

SELF-REINFORCED COMPOSITE FABRIC

TECHNICAL DATA SHEET – Version 1 - 26.07.2016

This self-reinforced composite is a 100% polyolefin composite material, thus a mono material concept which is fully recyclable. The fabric filaments consist of a highly oriented, high strength and high modulus core and specially formulated skin on surface for welding the filaments together in a compaction process using a hot press.

This self-reinforced composite conjugated filament yarn can be woven into fabric and subsequently sheets can be made from the fabrics by sealing them together. Molded parts can be produced by thermoforming from sheets or directly from fabric.



Scheme 1: Transformation of conjugated filaments into yarn by heat

FILAMENTS

TYPE	Conjugated filament yarn	CONDITIONNING	Flat, 12", cross winded
	SFE: PE(Shell)/PP(Core) type SFP: PP(Shell)/PP(Core) type		6.5 kg spools Outer diameter about 260mm Inner diameter 94mm Cardboard tube Tube length 330mm
COLORS	Natural (white)		
	Gray		

PRODUCT REFERENCES AND CODES

SFE-2000-N	Filament Shell/Core: PE/PP -Type 2000 dtex color: Natural
SFE-2000-Gy	Filament Shell/Core: PE/PP -Type 2000 dtex color: Gray
SFP-2000-N	Filament Shell/Core: PP/PP -Type 2000 dtex color: Natural

MECHANICAL PROPERTIES

	Unit	SFE-2000	SFP-2000
Filament size	dtex	2022	1977
Tensile strength	cN/dtex	6.2	5.6
	MPa	570	515
Tensile modulus	cN/dtex	95.7	117
	GPa	8.8	10.8
Tensile strain to failure	%	12.5	8.0
Heat shrinkage at 140°C	%	7.5	5.4

Value in the above table is measured value, not a guaranteed value

SELF-REINFORCED COMPOSITE FABRIC

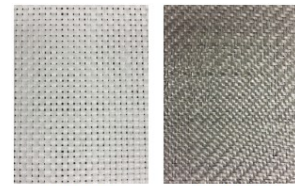
FABRICS

Thermoformable, sealable fabric based on filament

COLOR	Natural / Grey / Black (others on request)	WIDTH	1,000 mm (others on request)
FABRIC	Plane or twill (others on request)	LENGTH	200m (others on request)
AREA DENSITY	0.200 - 0.250 kg/m ² (others on request)		

PRODUCTS REFERENCES AND CODES

FE-250-P-N	Fabric PE(shell) 250g/m² Plane Natural
FE-200-T-Gy	Fabric PE(shell) 200g/m² Twill Gray
FP-200-T-N	Fabric PP(shell) 200g/m² Twill Natural



FE-250-P-N

FE-200-T-Gy

MECHANICAL PROPERTIES

The table below shows the mechanical properties of various references based on the following thermoforming settings:

PRESS TYPE	Hot Press
PRESSURE	1MPa
TEMPERATURE	FE: 140°C - FP: 160°C

	Unit	FE-250	FP-200	FP-200
Filament		SFE-2000-N	SFP-2000-N	SFP-2000-N
Fabric type		Plane – 250g/m ²	Twill – 200g/m ²	Twill – 200g/m ²
Ply		4	4	5
Thickness	mm	1.30	1.02	1.27
Theoretical weight	g/m ²	1000	800	1000
Tensile strength	MPa	200	200	200
Tensile modulus	MPa	3500	3500	3500
Flexural strength	MPa	54	80	91
Flexural Modulus	MPa	2500	3100	3100

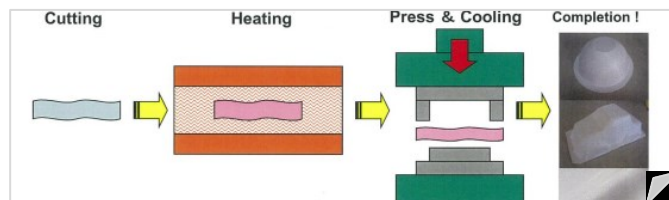
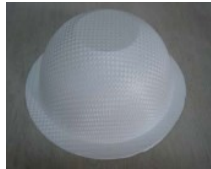
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THICKNESS AND PLY

Thickness	Number of Ply	Area density
~0.3 mm	1	250 g/m ²
About 1 mm	3	750 g/m ²
About 1.3mm	4	1000 g/m ²

THERMOFORMING SETTINGS

MOLDING TEMPERATURE	PE-type: 120-140°C PP-type: 150-170°C	
PRESSURE:	1 MPa - Note: Pressure may vary from 0.5 to 3 MPa depending on shape complexity	
COOLING TIME	2-3 minutes for a mold formed by less than 5 ply - Note: Cooling time may vary depending on numbers of ply, shape complexity and process	
ASPECT AND PRESS TYPE:	PRE-HEATING - COLD PRESS Mat and textured aspect	HOT PRESS (Heat & Cool) Smooth and gloss aspect



Scheme 2: Pre-heating and cold press process (Example)

Simtex fabrics and sheets are suitable with various thermoforming procedures. Please consult us for specific requests.

COLOR AND COLORABILITY

Colors

Simtex fabrics are available in white grey black and in pale colors upon request.

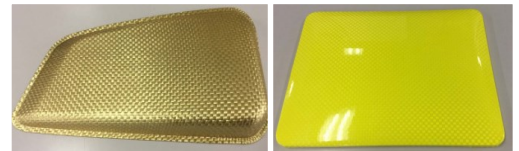
Coatings

The sheets and molded part can be coated during or after the thermoforming process.

Decoration Film

The sheets and molded part can be decorated during or after the thermoforming process with most of commercialized PET film

Coloring and film application procedures depending on end-use requirements and users production line, please [contact us](#) for your projects.



CONTACT US

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Fill in [this form](#) to get technical assistance!