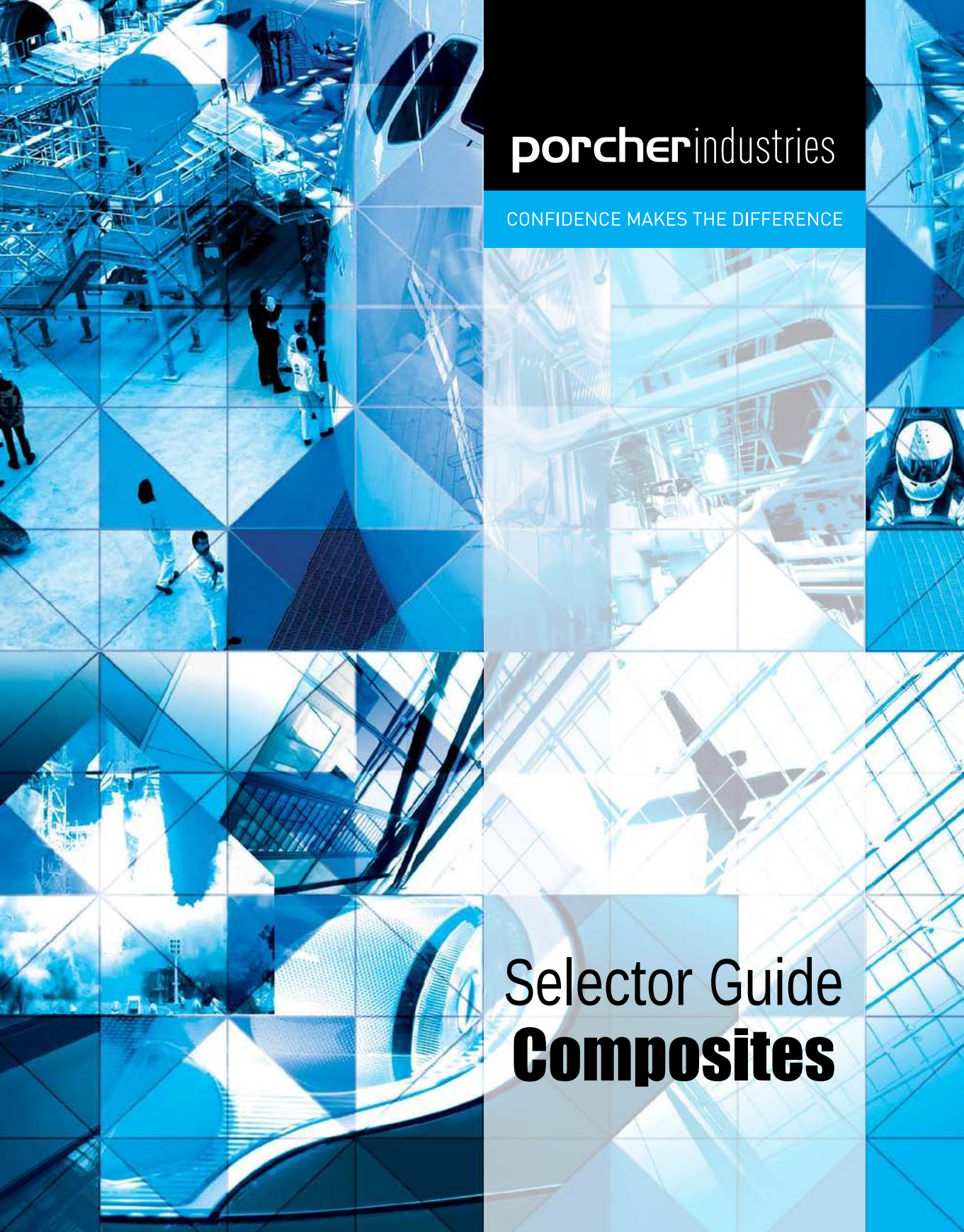


porcherindustries

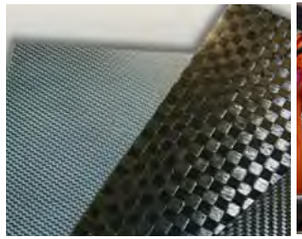
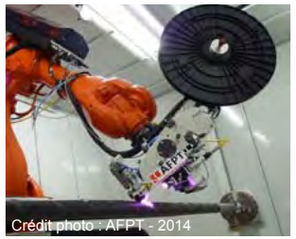
CONFIDENCE MAKES THE DIFFERENCE

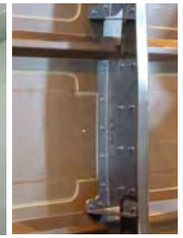
Selector Guide
Composites

porcherindustries

AT THE HEART OF INNOVATION

Porcher Industries develops and manufactures reinforcements for composite materials, thermoplastic prepregs, laminates and tapes.
Intended for state-of-the-art industries, requirements for these products are very high and necessitate close client proximity. Innovation, new technologies and research in new products and processes are on-going.




Aeronautics and space, ground transportation, sport and leisure, industrial applications...

DIVERSE MARKETS FOR COMPOSITES BUT SIMILAR REQUIREMENTS

Porcher Industries is comprised of various sectors all with high technology applications and a very wide diversity of clients and needs. All of these sectors have one common characteristic: they all have high levels of expectations and requirements for product quality and service.

RESPONSE AND QUALITY

Porcher Industries enjoys being in the leadership position in the market, thanks to flexibility in production and close cooperation between its technical teams and those of their clients.

INNOVATION - A PRIORITY

This market requires an on-going capacity for innovation. Most importantly, it is necessary to have the resources to find and create technical solutions for high performance applications.

DEDICATED DEVELOPMENT

Our engineers and technicians are dedicated to the on-going development of new products and new solutions.

They strive to create more than just a simple response to identified needs. They use a pro-active, visionary approach which entails continuous research, monitoring and evaluating potential innovations.

SUMMARY

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E Glass Fabrics ▸ Balanced

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
17	1270	Plain	29.6 x 29.6	50 / 50	EC5 2.8	EC5 2.8	101
25	1040 / 1220	Plain	22.2 x 22.2	50 / 50	EC5 5.5	EC5 5.5	**106 ***
48	975/1270	Plain	23.6 x 18.6	56 / 44	EC5 11	EC5 11	**1080 ***
69	975 / 1270	Plain	15.5 x 15.5	50 / 50	EC7 22	EC7 22	2112
81	1000	Plain	12.6 x 11.1	53 / 47	EC9 34	EC9 34	**1610 ***
105	1000 / 1270	4 H Satin	23.6 x 22.9	51 / 49	EC5 11 x 2	EC5 11 x 2	**120 ***
105	1270	4 H Satin	23.6 x 22.9	51 / 49	EC7 22	EC7 22	2120
105	965/1120	Plain	23.6 x 22.9	51 / 49	EC7 22	EC7 22	**2116 ***
105	1000	Plain	15.5 x 14.8	51 / 49	EC9 34	EC9 34	962
161	1000	Plain	6.0 x 5.8	51 / 49	EC9 136	EC9 136	3217
162	1000/1270	2 x 2 Twill	11.8 x 11.5	51 / 49	EC9 68	EC9 68	**917 ***
163	835/1250/1670	Plain	11.8 x 11.8	50 / 50	EC9 68	EC9 68	**7630 ***
193	1220	2 x 2 Twill	14.0 x 14.0	50 / 50	EC9 68	EC9 68	**3423***
200	1000	Plain	8.1 x 6.5	56 / 44	EC9 136	EC9 136	**3212 ***
202	965 / 1270	Plain	17.4 x 11.8	60 / 40	EC9 68	EC9 68	**7628 ***
231	1270	Plain	17.4 x 8.1	52 / 48	EC9 68	EC9 136	7637
235	1270	Plain	17.4 x 8.0	52 / 48	EC9 68	EC9 136	**7642 ***
282	1000	2 x 2 Twill	7.0 x 6.5	52 / 48	EC9 68 x 3 t0	EC9 204	**3063 ***
282	1000	Plain	7.0 x 6.5	52 / 48	EC9 68 x 3 t0	EC9 204	**3226 ***
296	1000/1270/1450	8 H Satin	22.9 x 21.1	52 / 48	EC6 68	EC6 68	**7781 ***
302	1000 / 1270	8 H Satin	22.9 x 21.1	52 / 48	EC9 68	EC9 68	**7581 ***
305	1200	8 H Satin	23.2 x 21.4	52 / 48	EC9 34 x 2	EC9 34 x 2	**1581 ***
320	1000	Plain	13.1 x 10.1	56 / 44	EC9 136	EC9 136	3704
345	1240	Plain	6.0 x 5.3	60 / 40	EC9 68 x 5 t0	EC9 272	3263
360	1000	2 x 2 Twill	13.1 x 13.3	50 / 50	EC9 136	EC9 136	3801
391	1000	2 x 2 Twill	6.0 x 6.6	53 / 47	EC9 68 x 5 t0	EC9 272	**1989 ***
391	1250	Plain	6.0 x 6.6	53 / 47	EC9 68 x 5 t0	EC9 272	3268
418	1000	3 x 1 Twill	19.0 x 11.8	62 / 38	EC9 136	EC9 136	3858
430	1230	2 x 2 Twill	19.2 x 11.8	62 / 38	EC9 136	ET9 136	4740
443	1000	Mock Leno	6.0 x 8.5	48 / 52	EC9 68 x 5 t0	EC9 272	3227
545	1270	8 H Satin	20.7 x 19.0	52 / 48	EC9 136	EC9 136	**3783 ***
612	1200 / 1250	8 H Satin	10.0 x 10.0	51 / 49	EC13 300	EC13 300	**3236 ***

* core range

E Glass Fabrics ▸ Unidirectional

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
19	965	Plain	23.6 x 20.7	70 / 30	EC5 5.5	EC5 2.8	104
23	1030	Plain	25.4 x 15.8	64 / 36	EC5 5.5	EC5 5.5	**792 ***
32	1030	Plain	23.6 x 10.3	82 / 18	EC5 11	EC5 5.5	**771 ***
33	1270	Plain	22.2 x 18.5	38 / 62	EC5 5.5	EC5 11	3364
35	1030	Plain	23.6 x 16.3	75 / 25	EC5 11	EC5 5.5	**778 ***
187	1000	4 H Satin	22.3 x 10.4	81 / 19	EC9 68	EC9 34	886
220	1000	Plain	6.0 x 7.0	93 / 7	EC9 68 x 5 t0	EC7 22	2071
300	1000	4 H Satin	19.0 x 12.0	87 / 13	EC9 68 x 2	EC5 11 x 2	**1543 ***
306	1000	4 H Satin	19.2 x 11.1	87 / 13	EC9 136	EC9 34	**892 ***
355	1270	8 H Satin	46.0 x 9.5	90 / 10	EC9 68	EC9 34	7576
431	1200 / 1250	Plain	5.5 x 6.3	90 / 10	EC9 136 x 5 t0	EC9 68	**3025 ***

* core range

Surfboard fabrics ▸ E Glass

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
124	685 / 762	Plain	9.4 x 8.7	52 / 48	EC9 34 x 2	EC9 34 x 2	1522
124	685 / 762	Plain	9.4 x 8.7	52 / 48	EC9 68	EC9 34 x 2	S125
145	685 / 762	Plain	11.8 x 7.1	62 / 38	EC9 34 x 2	EC9 68	1521
145	685 / 762	Plain	7.1 x 8.6	62 / 38	EC9 68 x 2	EC9 68	7537
200	685 / 762	Plain	7.4 x 7.4	50 / 50	EC9 68 x 2	EC9 68 x 2	7533
200	685 / 762	Plain	9.4 x 5.5	63 / 37	EC9 68 x 2	EC9 68 x 2	7534
200	762 / 965	Plain	6.3 x 5.5	53 / 47	EC9 68 x 3	EC9 68 x 3	7532

S2® Glass fabrics ▸ Balanced

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
119	1524 / 1560	Plain	9.2 x 8.4	52 / 48	SC9 33 x 2	SC9 33 x 2	6522
160	1000	2 x 2 Twill	11.8 x 11.5	51 / 49	SC9 66	SC9 66	6917
190	1270	8 H Satin	28.7 x 27.5	51 / 49	SC9 33	SC9 33	**6580 ***
190	1000	Plain	7.1 x 7.1	50 / 50	SC9 66 x 2	SC9 66 x 2	6533
300	965	8 H Satin	22.8 x 21.3	52 / 48	SC9 33 x 2	SC9 33 x 2	6581
300	1270	8 H Satin	22.4 x 21.2	52 / 48	SC9 66	SC9 66	**6781 ***
360	1270	8 H Satin	47.2 x 9.5	90 / 10	SC9 66	SC9 33	6576

Surfboard fabrics ▸ S2® Glass

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
114	685 / 762	Plain	9.4 x 8.7	52 / 48	SC9 33 x 2	SC9 33 x 2	6522
190	685 / 762	Plain	7.1 x 7.1	50 / 50	SC9 66 x 2	SC9 66 x 2	6533

S2® Glass roving fabrics ▸ Balanced

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
830	1270	Plain	2.0 x 2.0	50 / 50	S2-463AA-250	S2-463AA-250	**3898 ***

* core range

Carbon fabrics ▸ Balanced

Both available in aeronautical and industrial grade

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
1K HS yarn							
95	1000	Plain	7.0 x 7.0	50 / 50	1K HS	1K HS	**3607 ***
120	1000	Plain	9.0 x 9.0	50 / 50	1K HS	1K HS	**3623 ***
120	1000	2 x 2 Twill	9.0 x 9.0	50 / 50	1K HS	1K HS	**3913 ***
135	1000	Plain	10.0 x 10.0	50 / 50	1K HS	1K HS	**13624 ***
150	1250	2 x 2 Twill	11.0 x 11.0	50 / 50	1K HS	1K HS	**3971 ***
160	1000	2 x 2 Twill	11.9 x 11.9	50 / 50	1K HS	1K HS	13961
3K HS yarn							
160	1000	Plain	4.0 x 4.0	50 / 50	3K HS	3K HS	**3750 ***
160	1000	2 x 2 Twill	4.0 x 4.0	50 / 50	3K HS	3K HS	**4750 ***
185	1000	4 H Satin	4.7 x 4.7	50 / 50	3K HS	3K HS	**3198 ***
196	1000 / 1270	Plain	4.9 x 4.9	50 / 50	3K HS	3K HS	**3085 ***
196	1000 / 1270	2 x 2 Twill	4.9 x 4.9	50 / 50	3K HS	3K HS	**3257 ***
200	1000 / 1270	Plain	5.0 x 5.0	50 / 50	3K HS	3K HS	**3679 ***
205	1000 / 1270	2 x 2 Twill	5.0 x 5.0	50 / 50	3K HS	3K HS	**3692 ***
220	1000	Plain	5.5 x 5.5	50 / 50	3K HS	3K HS	4563
220	1000	4 H Satin	5.5 x 5.5	50 / 50	3K HS	3K HS	**3419 ***
225	1000	2 x 2 Twill	5.5 x 5.7	49 / 51	3K HS	3K HS	**4555 ***
245	1000	Plain	6.0 x 6.0	50 / 50	3K HS	3K HS	**3752 ***
245	1000	2 x 2 Twill	6.0 x 6.0	50 / 50	3K HS	3K HS	**3105 ***
285	1000	Plain	7.0 x 7.0	50 / 50	3K HS	3K HS	4544
285	1000	2 x 2 Twill	7.0 x 7.0	50 / 50	3K HS	3K HS	**3101 ***
285	1000	4 x 4 Twill	7.0 x 7.0	50 / 50	3K HS	3K HS	**3309 ***
285	1000 / 1250	5 H Satin	7.0 x 7.0	50 / 50	3K HS	3K HS	**3106 ***
370	1000	8 H Satin	9.3 x 9.1	50 / 50	3K HS	3K HS	3186
6K HS yarn							
280	1200	Plain	3.5 x 3.5	50 / 50	6K HS	6K HS	**3656 ***
280	1200	2 x 2 Twill	3.5 x 3.5	50 / 50	6K HS	6K HS	**3658 ***
280	1200	5 H Satin	3.5 x 3.5	50 / 50	6K HS	6K HS	4552
300	1000	Plain	3.7 x 3.7	50 / 50	6K HS	6K HS	3548
375	1200	5 H satin	4.6 x 4.6	50 / 50	6K HS	6K HS	**4540 ***
410	1000	2 x 2 Twill	5.0 x 5.0	50 / 50	6K HS	6K HS	3766

* core range

Carbon fabrics ▸ Balanced

Both available in aeronautical and industrial grade

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
12K HS yarn							
410	1000	Plain	2.5 x 2.5	50 / 50	12K HS	12K HS	4501
420	1000	Plain	2.6 x 2.6	50 / 50	12K HS	12K HS	3931
420	1000	2 x 2 Twill	2.6 x 2.6	50 / 50	12K HS	12K HS	**3855 ***
470	1100	Plain	2.9 x 2.9	50 / 50	12K HS	12K HS	13757
470	1000	2 x 2 Twill	2.9 x 2.9	50 / 50	12K HS	12K HS	3758
540	1000	5 H Satin	3.3 x 3.3	50 / 50	12K HS	12K HS	**3938 ***
600	1000	Plain	3.7 x 3.7	50 / 50	12K HS	12K HS	3356
600	1000	2 x 2 Twill	3.7 x 3.7	50 / 50	12K HS	12K HS	**3343 ***
645	1000	2 x 2 Twill	4.0 x 4.0	50 / 50	12K HS	12K HS	**3305 ***
680	1270	2 x 2 Twill	4.2 x 4.2	50 / 50	12K HS	12K HS	3702

Carbon fabrics ▸ Unidirectional

Both available in aeronautical and industrial grade

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
3K HS							
130	1000	Plain	4.9 x 5.0	75 / 25	3K HS	1K HS	3606
160	1000	Plain	4.9 x 3.1	61 / 39	3K HS	3K HS	3199
165	1000	Plain	8.0 x 4.0	97 / 3	3K HS	EC 5 11	3338
170	1000	Plain	7.0 x 4.4	85 / 15	3K HS	EC9 68 1383	3421
6K HS							
200	1000	Plain	4.9 x 2.0	97 / 3	6K HS	EC9 34 1383	3673
270	1200	Plain	6.6 x 2.5	97 / 3	6K HS	EC9 34 1383	4732
12K HS							
305	1000	Plain	3.5 x 4.5	95 / 5	12K HS	EC9 34 1383	**13796 ***
320	1000	Plain	3.5 x 4.5	90 / 10	12K HS	1K HS	**13795 ***
530	1000	4 H Satin	6.2 x 4.4	94 / 6	12K HS	EC9 68 1383	3922
600	1000	4 H Satin	7.5 x 2.0	99 / 1	12K HS	EC9 34 1383	3674
810	500	4 H Satin	10.0 x 2.0	99 / 1	12K HS	EC9 34 1383	3346

* core range

Carbon Flat Tow fabrics ▸ Balanced

Both available in aeronautical and industrial grade

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
193	1000	Plain	1.2 x 1.2	50 / 50	12K HS	12K HS	**2005 *** [1]
193	1000	2 x 2 Twill	1.2 x 1.2	50 / 50	12K HS	12K HS	**2015 *** [1]
220	1000	Plain	1.35 x 1.35	50 / 50	12K HS	12K HS	2001
220	1000	2 x 2 Twill	1.35 x 1.35	50 / 50	12K HS	12K HS	2031
240	1200	Plain	1.5 x 1.5	50 / 50	12K HS	12K HS	**4545 ***
240	1000	2 x 2 Twill	1.5 x 1.5	50 / 50	12K HS	12K HS	4516
290	1000	Plain	1.8 x 1.8	50 / 50	12K HS	12K HS	**2010 ***
290	1000	2 x 2 Twill	1.8 x 1.8	50 / 50	12K HS	12K HS	**2009 ***
300	1000	Plain	1.85 x 1.85	50 / 50	12K HS	12K HS	4635
300	1000	2 x 2 Twill	1.85 x 1.85	50 / 50	12K HS	12K HS	**3975 ***
370	1500	Plain	2.3 x 2.3	50 / 50	12K HS	12K HS	3336
370	1000	2 x 2 Twill	2.3 x 2.3	50 / 50	12K HS	12K HS	**4504 ***
385	1000	Plain	2.4 x 2.4	50 / 50	12K HS	12K HS	2013
385	1000	2 x 2 Twill	2.4 x 2.4	51 / 49	12K HS	12K HS	**2011 ***

[1] Powder coated on one face for stabilization

Carbon Flat Tow fabrics ▸ Unidirectional

Both available in aeronautical and industrial grade

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
180	1000	2 x 2 Twill	2.0 x 2.5	91 / 9	12K HS	Hot Melt glass yarn	4509
205	1000	Plain	2.4 x 1.0	96.5 / 3.5	12K HS		**4510 ***
240	1000	Plain	2.85 x 1.3	94 / 6	12K HS		15520
300	1000	Plain	3.7 x 1.0	97.7 / 2.3	12K HS		**4500 ***
460	1000	Plain	5.5 x 1.0	98 / 2	12K HS		4557
300	1000	Plain	3.7 x 2.0	97 / 3	12K HS	EC9 34 1383	4508
300	1000	Plain	3.0 x 3.0	80 / 20	12K HS	3K HS	3774

* core range

Carbon Heavy Tow fabrics ▸ Balanced

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
420	1000	2 x 2 Twill	1.2 x 1.2	50 / 50	24K HS	24K HS	4532
650	1000	2 x 2 Twill	1.9 x 1.9	50 / 50	24K HS	24K HS	3988
830	1000	2 x 2 Twill	2.45 x 2.45	50 / 50	24K HS	24K HS	4533
1000	1250	2 x 2 Twill	2.9 x 2.9	50 / 50	24K HS	24K HS	4527
1350	1250	2 x 2 Twill	2.1 x 2.1	50 / 50	48K HS	48K HS	3872

Carbon Heavy Tow fabrics ▸ Unidirectional

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
560	1000	Plain	3.25 x 1.4	98 / 2	24K HS	Hot Melt glass yarn	15521
650	1200	4 H Satin	3.7 x 2.0	97 / 3	24K HS	EC9 68 1383	3999

Carbon IM fabrics ▸ Balanced

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
200	1000	Plain	4.3 x 4.3	50 / 50	T800H 6K	T800H 6K	3979
200	1000	2 x 2 Twill	4.3 x 4.3	50 / 50	T800H 6K	T800H 6K	3651
205	700	Plain	1.2 x 1.2	50 / 50	IMS 65 24K	IMS 65 24K	14517
285	1000	5 H Satin	6.3 x 6.3	50 / 50	T800H 6K	T800H 6K	3978
300	1000	2 x 2 Twill	3.35 x 3.35	50 / 50	T800H 12K	T800H 12K	3989

Cellulose fabrics - Greenlite

Hybrid fabrics

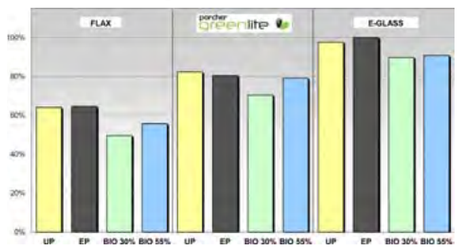
HIGH PERFORMANCE RENEWABLE FABRICS
HIGHLY COMPATIBLE WITH BIO-BASED RESINS
EASY TO IMPREGNATE WITH STANDARD PROCESSES

porcher greenlite is a new generation of high performance renewable reinforcements for the composites industry. These innovative materials are based on pure cellulose fibers. The combination of low density and superior mechanical properties allows biocomposites to be made on an excellent weight / performance basis. The new materials constitute a significant advancement in terms of quality, reproducibility, transparency and strength with respect to common bio-based solutions.

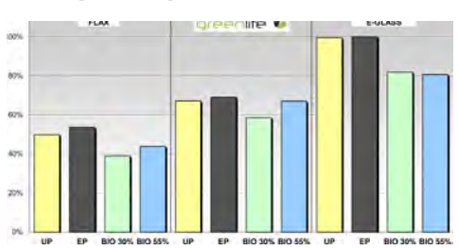
Our reinforcements are biodegradable and highly compatible with bio-based resins, making them suitable for the production of 100% bio-based composites on a large scale. With these new materials, PORCHER Industries demonstrates a strong commitment to developing renewable materials utilizing an eco-friendly process with minimal environmental impact.

COMPOSITE MATERIAL PERFORMANCES

Stiffness to weight ratio



Strength to weight ratio



UP = unsaturated polyester resin
EP = epoxy resin

BIO 30% = 30% bio-based epoxy resin
BIO 55% = 55% bio-based epoxy resin

*Specific properties related to material density

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
160	762 / 1000	Plain	NC	50 / 50	Cellulose	Cellulose	**14414**
190	1000	Plain	NC	50 / 50	Cellulose	Cellulose	14413
190	1000	2 x 2 Twill	NC	50 / 50	Cellulose	Cellulose	14416
220	1000	Plain	NC	50 / 50	Cellulose	Cellulose	**14412**
300	1000	Plain	NC	50 / 50	Cellulose	Cellulose	14415

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
Carbon / Kevlar®							
165	1000 / 1200	Plain	3.3 x 1.3 1.7 x 2.7	41 / 16 17 / 26	3K HS Kevlar® 49 1580	3K HS Kevlar® 49 1580	3210
180	1000	Plain	4.9 x 5.2	54 / 46	3K HS	Kevlar® 49 1580	3875
180	1000	2 x 2 Twill	4.9 x 5.2	54 / 46	3K HS	Kevlar® 49 1580	3876
Carbon / E Glass							
175	1000	4 H Satin	2.8 11.2 x 12.0	33 44 / 23	3K HS EC9 68 1383	EC9 34 1383	3054
260	600	Plain	5.0 x 5.3	39 / 61	3K HS	Roving 300 tex	4634
440	600	Plain	4.0 x 4.7	36 / 64	6K HS	Roving 600 tex	4633

Para-aramid fabrics

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style (1)
62	1270	Plain	13.4 x 13.4	50 / 50	Kevlar® 49 215 dtex	Kevlar® 49 215 dtex	**5120 ***
170	1000 / 1270	Plain	6.7 x 6.7	50 / 50	Kevlar® 49 1270 dtex	Kevlar® 49 1270 dtex	5281
170	1270	4 H Satin	6.7 x 6.7	50 / 50	Kevlar® 49 1270 dtex	Kevlar® 49 1270 dtex	**5285 ***
220	1270	Plain	6.6 x 6.6	50 / 50	Kevlar® 49 1580 dtex	Kevlar® 49 1580 dtex	5328
460	1320	Plain	6.7 x 6.7	50 / 50	Kevlar® 29 3300 dtex	Kevlar® 29 3300 dtex	**5770 ***

(1) Finish: available either in LS (Loom State) or S (Scoured)

* core range

E Glass fabrics

Black finish
Carbon appearance
Balanced

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
282 / 290	1000	2 x 2 Twill	7.0 x 6.5	52 / 48	EC9 68 x 3 t0	EC9 204	3063
391 / 410	1000	2 x 2 Twill	6.0 x 6.0	53 / 47	EC9 68 x 5 t0	EC9 272	1989

Aluminium Finish - Balanced

Weight (g/sqm)	Std width (mm)	Weave	Warp/Weft (yarn/cm)	Weight ratio	Warp	Weft	Style
162	1000	2 x 2 Twill	11.8 x 11.5	51 / 49	EC9 68	EC9 68	917
280	1000	Plain	7.0 x 6.5	52 / 48	EC9 68 x 3 t0	EC9 204	3226
280	1000	2 x 2 Twill	7.0 x 6.5	52 / 48	EC9 68 x 3 t0	EC9 204	3063
391	1000	2 x 2 Twill	6.0 x 6.6	53 / 47	EC9 68 x 5 t0	EC9 272	1989

Finish

Finish	Applications & compatibility
731	For epoxy resins, compatible with polyester & vinylester resins.
K506	Chrome-free finish to replace Volan-A based finishes. Finish dedicated for aeronautical applications.
35/135	Black finish
786	Aluminium finish

Weave set

Powdering for preforming and stabilization *

Compatibility	Softening temperature (°C)
Polyester	95 - 105
Epoxy	100 - 150

Benefits

- Preformable fabrics
- Easier handling
- Easier cutting
- Stabilization of light fabrics

* on one face or both faces

Synthetic fabrics

Peel Ply

Scoured & Heat Set polyamide fabrics

Weight (g/sqm)	Std width (mm)	Yarn	Warp/Weft (yarn/cm)	Colored Threads	Finish	Style
82	1630	PA 66 HT 235 dtex	19 x 15	Yes (red)	Greige	9280 POO
82	1640	PA 66 HT 235 dtex	19 x 15	No	Greige	9222 POO
90	1500	PA 66 HT 235 dtex	19 x 19	No	Greige	9202 POO
90	1500	PA 66 HT 235 dtex	19 x 19	No	Dyed*	9202 TOO
105	1640	PA 66 HT 235 dtex	22 x 21	No	Greige	9200 DPO
105	1640	PA 66 HT 235 dtex	22 x 21	No	Dyed*	9200 TOO

Scoured & Heat Set polyester fabrics

Weight (g/sqm)	Std width (mm)	Yarn	Warp/Weft (yarn/cm)	Colored Threads	Finish	Style
60	1600	PET 50 dtex	58 x 38	No	Greige	6044 DPO
90	1650	PET 140 dtex	28 x 28	No	Dyed*	8111 TOO
105	1640	PET 280 dtex	18 x 18	No	Greige	8231 POO

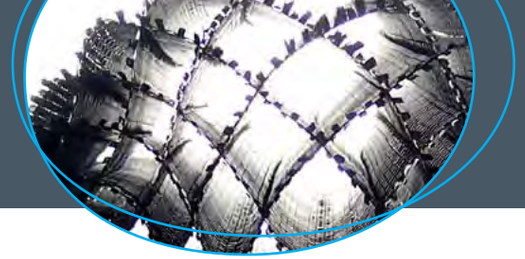
Synthetic fabrics

Structural bonding

Scoured & Heat Set polyester fabrics

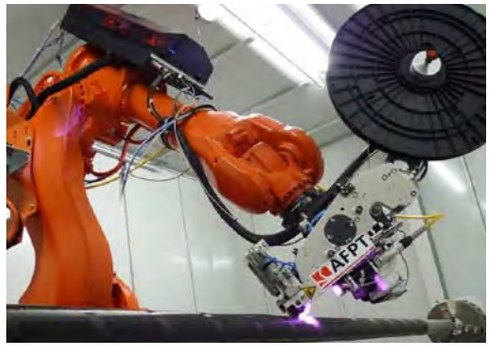
Weight (g/sqm)	Std width (mm)	Yarn	Warp/Weft (yarn/cm)	Colored Threads	Finish	Style
90	1000 / 1320	PET 140 dtex	28 x 28	No	Greige	8115 DPO

* Available in 3 colors



CREATING STRUCTURES IN THREE DIMENSIONS UNLIMITED SOLUTIONS

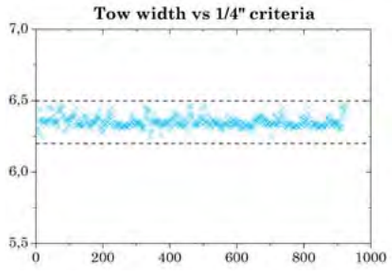
porcher d3sign® product range offers potential 3D solutions, including a towpreg technology dedicated to automated and advanced fiber placement (AFP) and filament winding.
This innovative product provides potential applications for out-of-autoclave (OOA) processing.



© Photo AFPT - 2014

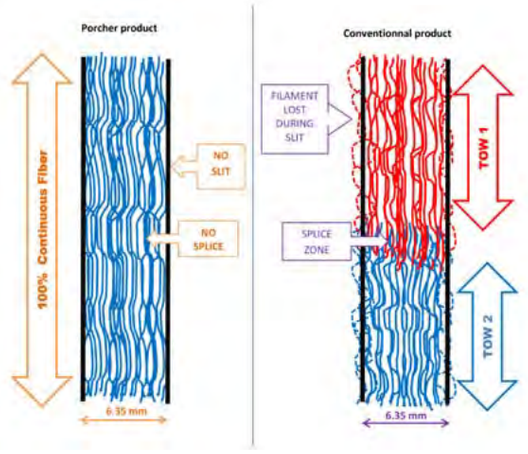
porcher d3sign® towpregs are continuous carbon or glass fibers treated or impregnated with high performance thermoplastics.
Depending on final application, polymer content in weight covers a range from 30% to 50%.

WIDTH FROM 1/4 OF INCH OR ON DEMAND!



According to customer requirements, fibers can be fully impregnated in various widths. Besides, compared to slitted tapes, towpregs are 100% continuous, avoiding any splice.

OUR PRODUCT — CONVENTIONNAL PRODUCT



THANKS TO OUR INNOVATIVE TECHNOLOGY, KEY BENEFITS FOR END USERS ARE VARIOUS!

MECHANICAL PROPERTIES

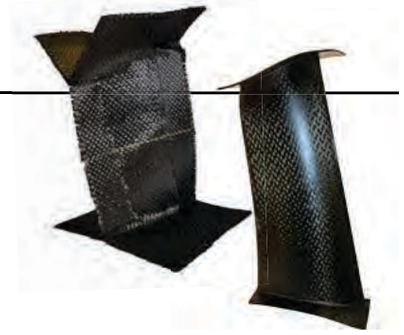
- No weakness in final part (no splice).
- Homogeneous performances (stable fiber rate along the tow).
- Management of non isotropic performances in final part.

PROCESS OPTIMIZATION

- High speed processing.
- Lower energy consumption.
- Very low curvature angle.
- Very constant weight and width along the tow.
- No dry / lift fiber on towpreg surface (low pollution of AFP machine).

COST

- No carbon waste during AFP process.
- More efficient towpreg process (energy, speed, constant weight and width).
- Less downtimes (no splice management).



porcher d3sign®

Porcher D3SIGN® fabrics offer:

- complex design patterns per customer requirements,
- variable thicknesses in length and/or width,
- fabric density up to 200 yarns/cm on multiple layers (carbon, glass, ceramic fibers).

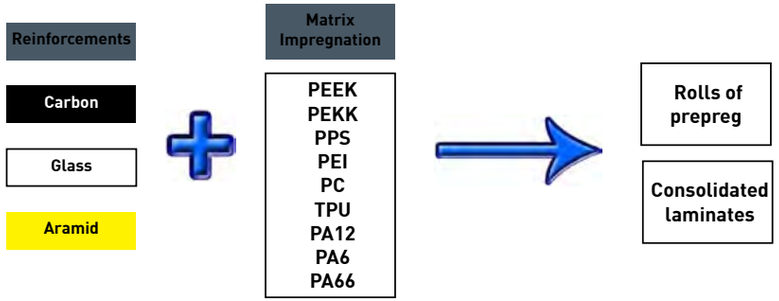
Porcher D3SIGN® fabrics advantages:

- easy handling,
- process optimization, thanks its easy lay-up compared to multi-plied stacking,
- high mechanical performances of final part - initial cross linking between plies thanks to 3D weaving.

D3SIGN

pipreg® Thermoplastic Composites

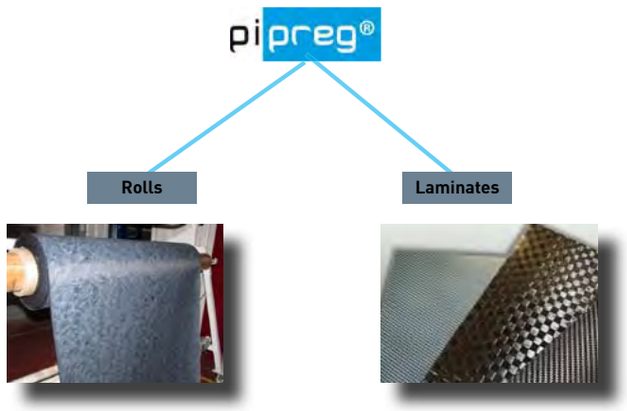
OUR PROCESS



Weaving

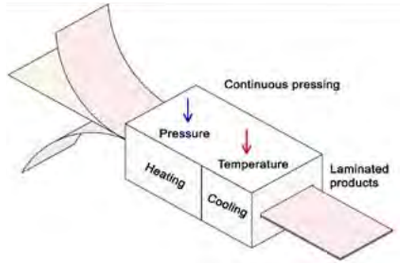
Impregnation

Consolidation

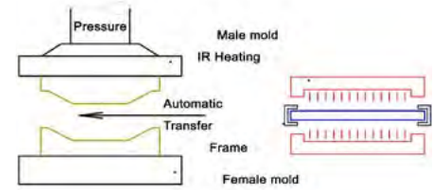


HOW TO HANDLE OUR THERMOPLASTIC COMPOSITES

DOUBLE BELT PRESS : with Pipreg® in rolls



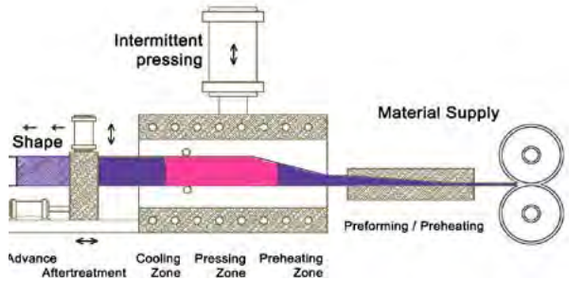
THERMOFORMING : with Pipreg® flat laminates



AUTOCLAVE MOLDING : with Pipreg® layers

COMPRESSION MOLDING PROCESS: with Pipreg® layers

SEMI CONTINUOUS PRESS: with Pipreg® in rolls



ADDED VALUES OF OUR COMPOSITES

Our facilities are **ISO 9001 : 2008** and **EN 9100 : 2009** certified in order to offer you the level of quality you expect from us, for both products and services.

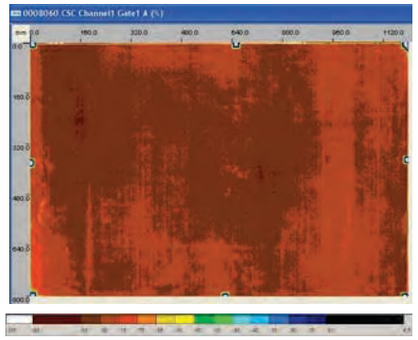
Thermoplastic composites combine the advantages of continuous fibers and polymers, where:

- woven continuous fibers bear the mechanical loads of the composite,
- polymers distribute these strengths over the fibers and determine the thermal, chemical and part of the impact resistance of the composite.

The use of composites gives very high flexibility to optimize the material according to the required specifications. It results in lighter, sometimes thinner, stronger and more durable structures compared to conventional materials.
Porcher Industries extended its know-how to thermoplastic composites in the early 1990's, before investing in a more competitive and flexible impregnation technology to be able to offer today a broad range of thermoplastic composites.

Pipreg® with other polymer / reinforcement combination and / or polymer volume content can be developed on request.

OUR COMMITMENT IN HIGH QUALITY



Thanks to our Ultrasonic NDT equipment, technicians check the quality of our consolidated laminates and their compliance with customer specifications.

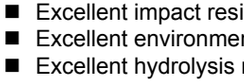
Our operating people are certified:
- Level 1
- Level 2 COFREND / COSAC in US methods. Our NDT department is qualified by aeronautical customers on some specific products.

THERMOPLASTIC COMPOSITES

Polymer Data Sheet

PEEK

(Poly-Ether-Ether-Ketone)



Semi-crystalline polymer

Properties	
Melting temperature Tm	343°C
Density	1.30 g/cm3
Processing temperature Tp	390 +/- 15°C
Processing pressure	10 bars
Glass transition temperature Tg	143°C
Service temperature	120°C (Aerospace) 260°C (Low stress applications)

Performances

- Good mechanical properties from cryogenic to high temperatures
- Excellent tribologic properties
- High toughness
- Good resistance to creep and fatigue
- Excellent impact resistance
- Excellent environmental resistance
- Excellent hydrolysis resistance
- Very low smoke & toxic gas emission
- Good bonding & painting
- Indefinite shelf life at ambient conditions

Carbon Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/ Weft	Polymer content in volume (in weight)	Style
294	1100	Plain	4.9 x 4.9	3K HS	40 (33)	3085-P51
326	1000	Plain	4.9 x 4.9	3K HS	47 (40)	3085-P55
344	1000	Plain	4.9 x 4.9	3K HS	50 (43)	3085-P17
344	1000	2 x 2 Twill	4.9 x 4.9	3K HS	50 (43)	3257-P17
350	1000	4 H Satin	5.5 x 5.5	3K HS	44 (37)	**3419-P03 *** [1]
427	1250	5 H Satin	7.0 x 7.0	3K HS	40 (33)	3106-P51
439	1250	5 H Satin	7.0 x 7.0	3K HS	42 (35)	3106-P52
459	1250	5 H Satin	7.0 x 7.0	3K HS	45 (38)	**3106-P03 ***
485	1250	5 H Satin	7.0 x 7.0	3K HS	49 (41)	**3106-P57 *** [1]
479	1250	5 H Satin	7.0 x 7.0	3K HS	48 (40)	3106-P55
497	1250	5 H Satin	7.0 x 7.0	3K HS	50 (43)	**3106-P17 ***
497	1000	2 x 2 Twill	1.8 x 1.8	12K HS	50 (43)	2009-P17

E Glass Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
161	1270	4 H Satin	23.6 x 22.9	EC5 11x2	51 (35)	**120-P17 *** [1]
450	1270	8 H Satin	22.9 x 21.1	EC6 68	50 (34)	**7781-P17 ***
456	1270	8 H Satin	22.9 x 21.1	EC9 68	50 (34)	**7581-P17 ***

S2® Glass pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
460	1270	8 H Satin	22.4 x 21.2	SC9 66	50 (35)	**6781-P17 ***

[1] **aeronautical qualified**

*** Core range**

Standard laminates

Reference	Nominal thickness (mm)	No. of plies	Stacking sequence
L03106-57100602	1.86	6	[(0,90)/(+45,-45)/(0,90)]s
L03106-57100702	2.17	7	$[(0,90)/(+45,-45)]_3/(0,90)$
L03106-57100802	2.48	8	$[[(0,90)/(+45,-45)]_2]s$
L03106-57100902	2.79	9	$[(0,90)/(+45,-45)]_4/(0,90)$
L03106-57101002	3.10	10	$[[(0,90)/(+45,-45)]_2/(0,90)]s$
L03106-57101102	3.41	11	$[(0,90)/(+45,-45)]_5/(0,90)$
L03106-57101202	3.72	12	$[[(0,90)/(+45,-45)]_3]s$
L03106-57101402	4.34	14	$[[(0,90)/(+45,-45)]_3/(0,90)]s$
L03106-57101502	4.65	15	$[(0,90)/(+45,-45)]_7/(0,90)$

Available dimensions : 800 x 1200 mm
Possibility to add surface ply like PEEK / Glass Pigreg or wire bronze mesh

Thick laminates

Reference	Minimum thickness (mm)	No. of plies	Stacking sequence
L03106-17103401	10	34	(0,90)
L03106-17104001	12	40	(0,90)
L03106-17105001	15	50	(0,90)
L03106-17106602	20	66	(0,90)
L03106-17108201	25	82	(0,90)
L03106-17109801	30	98	(0,90)
L03106-17113001	40	130	(0,90)

Available dimensions : 800 x 1200 mm

PI PREG® ▸ PPS

pipreg®

THERMOPLASTIC COMPOSITES

Polymer Data Sheet

PPS
(Poly-Phenylene-Sulfide)

Semi-crystalline polymer

Properties	
Melting temperature Tm	280°C
Density	1.35 g/cm3
Processing temperature Tp	310 +/- 15°C
Processing pressure	10 bars
Glass transition temperature Tg	90°C
Service temperature	240°C (Low stress applications)

Performances

- Good impact resistance
- Inert to aggressive chemicals (engine & hydraulic oils, fuels, solvents, ...)
- Very good hydrolysis resistance
- Inherently flame retardant
- High hardness and rigidity
- Very low water absorption
- Excellent creep resistance (even at elevated temperatures)
- Excellent dimensional stability
- Indefinite shelf life at ambient conditions

Carbon Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
501	1250	5 H Satin	7.0 x 7.0	3K HS	50 (43)	**3106-P23 ***
501	1000/1250	2 x 2 Twill	1.8 x 1.8	12K HS	50 (43)	2009-P23
533	1000	Plain	3.5 x 4.5	12K HS / EC9 34	50 (43)	13796-P23
559	1000	Plain	3.5 x 4.5	12K HS / 1K HS	50 (43)	13795-P31

E Glass Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
159	1000/1270	4 H Satin	23.6 x 22.9	EC5 11x2	50 (34)	**120-P23 ***
450	1270	8 H Satin	22.9 x 21.1	EC6 68	50 (34)	**7781-P23 ***
462	1270	8 H Satin	22.9 x 21.1	EC9 68	50 (34)	7581-P23
827	1270	8 H Satin	20.7 x 19	EC9 136	50 (34)	3783-P23

S2® Glass Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
460	1270	8 H Satin	22.4 x 21.2	SC9 66	50 (35)	6781-P23

* core range

PI PREG® ▸ PEI

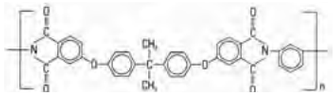
pipreg®

Thermoplastic Composites

Polymer Data Sheet

PEI

(Poly-Ether-Imide)



Amorphous polymer

Properties	
Density	1.27 g/cm3
Processing temperature Tp	370 +/- 15°C
Processing pressure	10 bars
Glass transition temperature Tg	217°C
Service temperature	170°C (Low stress applications)

- Inherent flame resistance, LOI 47%
- Low smoke evolution
- Strength and modulus at elevated temperatures
- Good chemical resistance
- Indefinite shelf life at ambient conditions

Carbon Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
340	1000	2 x 2 Twill	4.9 x 4.9	3K HS	50 (42)	3257-P44
489	1250	5 H Satin	7.0 x 7.0	3K HS	50 (42)	**3106-P44 ***
495	1000	2 x 2 Twill	1.8 x 1.8	12K HS	50 (42)	2009-P44
521	1000	Plain	3.5 x 4.5	12K HS EC9 34	50 (41)	13796-P44

E Glass Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
157	1000/1270	4 H Satin	23.6 x 22.9	EC5 11x2	50 (33)	**120-P44 ***
440	1000/1270	8 H Satin	22.9 x 21.1	EC6 68	50 (33)	7781-P44
450	1270	8 H Satin	22.9 x 21.1	EC9 68	50 (33)	7581-P44

S2® Glass Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
438	1270	8 H Satin	22.4 x 21.2	SC9 66	47 (32)	6781-P44

* core range

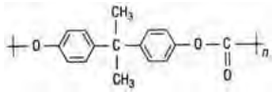
PI PREG® ▸ PC

THERMOPLASTIC COMPOSITES

Polymer Data Sheet

PC

(Polycarbonate)



Amorphous polymer

Properties	
Density	1.20 g/cm3
Processing temperature Tp	275 +/- 15°C
Processing pressure	10 bars
Glass transition temperature Tg	143°C
Service temperature	120°C (Low stress applications)

Performances

- High Transparency
- Flame retardant (UL94 V-0 rated)
- Exceptional impact resistance
- High ductility and toughness over a wide temperature range
- Low water absorption
- Good dimensional stability
- Indefinite shelf life at ambient conditions
- Halogen free
- UV Stabilized

Carbon Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
328	1250	2 x 2 Twill	4.9 x 4.9	3K HS	50 (40)	3257-P48
328	1000	Plain	4.9 x 4.9	3K HS	50 (40)	3085-P48
358	1000	2 x 2 Twill	4.9 x 4.9	3K HS	55 (45)	3257-P53
358	1000	Plain	4.9 x 4.9	3K HS	55 (45)	3085-P53
479	1250	5 H Satin	7.0 x 7.0	3K HS	50 (40)	**3106-P48 ***
479	1000	2 x 2 Twill	1.8 x 1.8	12K HS	50 (40)	2009-P48
521	1000	2 x 2 Twill	7.0 x 7.0	3K HS	55 (45)	3101-P53
521	1000	2 x 2 Twill	1.8 x 1.8	12K HS	55 (45)	2009-P53

E Glass Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
442	1270	8 H Satin	22.9 x 21.1	EC9 68	50 (32)	7581-P48
571	1000	2 x 2 Twill	6.0 x 6.6	EC9 68x5 / EC9 272	50 (32)	1989-P48
612	1000	2 x 2 Twill	6.0 x 6.6	EC9 68x5 / EC9 272	55 (36)	1989-PX4 [1]

[1] : Black finish (carbon appearance)

* core range

PI PREG® ▸ TPU

THERMOPLASTIC COMPOSITES

Polymer Data Sheet

TPU

(Thermoplastic PolyUrethane, polyester based)

Properties	
Density	1.22 g/cm3
Processing temperature Tp	235 +/- 15°C
Processing pressure	10 bars
Glass transition temperature Tg	95°C
Service temperature	80°C (Low stress applications)

Performances

- High modulus
- High transparency
- Good toughness
- Good abrasion & wear resistance
- Good chemical resistance
- Low water absorption
- Indefinite shelf life at ambient conditions

Carbon Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
334	1000	Plain	4.9 x 4.9	3K HS	50 (41)	3085-P29
334	1000	2 x 2 Twill	4.9 x 4.9	3K HS	50 (41)	3257-P29
362	1000	Plain	4.9 x 4.9	3K HS	55 (46)	3085-P54
362	1070	2 x 2 Twill	4.9 x 4.9	3K HS	55 (46)	3257-P54
481	1250	5 H Satin	7.0 x 7.0	3K HS	50 (41)	**3106-P29 ***
481	1000	2 x 2 Twill	1.8 x 1.8	12K HS	50 (41)	2009-P29

E Glass Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
283	1220	2 x 2 Twill	14.0 x 14.0	EC9 68	50 (32)	3423-P29
416	1000	2 x 2 Twill	7.0 x 6.5	EC9 68x3 / EC9 204	50 (32)	3063-P29
416	1000	2 x 2 Twill	7.0 x 6.5	EC9 68x3 / EC9 204	50 (32)	3063-P38 [1]
444	1000	2 x 2 Twill	7.0 x 6.5	EC9 68x3 / EC9 204	55 (36)	3063-P54
575	1000	2 x 2 Twill	7.0 x 6.6	EC9 68x5 / EC9 272	50 (32)	1989-P29
576	1000	2 x 2 Twill	7.0 x 6.6	EC9 68x5 / EC9 272	50 (32)	1989-P45 [2]

* core range

PI PREG® ▸ PA12

Thermoplastic Composites

Polymer Data Sheet

PA12

(Polyamide 12)

H - [NH - (CH2)11 - CO]n - OH

Semi-crystalline polymer

Properties	
Melting temperature Tm	176°C
Density	1.02 g/cm3
Processing temperature Tp	230 +/- 15°C
Processing pressure	10 bars
Glass transition temperature Tg	55°C
Service temperature	70°C (Low stress applications)

Performances

- Medium toughness
- Very good impact resistance
- Good chemical resistance
- Good abrasion resistance
- Lowest humidity absorption vs. all available polyamides
- Indefinite shelf life at ambient conditions

Carbon Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
310	1000	Plain	4.9 x 4.9	3K HS	50 (37)	3085-P19
310	1250	2 x 2 Twill	4.9 x 4.9	3K HS	50 (37)	3257-P19
451	1250	5 H Satin	7.0 x 7.0	3K HS	50 (37)	**3106-P19 ***
451	1000	2 x 2 Twill	1.8 x 1.8	12K HS	50 (37)	2009-P19

E Glass Pipreg® rolls

Pipreg® areal weight (g/sqm)	Width (mm)	Weave	Warp/Weft (yarn/cm)	Warp/Weft	Polymer content in volume (in weight)	Style
412	1270	8 H Satin	22.9 x 21.1	EC6 68	50 (28)	7781-P19
422	1270	8 H Satin	22.9 x 21.1	EC9 68	50 (28)	7581-P19
545	1000	2 x 2 Twill	6.0 x 6.6	EC9 68 / EC9 272	50 (28)	1989-P19

* core range

Armures	Weave patterns	Bindungen	Construccion
Toile	Plain	Leinwand	Tafetan
Sergé 2/2	2 x 2 Twill	Köper 2/2	Sarga 2/2
Sergé 4/4	4 x 4 Twill	Köper 4/4	Sarga 4/4
Satin de 4	4 H Satin	Satin 1/3	Satin 4
Satin de 5	5 H Satin	Satin 1/4	Satin 5
Satin de 8	8 H satin	Satin 1/7	Satin 8
Fausse gaze	Mock Leno	Scheindreher	Gasa de vuelta

The information contained in this brochure is based on the present state of our knowledge. Values quoted are average values and are given for guidance purposes only. Any conclusions and recommendations are made without liability on our part. Buyers and users should make their own assessment of our products under their own conditions and requirements.

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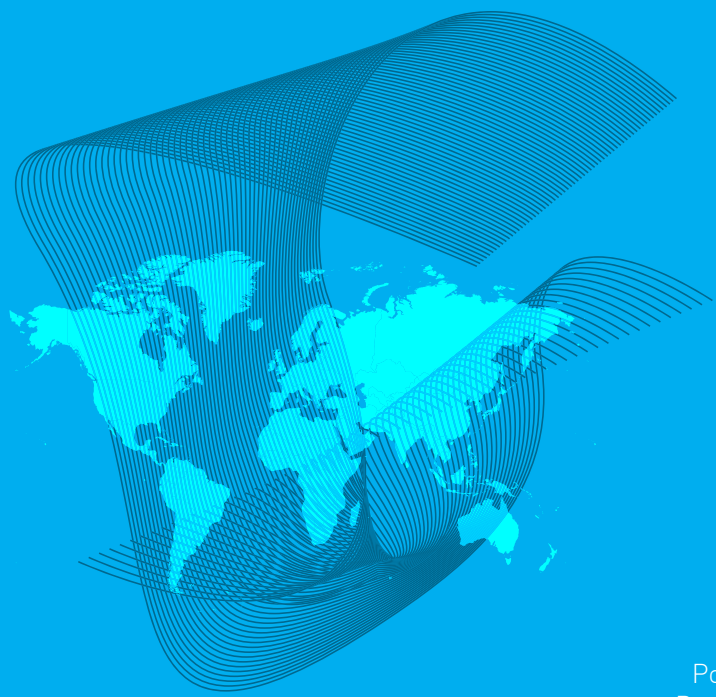

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