Introduction of the

「SIMTEX CONJUGATE FILAMENT」

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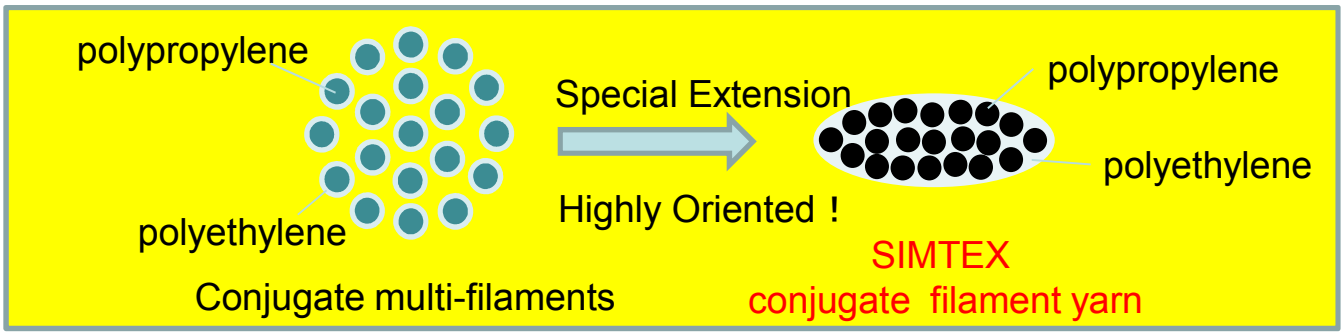
SIMTEX FILAMENT

What is SIMTEX FILAMENT?

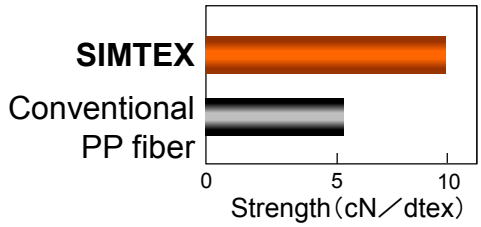
SIMTEX is the extended polyolefin-based fiber which is fully recyclable.
SIMTEX filament consists of core and specially formulated shell on the core surface.
The conjugate multi-filaments are processed to lead filament yarns whose highly oriented cores have high strength and high modulus, and shell become together.
It is used as a reinforcing structure of a self-reinforced composite.

【 Characteristics of the SIMTEX conjugate filament 】

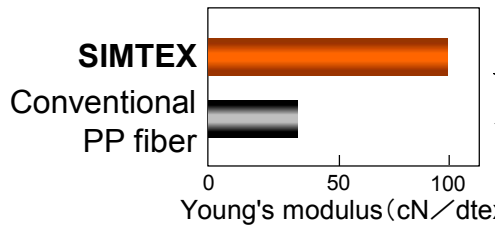


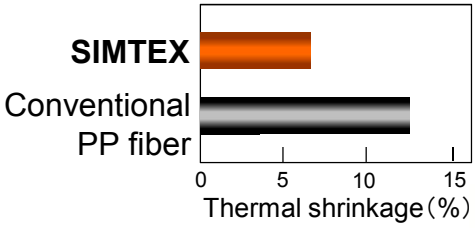
Characteristics of SIMTEX FILAMENT

Characteristics



SIMTEX is a high-strength and high-modulus polypropylene fiber showing about twice strength and about 3 times elastic modulus of the conventional PP fiber.





SIMTEX exhibits half the thermal shrinkage of the conventional PP fiber.

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Specifications of SIMTEX FILAMENT

Conjugate Filament Yarn

It is a conjugate filament yarn made from highly oriented PP filament covered by a PE（or PP）shell.

■Standard specifications

- Linear Density ： 2,000dtex
  ※ Other on request.（1,000～3,000dtex）
- Color ： White and Gray
  ※ Other on request.

■Grade

Type	Constitution（Shell／Core）	Tensile Strength（cN/dtex）	Tensile Modulus（cN/dtex）	Thermal shrinkage（%）
SFE	PE/PP	5～7	65～110	6～8
SFP	PP/PP	5～7	75～130	5～8

※ Thermal shrinkage：value to 30 minutes later at 140 ℃

■Type of packing

Packing configuration ： Flat, 12”, cross winded,
Cardboard tube
(inner diameter 94mm, length 330mm)

Packing unit ： 6～6.5 kg／ unit
(2000dtex)

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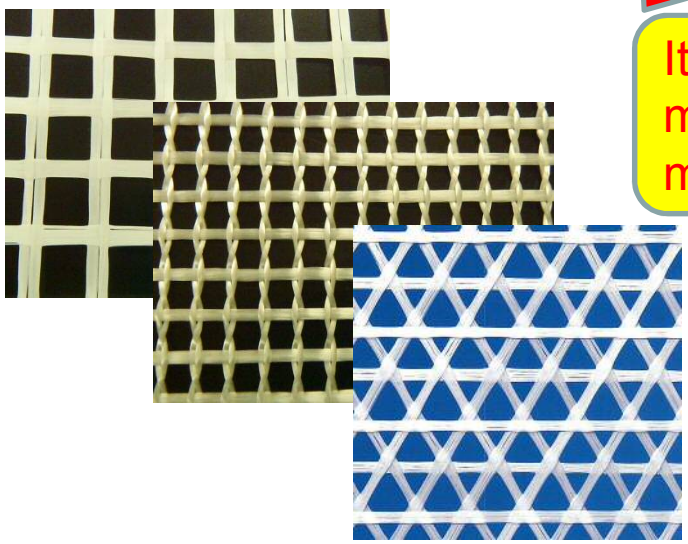
Use Example of SIMTEX FILAMENT

Rope

Mesh

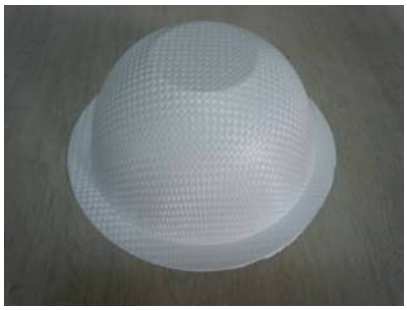
Adhesiveless ！

It is easy to make mesh by heat-sealing method.



Applied example：
Reinforcement mesh for the prevention of concrete exfoliation

Molding materials



3D molded parts can be shaped by thermoforming from sheets or directly from fabric.

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Unique Structure of SIMTEX Fabrics

Self-reinforced Composite

SIMTEX filament yarns can be woven into fabric (SIMTEX-fabric).

■SIMTEX-Fabrics

Thermoformable, sealable fabric based on SIMTEX-filament

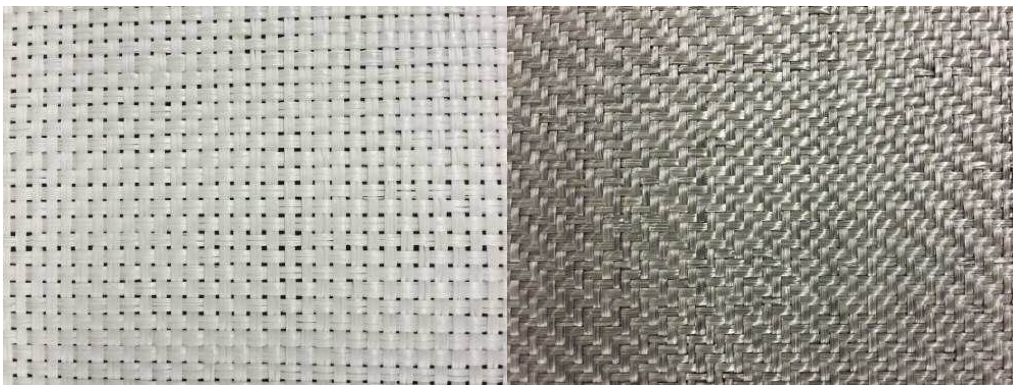
Color：Natural（white） or gray
Weave pattern：Plain or twill (others on request)
Area density: 200 g/m2, 250 g/m2 (others on request)
Width：1,000 mm(others on request)
Length：200 m(others on request)
Sealing temperature range： 120-140℃(PE(shell)-type)
140-160℃(PP(shell)-type)

■Assignment of names

FE-250-PW-N
Fabric PE(shell) 250g/m2 Plain Natural

FE-200-T-Gy
Fabric PE(shell) 200g/m2 Twill Gray

FP-200-T-N（development）
Fabric PP(shell) 200g/m2 Twill Natural



FE-250-PW-N FE-200-T-Gy

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Specifications of SIMTEX Fabrics

Self-reinforced Composite

■SIMTEX-Fabric Mechanical properties

Mechanical properties of various molded products by hot-pressing are shown in Table 1. Forming condition：140℃(FE(PE shell)) or 160℃ (FP(PP shell)) at 1MPa

Table 1

		FE-250	FP-200
Filament		SFE-2000-N	SFP-2000-N
Weave pattern		Plain, 250g/m2	Twill, 200g/m2
Ply		4	4
Thickness	mm	1.30	1.02
Theoretical weight	g/m2	1000	800
Tensile strength	MPa	200	200
Tensile modulus	MPa	3500	3500
Flexural strength	MPa	54	80
Flexural modulus	MPa	2500	3100
Heat Deflection Temperature			
Load at 0.45MPa	℃	110	137
Load at 1.8MPa	℃	98	109

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

Molding method

1) Hot-pressing method in which heating and cooling are continued with the same mold without transferring materials

◆It uses a hot-pressing machine that attached the adjustable die.

◆After setting the material in a mold, by heating / cooling a die, it is integrated and formed. (Setting of rapid heating / cooling system is desirable)

2) Pre-heating and cold-pressing method by transferring pre-heated fabric to a cold mold for pressing

(Stampable sheet molding method)

◆After heating the material by heating arrangement, the material is transferred to the cooling press and molded.

◆Molding is possible in a short time than hot-pressing method.

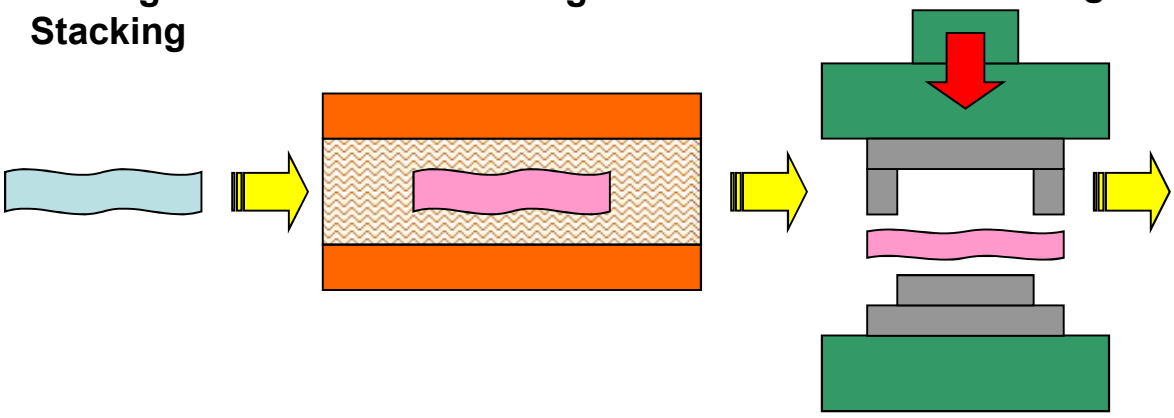
Molding condition (example)

Cutting & Stacking

Heating

Press & Cooling

Completion !



Several cut fabrics are laminated so that the desired thickness of the mold goods can be achieved.

If 1mm thickness is necessary, 3-4 ply fabrics with 250g/m2 per one ply will be used.

By heating arrangement, the laminated fabric is heated enough until the temperature inside of the material reaches to targeted one.
(ex. SFE: 120-140℃)

In case two molds are available, one is applied for heating, another for cooling.

The heated material is transferred to the mold, and pressed.

Pressure: 0.5-3MPa
(it varies according to shape of products)

It is desirable to control the temperature by water cooling systems.

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