

## ®SIGRAFIL C – continuous tow carbon fiber

### Introduction

SIGRAFIL C as continuous tow is ideal for weaving, prepregging, filament winding, Carbon Fiber Reinforced Plastics (CFRP) components, advanced composites, multi-axial production, unidirectional tapes, extrusion, pultrusion and other conversion processing. Characteristic properties of SIGRAFIL C include high tensile strength, high modulus of elasticity coupled with high electrical conductivity and compatibility with a large variety of resins.

### Product Specification

SIGRAFIL C type	Filaments per tow in thsd.	Fiber diameter µm	Fiber Density		Tensile strength		Youngs modulus		Elongation at break %	Carbon content %	Sizing content <sup>1)</sup> % by weight	Sizing type <sup>2)</sup>	Weight per unit length		Typical resistivity	
			g/cm <sup>3</sup>	lb/ft <sup>3</sup>	GPa	Ksi	GPa	Msi					g/m	lb/in	µΩm	µΩin
C30 T045 EPY	45	7.0	1.80	112	3.8	550	225	33	1.6	> 95	0.5 - 0.8	Epoxy	3.3	185x10 <sup>-6</sup>	15	590
C30 T045 EPY	45	7.0	1.80	112	3.8	550	225	33	1.6	> 95	1.3 - 1.8	Epoxy	3.3	185x10 <sup>-6</sup>	15	590
C30 T050 EPY	50	7.0	1.80	112	4.0	580	240	35	1.6	> 95	1.0	Epoxy	3.5	196x10 <sup>-6</sup>	14	550
C30 T060 EPY	60	6.5	1.80	112	3.8	550	230	33	1.6	> 95	1.0	Epoxy	3.5	196x10 <sup>-6</sup>	15	590
C30 T400 EPY	400	6.5	1.80	112	3.8	550	240	35	1.5	> 95	1.0	Epoxy	25	1.4X10 <sup>-3</sup>	16	630

<sup>1)</sup> customized by application

<sup>2)</sup> further sizing types on request

### Packaging units

SIGRAFIL C type	Packaging	Net weight per spool
C30 T045 EPY	Crosswound tow on cardboard spools 280 mm / 13 in long with 76 mm / 3 in inside diameter, shrink wrapped in cartons	5 kg / 11 lb
C30 T050 EPY	Crosswound tow on cardboard spools 280 mm / 13 in long with 76 mm / 3 in inside diameter, shrink wrapped in cartons	5.5 kg / 12 lb
C30 T060 EPY	Crosswound tow on cardboard spools 280 mm / 13 in long with 76 mm / 3 in inside diameter, shrink wrapped in cartons	5.5 kg / 12 lb
C30 T400 EPY	Cartons on non-returnable pallets	50 kg / 23 lb

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## ®SIGRAFIL C – staple carbon fiber

### Introduction

In its precision cut staple form SIGRAFIL C is a superior free-flowing material suitable for low and high temperature thermoplastic injection-molding processes. It is also an excellent way of making plastics or other non-conductive bulk materials electrically conductive e.g. glues, resin systems, and speciality paper. Further important uses include fuel cells, cement reinforcement and applications where enhanced chemical resistance is needed. The sizing type and surface treatment can be tailored for individual end uses.

### Product Specification

SIGRAFIL C type	Fiber diameter µm	Fiber Density g/cm <sup>3</sup>	lb/ft <sup>3</sup>	Tensile strength GPa	Ksi	Youngs modulus GPa	Msi	Elongation at break %	Carbon content %	Sizing content % by weight	Sizing type	Bulk Density g / L	Fiber length* chopped mm	In	Typical resistivity µΩm	µΩin
<b>Low temperature thermoplastic injection molding:</b>																
C25 S003 PUT	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 4	Polyurethane	360	3	0.1	16	630
C25 S006 PUT	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 4	Polyurethane	360	6	0.2	16	630
<b>High temperature thermoplastic injection molding:</b>																
C25 S003 APS	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	0.5 – 1.5	Aromatic polymer	360	3	0.1	16	630
C25 S006 APS	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	0.5 – 1.5	Aromatic polymer	360	6	0.2	16	630
<b>Electromagnetic shielding – glues, resin systems, paper manufacturing:</b>																
C25 S001 EPY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.4 - 4.5	Epoxy	-	1	0.04	16	630
C25 S003 EPY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.4 - 4.5	Epoxy	-	3	0.1	16	630
C25 S006 EPY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.4 - 4.5	Epoxy	-	6	0.2	16	630
C25 S009 EPY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.4 - 4.5	Epoxy	-	9	0.4	16	630
C25 S012 EPY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.4 - 4.5	Epoxy	-	12	0.5	16	630
C25 S003 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	-	3	0.1	16	630

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## Product Specification

SIGRAFIL C type	Fiber diameter µm	Fiber Density g/cm <sup>3</sup> lb/ft <sup>3</sup>	Tensile strength GPa Ksi	Youngs modulus GPa Msi	Elongation at break %	Carbon content %	Sizing content % by weight	Sizing type	Bulk Density g / L	Fiber length* chopped mm In	Typical resistivity µΩm µΩin					
<b>Electromagnetic shielding – glues, resin systems, paper manufacturing (cont'd):</b>																
C25 S006 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	-	6	0.2	16	630
C25 S009 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	-	9	0.4	16	630
C25 S012 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	-	12	0.5	16	630
<b>Other applications – fuel cells, cement reinforcement, chemical resistance:</b>																
C10 S003 GLY	7.5	1.75	112	2.8	410	200	29	1.2 - 1.3	> 95	1.5 - 6.5	Glycerine	-	3	0.1	18	710
C10 S006 GLY	7.5	1.75	112	2.8	410	200	29	1.2 - 1.3	> 95	1.5 - 6.5	Glycerine	-	6	0.2	18	710
C25 S003 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	-	3	0.1	16	630
C25 S006 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	-	6	0.2	16	630
C25 S009 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	-	9	0.4	16	630
C25 S012 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	-	12	0.5	16	630
C30 S003 GLY	7.0	1.82	113	3.8	550	240	34	1.2 - 1.6	> 95	1.5 - 6.5	Glycerine	-	3	0.1	13	510
C30 S006 GLY	7.0	1.82	113	3.8	550	240	34	1.2 - 1.6	> 95	1.5 - 6.5	Glycerine	-	6	0.2	13	510
C30 S009 GLY	7.0	1.82	113	3.8	550	240	34	1.2 - 1.6	> 95	1.5 - 6.5	Glycerine	-	9	0.4	13	510
C30 S012 GLY	7.0	1.82	113	3.8	550	240	34	1.2 - 1.6	> 95	1.5 - 6.5	Glycerine	-	12	0.5	13	510

\* further lengths on request

## Packaging units

SIGRAFIL C Type	Packaging	Items per carton	Net weight per PE bag	Net weight per carton
C25 S003/6 PUT C25 S003/6 APS	PE bags in cartons on non-returnable pallets	8	12.5 kg / 27.6 lb	100 kg / 220 lb
C25 S001 EPY	PE bags in cartons on non-returnable pallets	4	10 kg / 22 lb	40 kg / 88 lb
C10 S003/6 GLY C25 S003/6/9/12 EPY C25 S003/6/9/12 GLY C30 S003/6/9/12 GLY	PE bags in cartons on non-returnable pallets	8	10 kg / 22 lb	80 kg / 176 lb

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## ®SIGRAFIL C – milled or pelletized carbon fiber

### Introduction

Milled SIGRAFIL C is excellent for making materials electrically conductive such as powders, dry mixtures, adhesives, floorings, aqueous adhesive systems and all aqueous mixing processes. Milled SIGRAFIL C fibers can be added to thermoplastic injection molding compounds and are also available in a pelletized form for improved handling characteristics. SIGRAFIL C fibers are optimized in terms of their mechanical properties to offer excellent physical handling and process feeding properties. SIGRAFIL C can be blended with a variety of resins.

### Product Specification

SIGRAFIL C type	Fiber diameter µm	Fiber Density		Tensile strength		Youngs modulus		Elongation at break %	Carbon content %	Sizing content % by weight	Sizing type	Bulk Density g / L	Mean fiber length* milled µm		Typical resistivity µΩ·m µΩ·in	
		g/c m <sup>3</sup>	lb/ft <sup>3</sup>	GPa	Ksi	GPa	Msi						µm	µm	µΩ·m	µΩ·in
<b>Thermoplastic injection molding</b>																
C10 M250 UNS	8	1.75	109	2.5	360	180	26	1.2 - 1.3	> 95	-	unsized	230	135	18	710	
C25 M100 UNS	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	-	unsized	350	100	16	630	
C25 M250 UNS	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	-	unsized	230	135	16	630	
C25 M350 UNS	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	-	unsized	150	155	16	630	
C25 P350 PUT	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 4.0	Polyurethane	220	155	16	630	
C25 P250 EPY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 4.5	Epoxy	220	135	16	630	
<b>Flooring compounds, adhesives, wet and dry mixes</b>																
C10 M250 UNS	8	1.75	109	2.5	360	180	26	1.2 - 1.3	> 95	-	unsized	230	135	18	710	
C25 M250 UNS	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	-	unsized	230	135	16	630	
C25 M350 UNS	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	-	unsized	150	155	16	630	
C25 P250 EPY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 4.5	Epoxy	220	135	16	630	
C25 P350 GLY	7.5	1.80	112	3.6	520	225	33	1.4 - 1.8	> 95	1.5 - 6.5	Glycerine	220	155	16	630	

- further lengths on request
- Note: "M" denotes milled fibre, eg C25 M250 UNS "P" denotes pelletised, eg C25 P350 PUT

### Packaging units

SIGRAFIL C type	Packaging	Net weight per carton
C10 M250 UNS C25 M100 UNS C25 M250 UNS	Cartons lined with PE bags on non-returnable pallets	25 kg / 55 lb
C25 M350 UNS C25 P250 EPY C25 P350 PUT C25 P350 GLY	Cartons lined with PE bags on non-returnable pallets	15 kg / 33 lb

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