii of 3 or 5 mm [0,118" or 0,314"]. Sample size: Length 60-130mm [2,36"-5,12"] ; Width = 10-15mm [0,39"-0,59"] ; Thickness 2-4mm [0,0787"-0,157"]. Span: UD90° 40mm [1,57"-3,15"] ; UD-0° 80mm [3,15"-2,52"] ; others 64mm [2,52"]

-9 IPS (in plane shear) is conducted on prepreg laminates stacked [45°/-45°]ns. typical sample size 2x25x250mm [0,078" x 0,98" x 9,84"], thickness can vary depending on material and application. Adhesive or friction tabs are used were required. Test speed 2mm/min [0,079inch/min]

-10 Apparent interlaminar shear strength measured according to short beam test in 3 point bending set-up. Sample geometry 2x10x20mm [0,079" x 0,394" x 0,787"] , test speed 1mm/min [0,039inch/min] and span 10mm [0,394"].

-11 Determination of puncture impact. Sample length and width or diameter is 60mm [2,36"] and thickness 2mm [0,079"] . Impact velocity is 4,4 m/s [173inch/s] and hemispherical striker with diameter 20mm [0,79"]. Impact energy is the energy absorbed by deflection at force drop of 50% (= puncture definition)

-12 Sample diameter 50mm or 50x50mm [1,97" x1,97"] with specimen thickness 3mm [0,12"]

-13 Coefficient of linear thermal expansion is determined via thermodynamical analysis where a sample is heated and dimensional changes are measured. A linear heating ramp of 5K/min is applied and preferred sample size are cylinders OD5mm [0,197"] x H5-10mm [0,197" - 0,394"]. Rectangular samples W5mm x L5mm [0,197" x 0,197"] are also allowed