

# Mobilon (melt spinning) introduction



Nisshinbo Textile Inc.  
Developed Material Department  
Mobilon Sales Section

June.2022



**NISSHINBO**

Marketed in India by HILLSILVER EXPORTSS, Tamil Nadu, India  
In association with moRiRin Co Ltd., Japan

THANKS TO OUR PROUD CUSTOMER :

# DaMENSCH

ComFit Innerwears using Japanese products:

• MOBILON® Spandex • DEOCELL® fibre

## DEO-SOFT TRUNKS

Odourless everyday



• DaMensch's DEO SOFT fabric cancels all bad odour much faster, thanks to DEOCELL® deodorant cellulosic fibre



• The 4 way stretch is body responsive.  
• MobilonR® spandex offers comfort fit with soft power but firm grip!



MOBILON.  
ComFit stress-free spandex

MOBILON.  
4-WAY STRETCH (Performance by Nature) with  
powerful grip for the most comfortable fit.  
Trademarks of MOBILON®  
GOTS GRS OEKO-TEX® MADE IN JAPAN

Mobilon® monofilament spandex  
Soft power but firm Grip!



# What is MOBILON ?

**MOBILON is polyurethane product developed by Nisshinbo Textile's proprietary polymer technology.**

**High-quality, high-performance MOBILON products are made in Japan. They have excellent functionality and popular for their soft texture.**

## **(Features)**

- 1. Soft elasticity and gentle recovery**
- 2. Variations such as heat-fusion type and biomass type**
- 3. Available in yarn(spandex), tape, band, film, and other**
- 4. A wide range of products for apparel, medical, skin care, household products, materials, etc.**
- 5. No organic solvents are used in the manufacturing process, making our products environmentally friendly, safe, and secure**



**NISSHINBO**



# MOBILON®

“MOBILON®” is a spandex brand developed by Nisshinbo Textile using its own melt spinning method.

## Features of MOBILON®



Stress-free



Heat-fusing performance



Shrink proof performance



Heat setting at lower temperature



Solvent free



OEKO-TEX® certification

### Stress-free <sup>\*Fig.1</sup>

MOBILON® has moderate tightening power compared to other normal spandex. Fabric using MOBILON® feels comfortable when tightened slightly and responds flexibly to body movements.

### Heat-fusing performance

MOBILON® has excellent Heat-fusing performance, therefore MOBILON® is used for Seamless wear.

### Shrink proof performance <sup>\*Fig.2</sup>

MOBILON® has an excellent heat setting function compared to other normal spandex. Therefore, fabric using MOBILON® has less shrinkage after washing.

### Heat setting at lower temperature

MOBILON® has an excellent heat setting function at lower temperature. The ground yarn (opponent's yarn) is not significantly damaged by heat. You are able to make soft feel fabrics.

### Solvent free

MOBILON® has original spinning technique, which is environmentally friendly without using solvent.

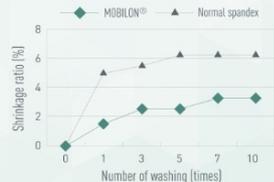
### OEKO-TEX® certification

MOBILON® has acquired OEKO-TEX® certification, which is Class1 for babies. OEKO-TEX® is one of the world's best-known labels for textiles tested for harmful substances.

Fig.1 Positioning map



Fig.2 Washing shrinkage ratio



Face yarn : Nylon 78T24F Washing method : JIS-L-1018-a115cm+15cmd JIS-L-0217-102 40°C



Nisshinbo Textile Inc.

# ComFit ECO~SET Spandex

MOBILON®  
ComFit stress-free spandex

**Nisshinbo Textile Inc.**  
NISSHINBO MOBILON R type that is used for innerwear is still stretchable even after being heat-sealed, ensuring a comfortable fit.

Features of MOBILON

# MOBILON Item List

type	R	R-L	R-LL	K	KC
Feature	Fusion	Fusion	Fusion	Regular	Regular/ Doped dyed black
Heat fusing condition (Dry heat setting)	170°C×60sec	150°C×60sec	130°C×60sec	×	×
Dtex	22 dtex	22 dtex	-	22 dtex	-
	33 dtex	33 dtex	33 dtex	-	-
	44 dtex	44 dtex	-	44 dtex	-
	78 dtex	78 dtex	-	78 dtex	-
	-	-	110 dtex	110 dtex	110 dtex
	156 dtex	-	-	156 dtex	156 dtex
	-	233 dtex	-	-	-
	-	-	-	311 dtex	311 dtex
chemical resistance	Alkali resistance◎	Alkali resistance◎	Alkali resistance◎	Chlorine resistance ◎	Chlorine resistance ◎
				470 dtex	470 dtex
Recommended Yarn	cotton·rayon polyester nylon ,etc	acrylic, wool, etc.	whole	whole	whole

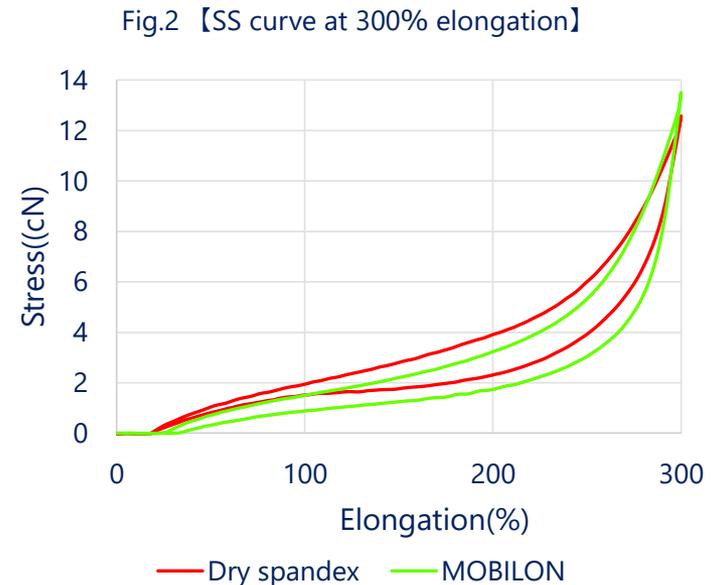
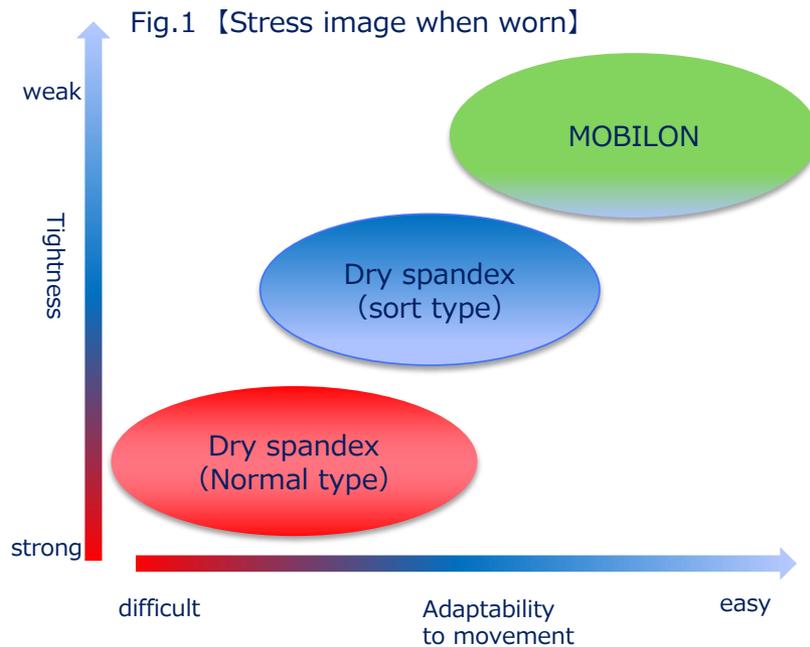
Heat fusing condition is different from kind of front thread fiber dtex and density of fabric.

# MOBILON'S Features

Features	Dry spinning	MOBILON(melt spinning)
①Stretch power	Strong (tightness)	<b>soft</b> <b>(soft stretch &amp; fit)</b>
②Fusion Temperature	High temperature	<b>Low temperature</b>
③Heat set ability	Low performance	<ul style="list-style-type: none"> <li>·<b>high heat set at low temperature</b> <b>(soft stretch &amp; fit)</b></li> <li>·<b>high dimensional stability after washing</b></li> </ul>
④Anti-slip effect	low	<b>High</b>
⑤Chlorine and light resistance	low	<b>high</b>
⑥Environmentally	Solvent use	<b>Solvent free</b>

# Feature① Stress-free (fit-feeling)

Compared to conventional dry type spandex, the soft stretch and tightness of this fabric make it easy to move and comfortable to wear for long periods of time without feeling stress.



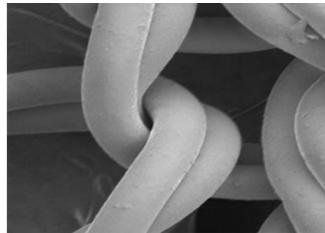
# Feature② Superior Heat-Fusing

MOBILON is effective in preventing fraying b heat-fusing spandex to each other.

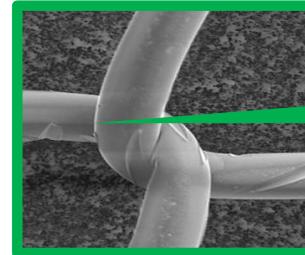
MOBILON is ideal for non-run stockings and seamless inner wear.

[Spandex knitting]

Dry spandex



MOBILON(Fusion-type)



Heat-Fusing

## 1. Pantyhose of ladder resist



Stretching 3 times

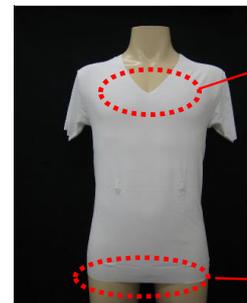


Ladder resist

Dry spandex

Heat-fusion Mobilon

## 2. Seamless inner



No sewing



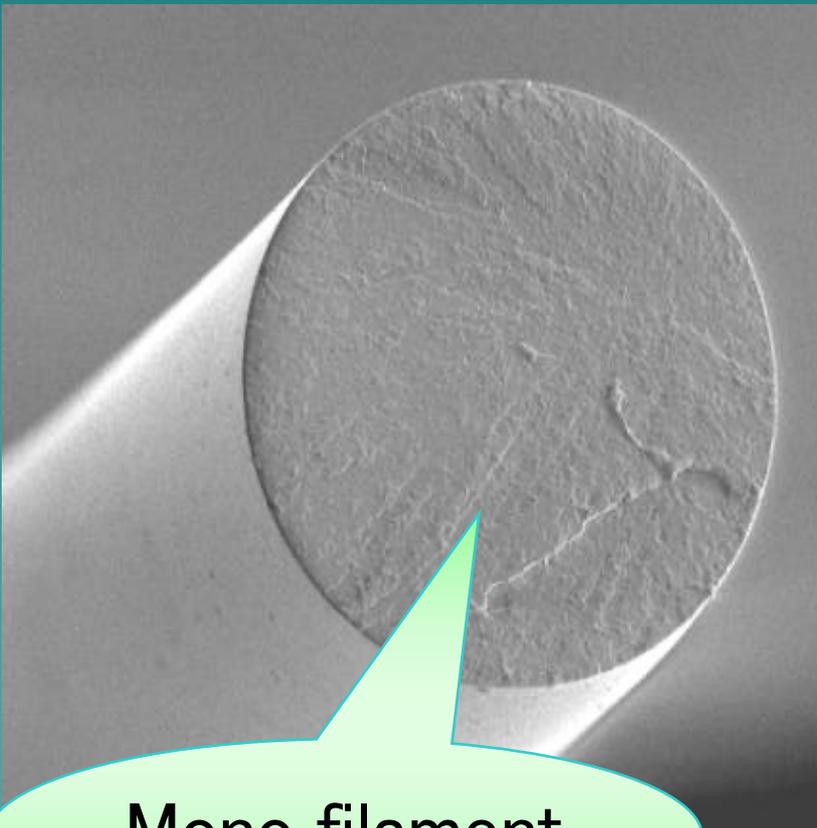
※Please be aware that this infringes on patents held by other companies.

# Mono filament

【Mobilon】

【Dry Type 33T】

- ◆ A pantyhose is finished finely.



Mono filament



Multifilament

# Heat fusing①

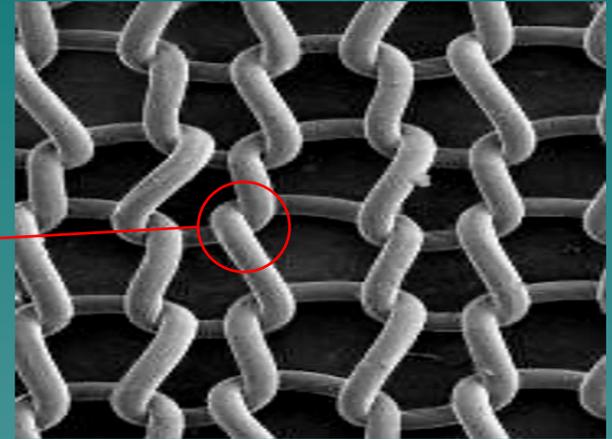
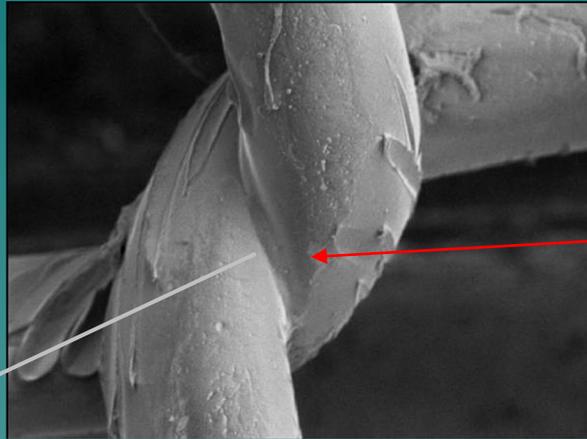


Mobilon-R can make free-cutting textiles.  
It has excellent heat fusing performance.

# Heat fusing②

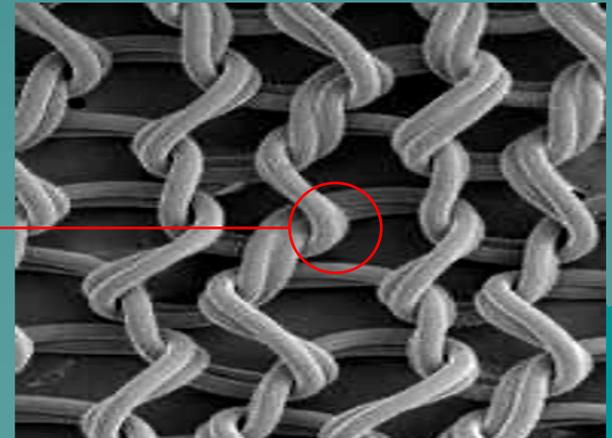
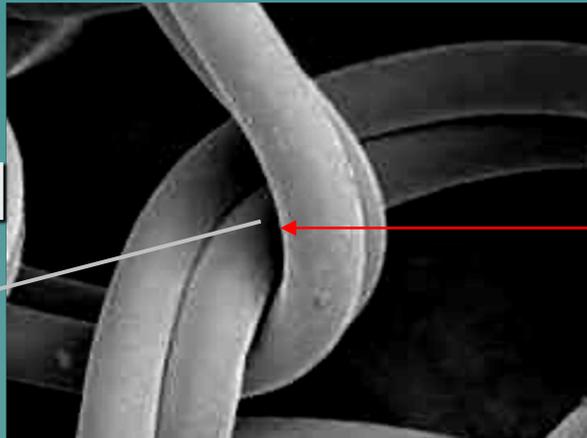
【Mobilon】

Heat fusing



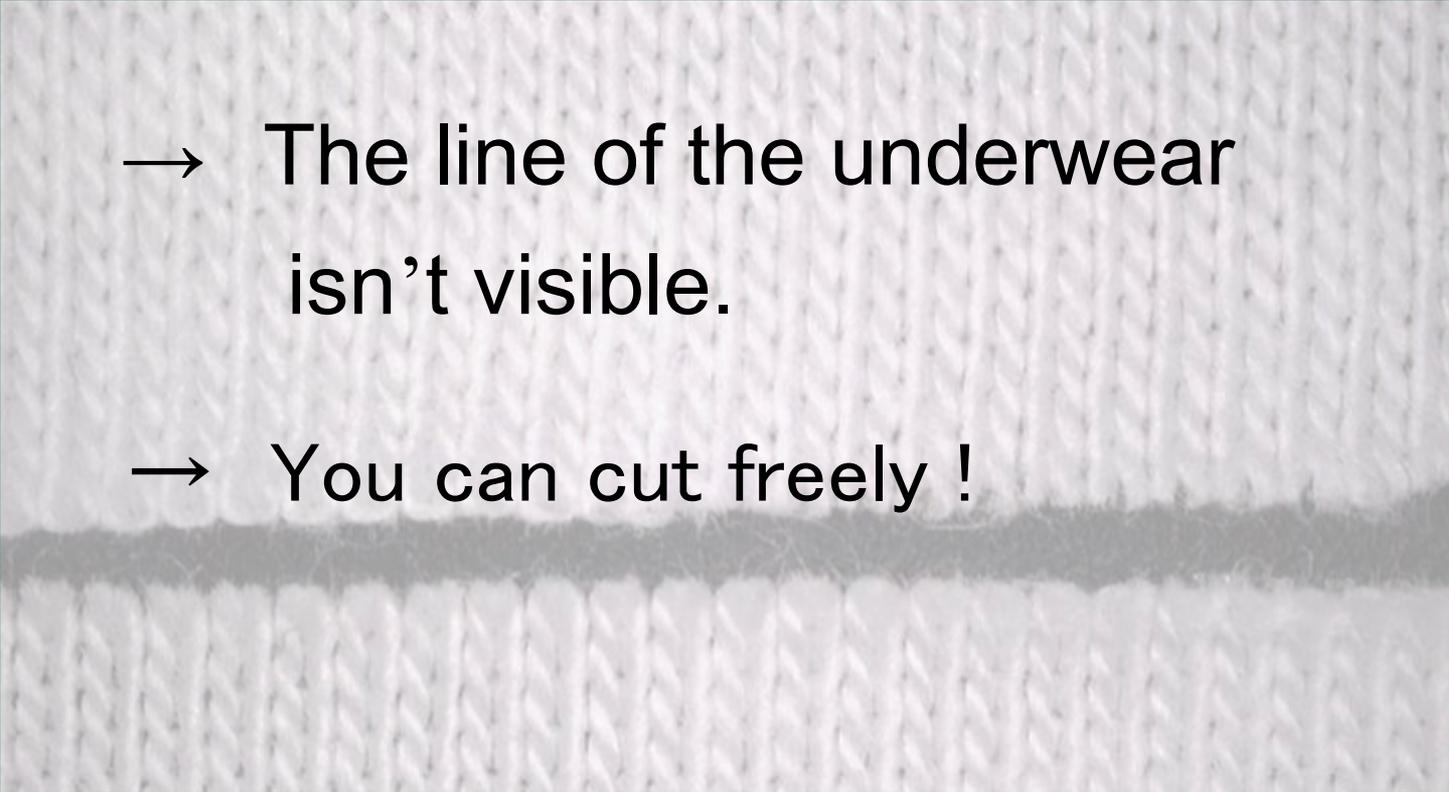
【Dry type spandex】

Non fusion yarn



# None Ravel

- ◆ None ravel at least we cut it !



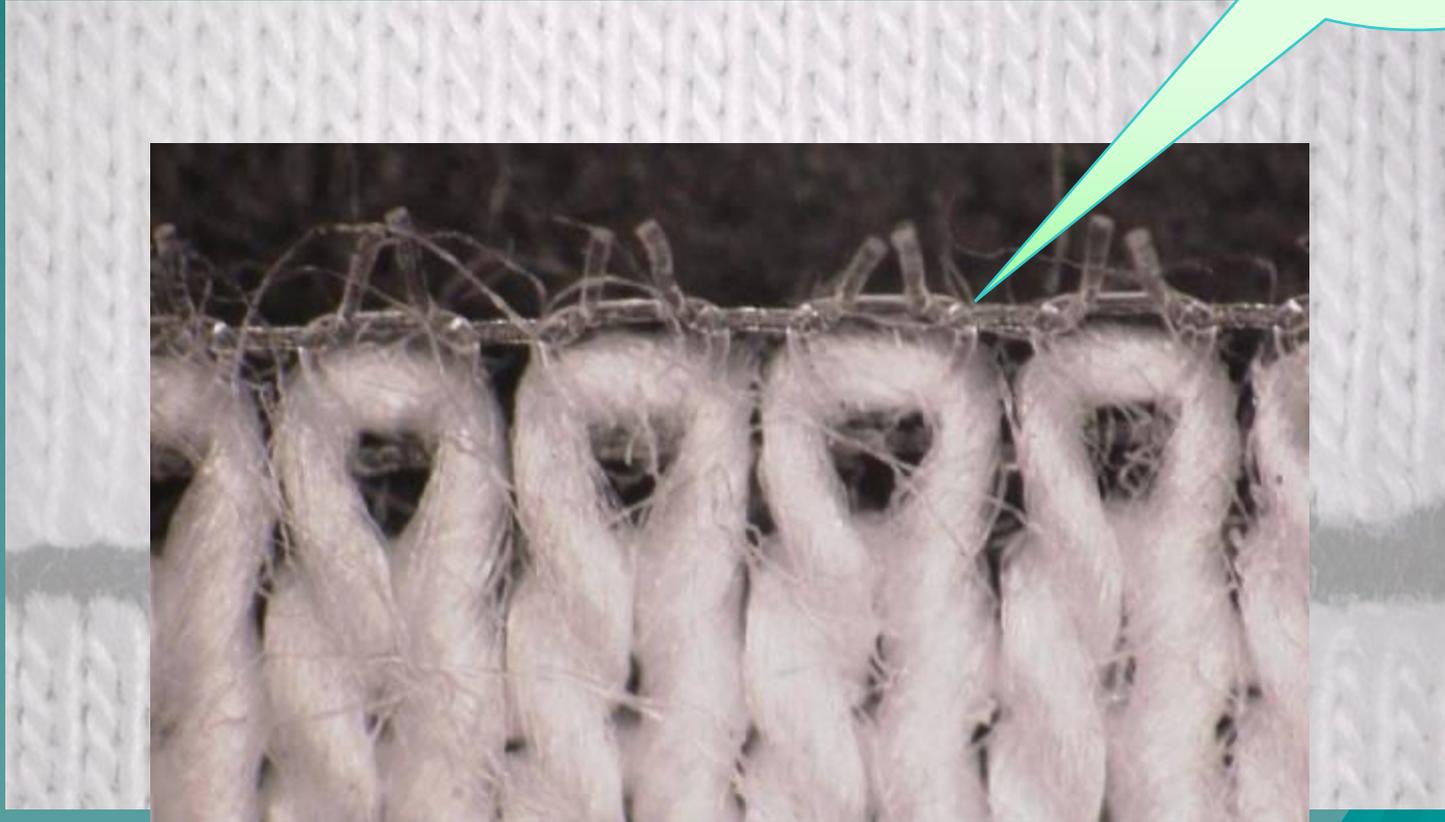
→ The line of the underwear isn't visible.

→ You can cut freely !

# None reuel ②

◆ How dose none ravel work ?

Heat  
fusing

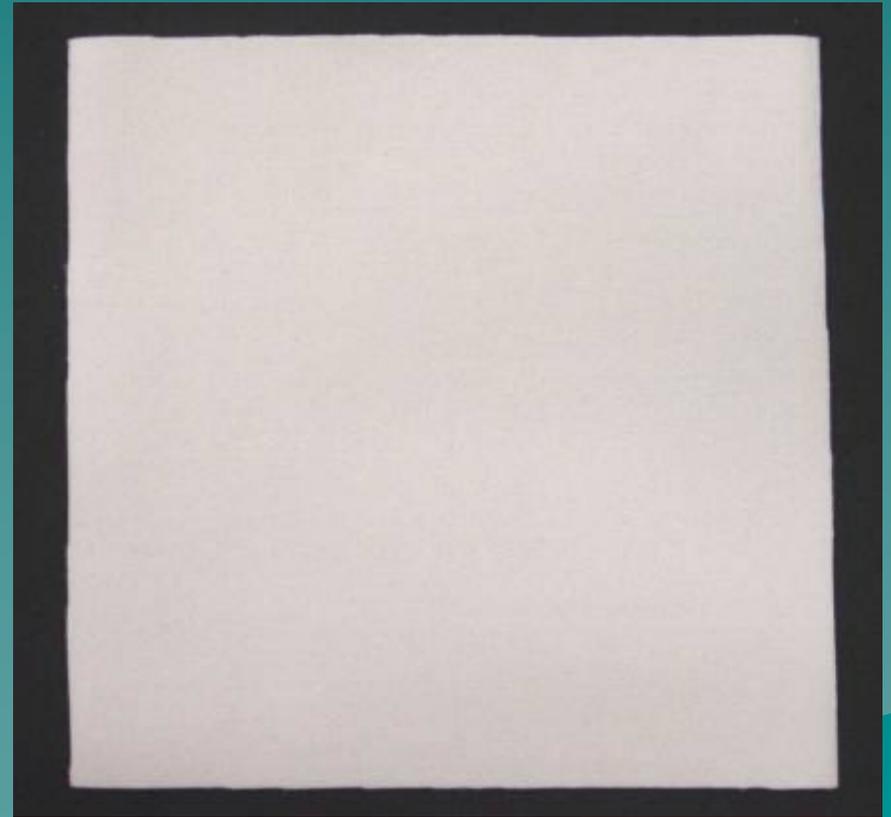


# Shrink proofing performance

- ◆ Uncurled selvage !

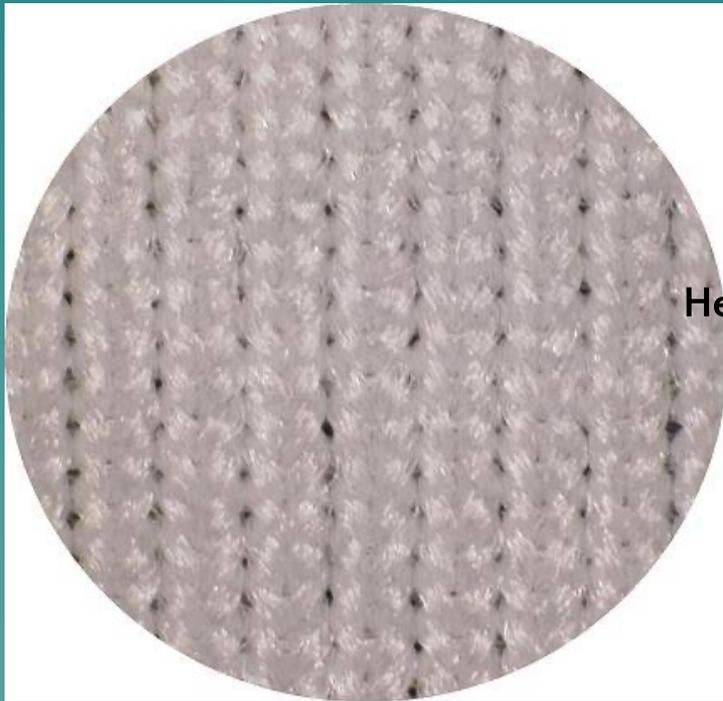


Heat setting

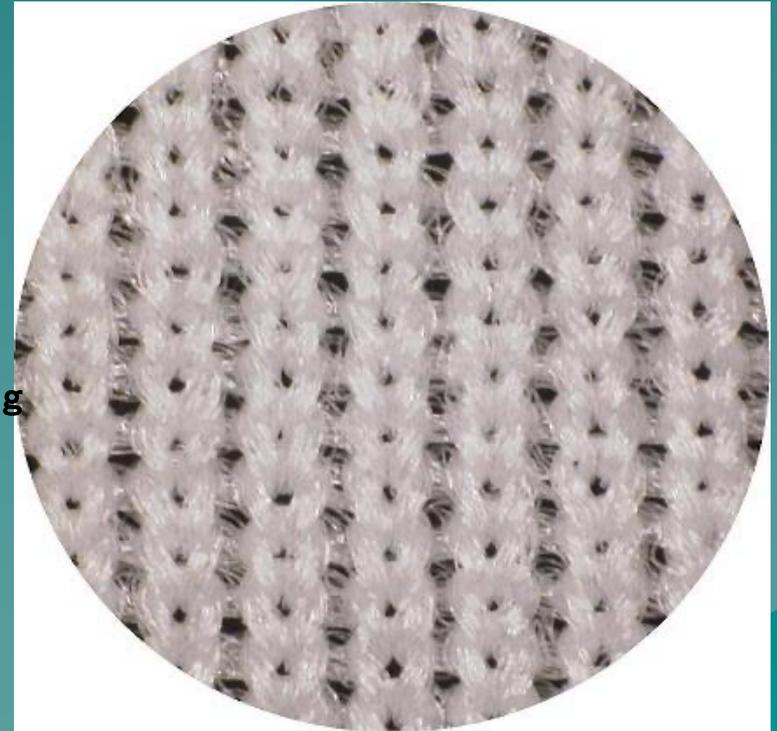


# Change weight per square-meter freely

- ◆ A large variety texture from same gray fabric !



Heat setting  
after stretching



# Features③ Heat setting at lower temperature

**MOBILON fabrics can be heat set at lower temperatures, allowing acrylics, wools, and other fabrics that are sensitive to heat to retain their softness. They are also dimensionally stable and shrink less after washing**

Fig1.Recommended heat setting conditions

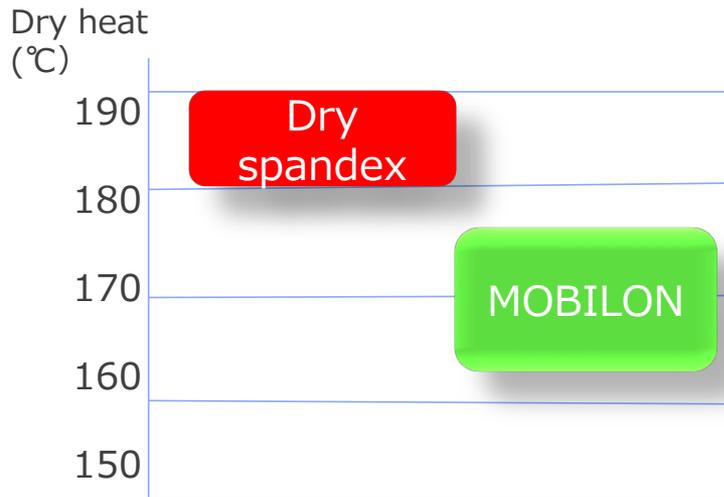
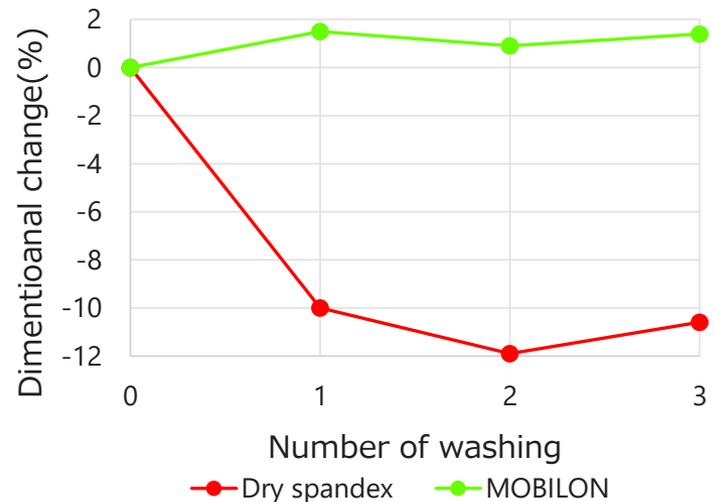


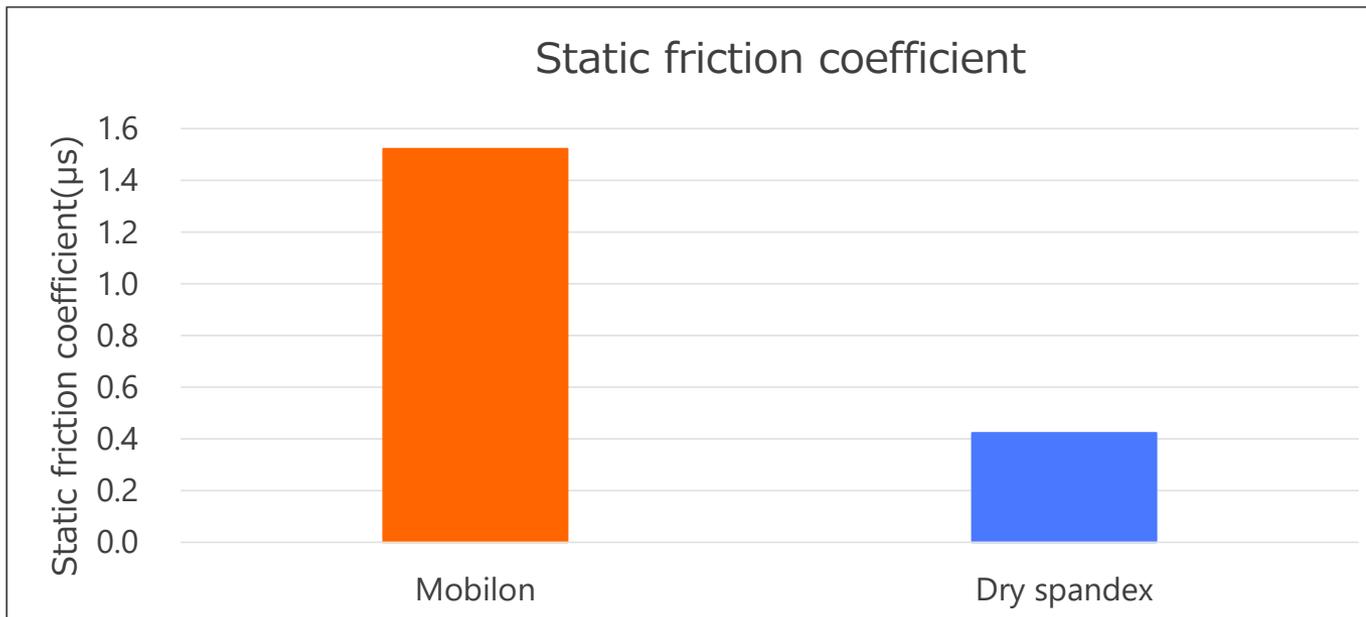
Fig2.Dimentional change after washing



sample : pantyhose for ladder resist  
Washing method : according to JIS L108a  
Washing method : according to JIS L0217 103

# Features④ Excellent anti-slip effect

OMOBILON has a higher anti-slip effect than normal spandex



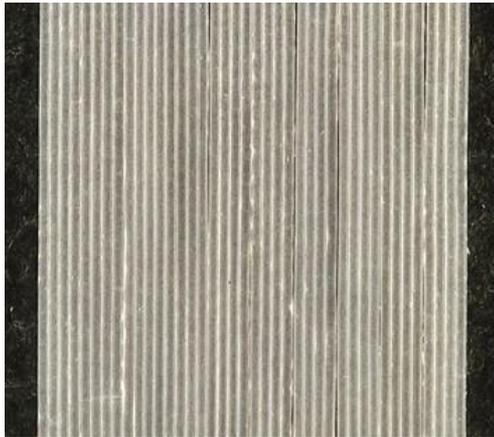
\*Sample

- MOBILON 470T
  - Dry spandex 620T
- Assuming friction with the skin, the coefficient of friction with pig leather was evaluated.  
- Static friction measured in the direction perpendicular to the thread.

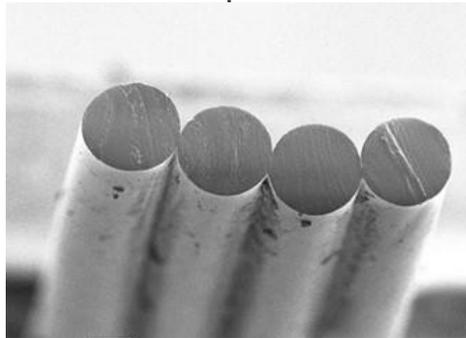
# Excellent anti-slip effect ②

- State of 10 yarns lined up between 5mm (non-slip evaluation sample) Mobilon has no space between the yarns and the yarns are lined up, but LYCRA has a space.

MOBILON K470T



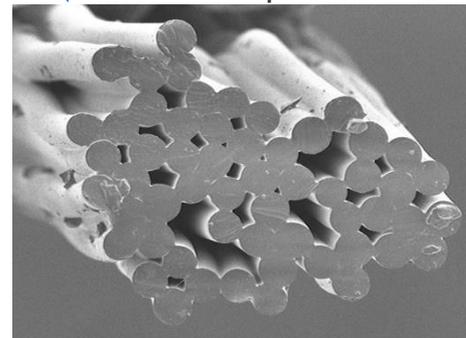
4fil/pc



Dry spandex 620T

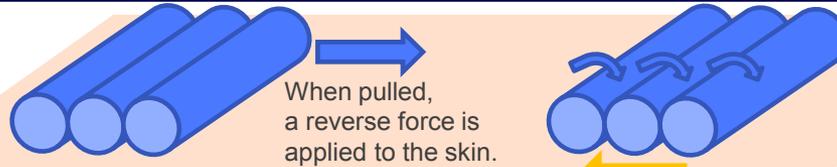


56fil/pc

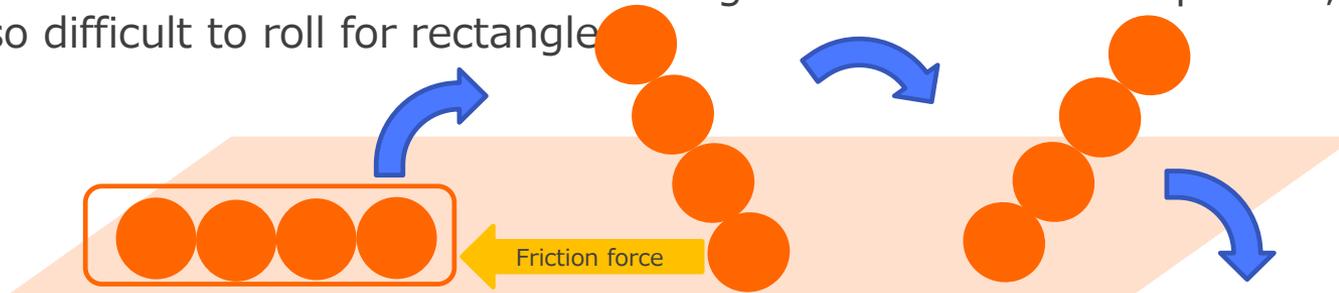


# Excellent anti-slip effect ③

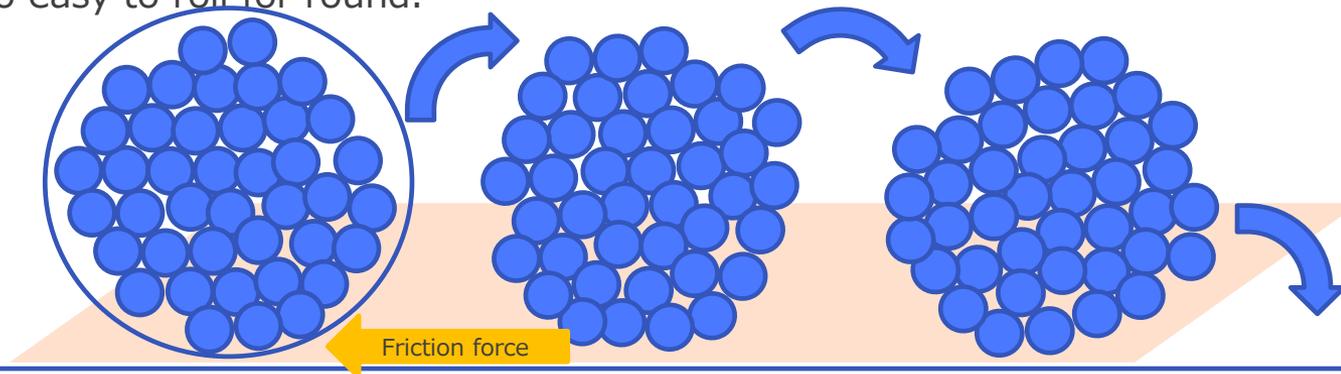
Looking at the cross section...



MOBILON: The contact surface is large between skin and spandex, so difficult to roll for rectangle

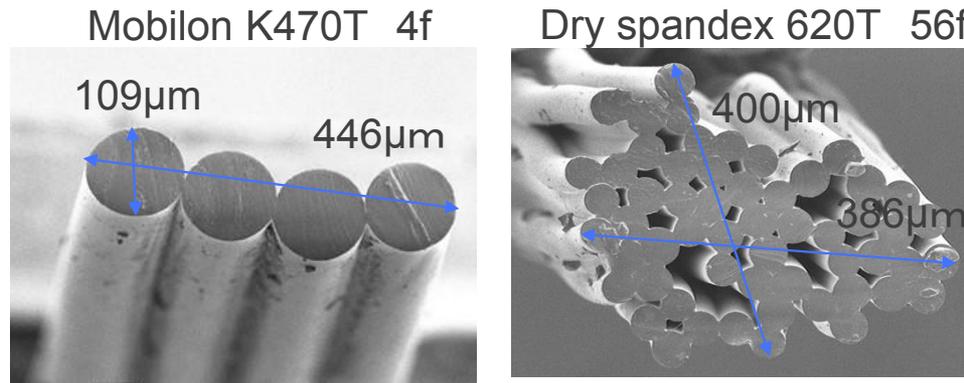


Normal spandex : The contact surface is small between skin and spandex, so easy to roll for round.



# Excellent anti-slip effect ④

- Difference in shape due to difference in spinning method

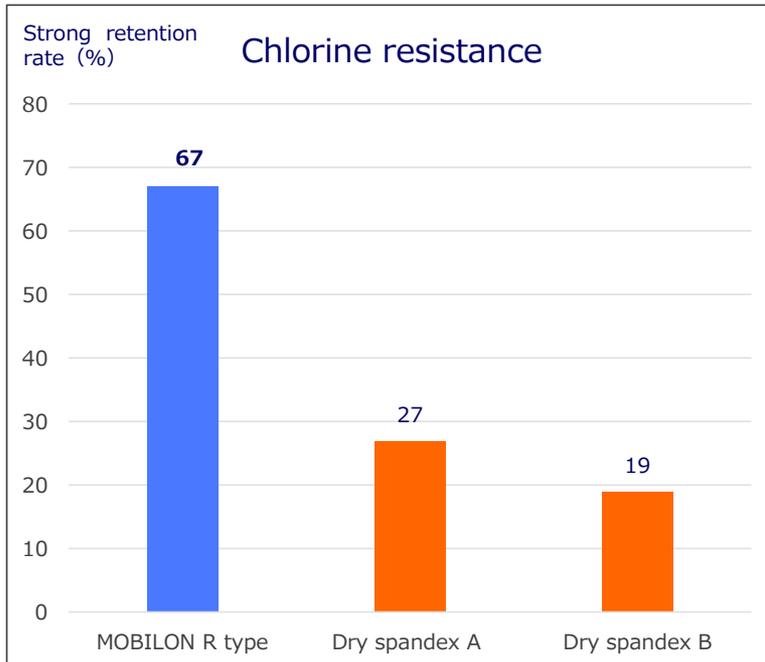


- Normal spandex requires the organic solvent to be volatilized after ejection from the nozzle and before winding. In order to spin the fitness, it's necessary to collect many fine threads into one thread. The cross-section shape is circular because a lot of twisted threads are collected.
- MOBILON is melt-spun that is solvent-free, so it can be spun while still thick. The shape of the thread is react like a tape.

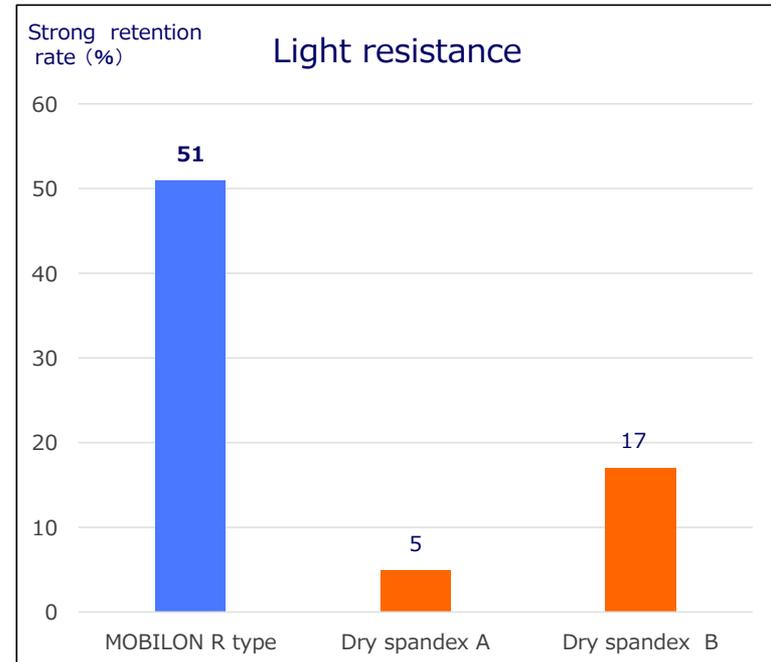
# Feature⑤ High chlorine and light resistance

**Mobilon has excellent chlorine and light resistance, and its high strength retention rate makes it suitable for use in swimwear and other applications.**

※It is recommended to use MOBILON with thionic PE or nylon.



Chlorination conditions :  
Chlorine concentration 20ppm×3cycle



Lightfastness Treatment Conditions :  
Carbon arc 32hours award

## Feature⑥ International Certification for safety and security

We have acquired international certifications that certify various kinds of safety and security in the environment.



ISO14001 is a standard that defines the specifications of the environmental management system, and includes the items that must be observed when establishing an environmental management system according to ISO standards.



MOBILON has acquired OEKO-TEX certification, which is Class1 for babies. OEKO-TEX is one of the world's best-known labels for textiles tested for harmful substances.



※GRS certifications pending

The "GRS" assures that proper working conditions and harmful environmental and chemical impacts are minimized based on an accurate determination of recycled content.

# MOBILONのCOOL CHOICE

MOBILONの

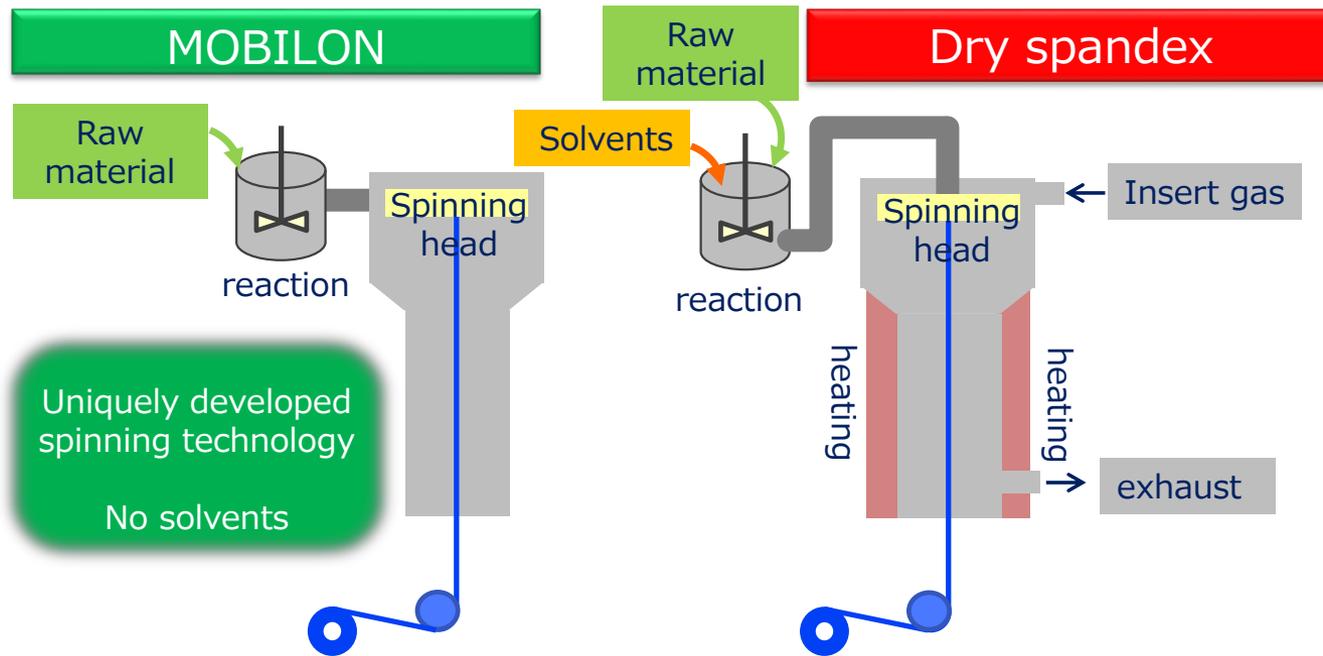


未来の  
ために、  
いま選ぼう。

- **COOL CHOICE① : Low environmental**
- **COOL CHOICE② : Biomass material**
- **COOL CHOICE③ : Recycled material**

# COOL CHOICE① Low environmental

The CO<sub>2</sub> emissions from the manufacturing process of MOBILON are significantly reduced compared to dry spandex.  
emissions in the manufacturing process of MOBILON are significantly reduced compared to dry spandex.  
In addition, MOBILON has less impact on the environment because it does not use organic solvents.



## Comparison of CO2 emissions in manufacturing processes

- CO2 emissions from dry spinning and melt spinning.

Spinning method	CO <sub>2</sub> emissions	Reduction rate (Dry spandex- Mobilon)/Dry spandex
Dry spandex (in-house)	7.1	—
Melt spinning (Mobilon)	3.8	46%

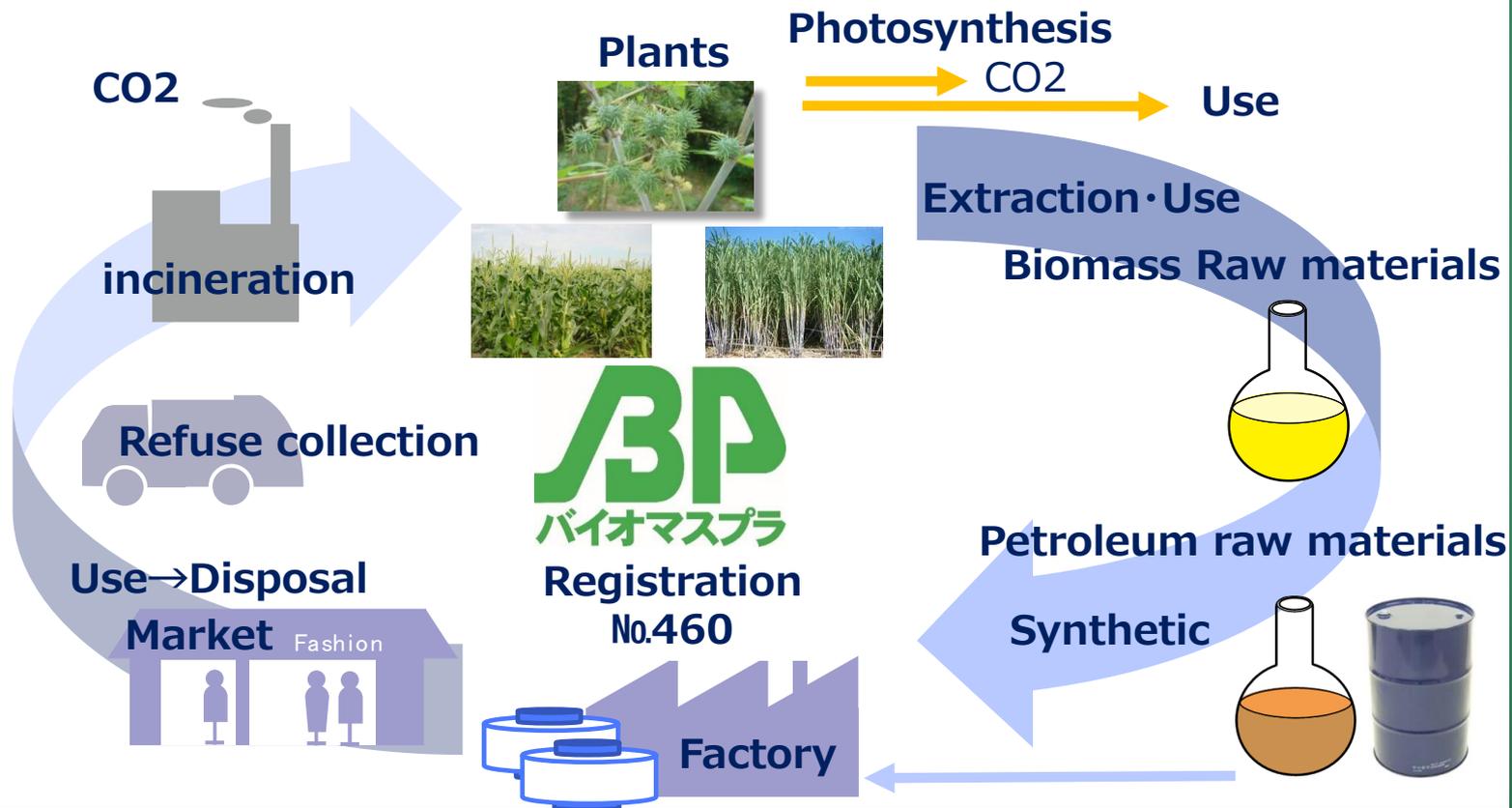
Note1 : CO2 emissions generated from the production of a single yarn based on in-house

comparison date(FY2000)

Note2 : Comparison results only for the manufacturing process, which is part of the product life cycle. The comparison is not for the entire lifecycle from raw material production disposal.

# COOL CHOICE② Use of Biomass Raw Materials

We are working to reduce environmental impact by using biomass raw materials (plant-derived raw materials) instead of conventional petroleum-derived materials. We will promote the use of biomass in all our products in the near future.



## Reduction of CO2 emissions at disposal

- CO2 emissions at the time of disposal(incineration)  
Biomass Mobilon (KL type)

Spandex	CO <sub>2</sub> emissions	Reduction ratio (①-②)/②
①Regular Mobilon (KL-type)	2.0	-
②Biomass Mobilon (KL-type)※	1.4	30%

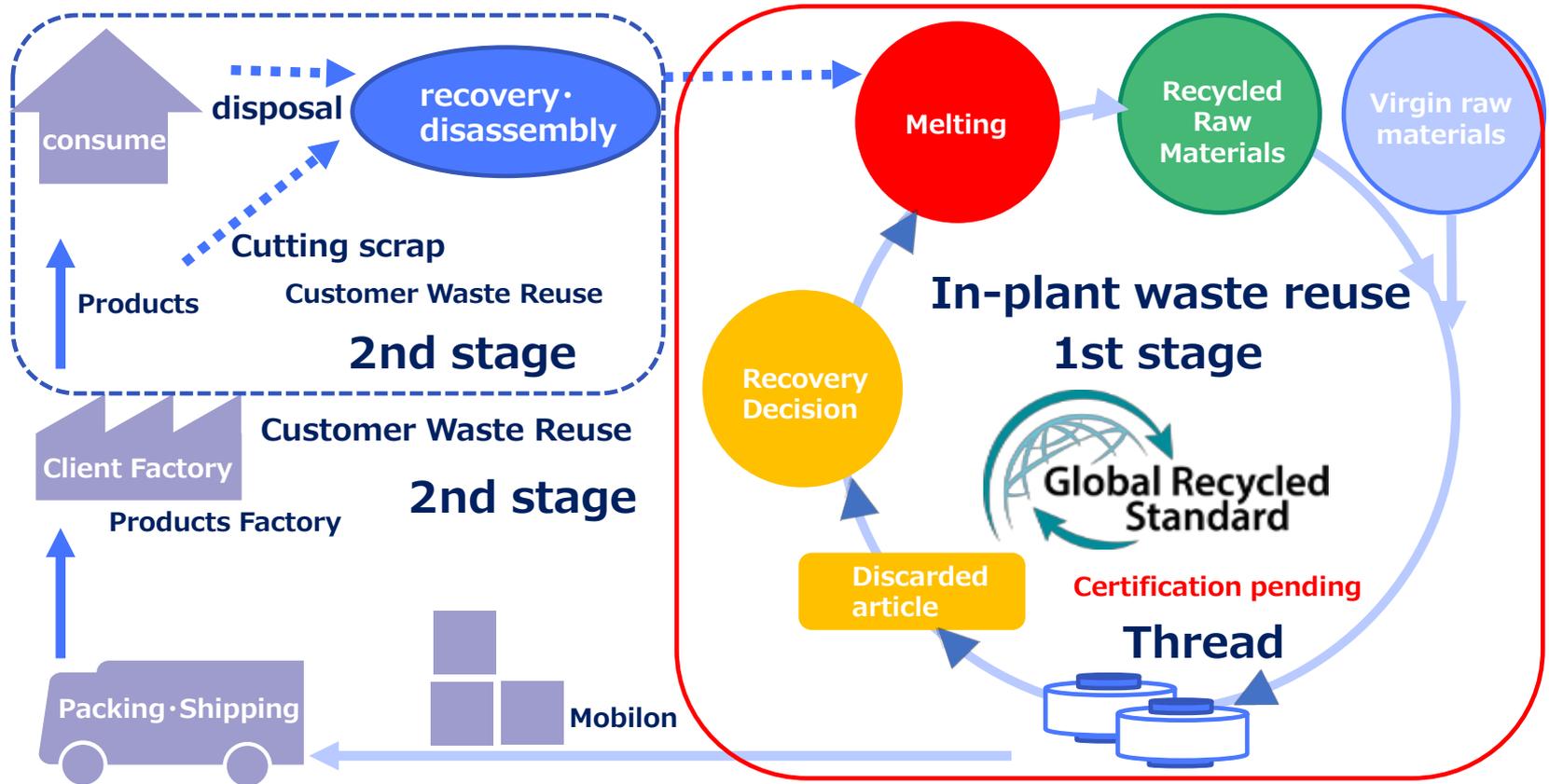
Spandex	CO <sub>2</sub> emissions	Reduction ratio (①-②)/②
①Dry spandex	2.8	-
②Biomass Mobilon(KL-type)	1.4	50%

Note1 : Based on the concept that plant-derived carbon is carbon that already exists on Earth and that CO2 emitted from plant-derived carbon does not increase CO2 on Earth.

Note2 : Comparison results are only for the waste treatment process, which is part of the product lifecycle.

# COOL CHOICE<sup>③</sup> Use of Recycled Raw Materials

We are working to reduce environmental impact by collecting waste materials that were disposed of in the manufacturing process, cutting them into pieces, and dissolving and reusing them.



# Mobilon (Single covering yarn) item list

No	Covering yarn name	Elastan (Mobilon Core)	Polyamid (Covering)	Draft Twist
1	R20NW12ZB-NCO	R 22dtex	Toray Wooly 13dtex/5fil	2.3 600TPM
2	R30NW12ZB-NCO	R 33dtex	Toray Wooly 13dtex/5fil	2.3 600TPM
3	R30NW12ZN-NL	RL 33dtex	Toray Wooly 13dtex/5fil	2.3 600TPM
4	R100NW12ZB-LL	RLL 110dtex	Toray Wooly 13dtex/5fil	2.3 600TPM



# ComFit intimate wears from MOBILON

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