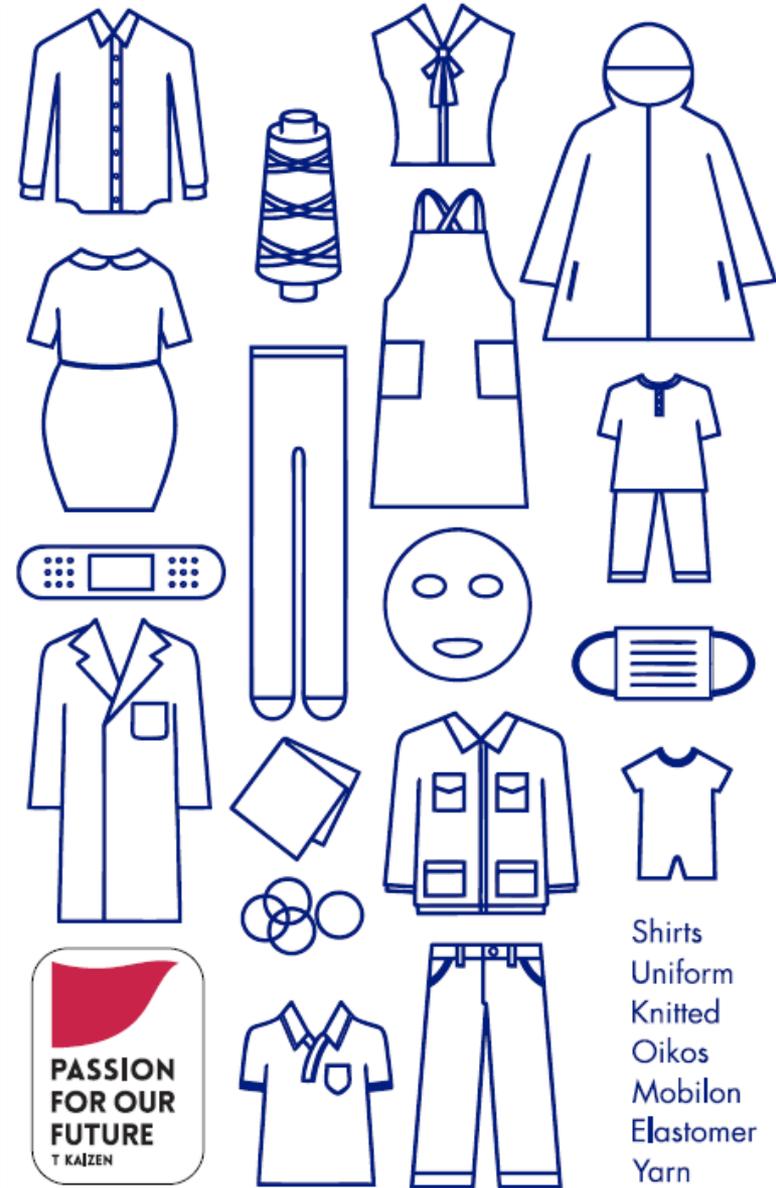


Introduce for **MOBILON®** (Melt spinning spandex)

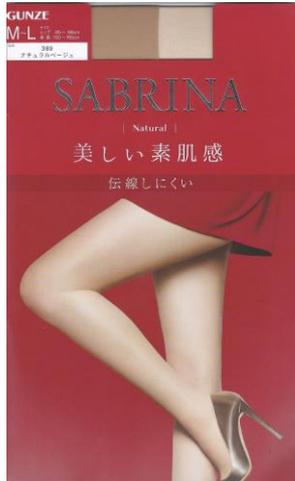


June, 2023

Nisshinbo Textile Inc.



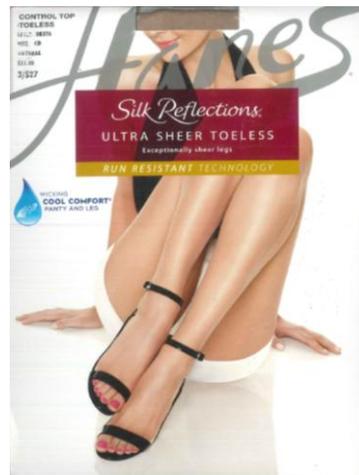
Introduce for pantyhose using MOBILON



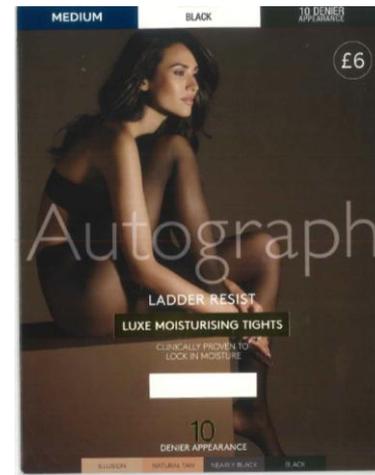
GUNZE



FUKUSUKE



HANES



MARKS & SPENCER



Wolford

Heat-fusing performance

MOBILON has an effect to ladder resistance by heat-fusion of each spandex, so MOBILON is used for non-run pantyhose.

In addition, MOBILON is possible to low-temperature setting comparing other fusing type of spandex, so can keep soft texture.

Fig.1 Parts of Heat-fusion for spandex

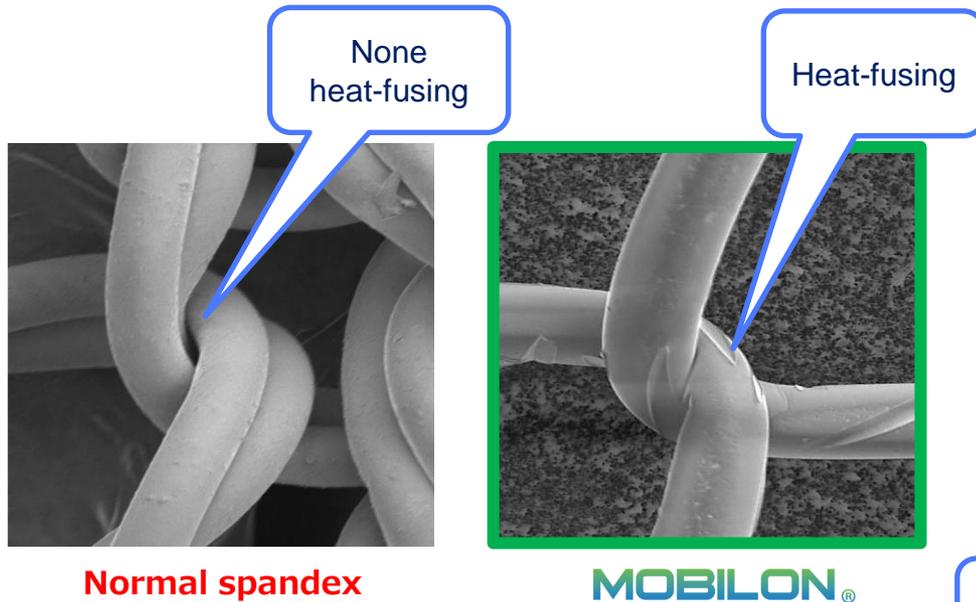
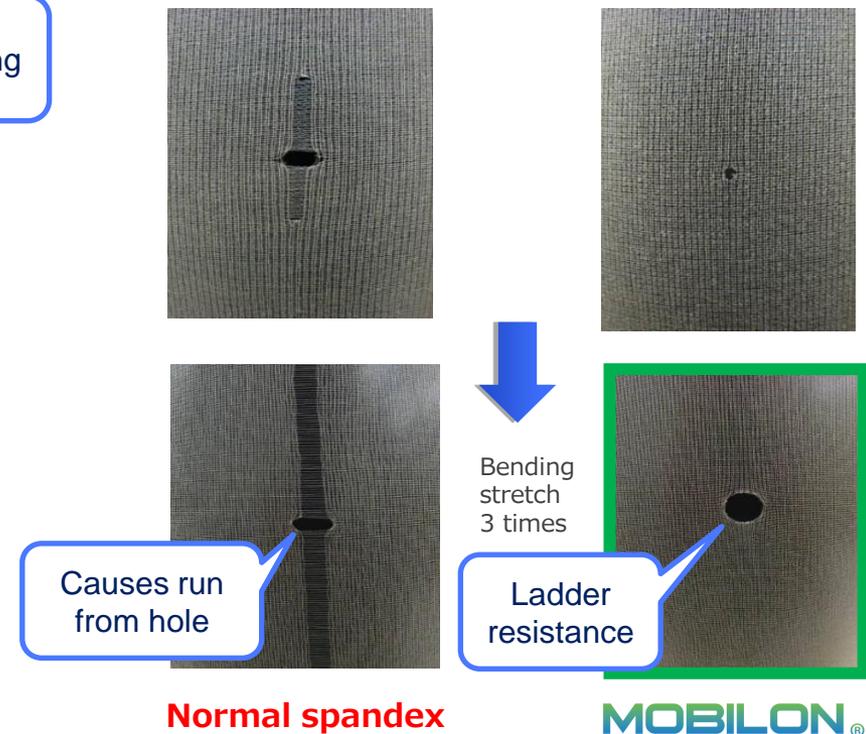


Fig.2 Leg wear application



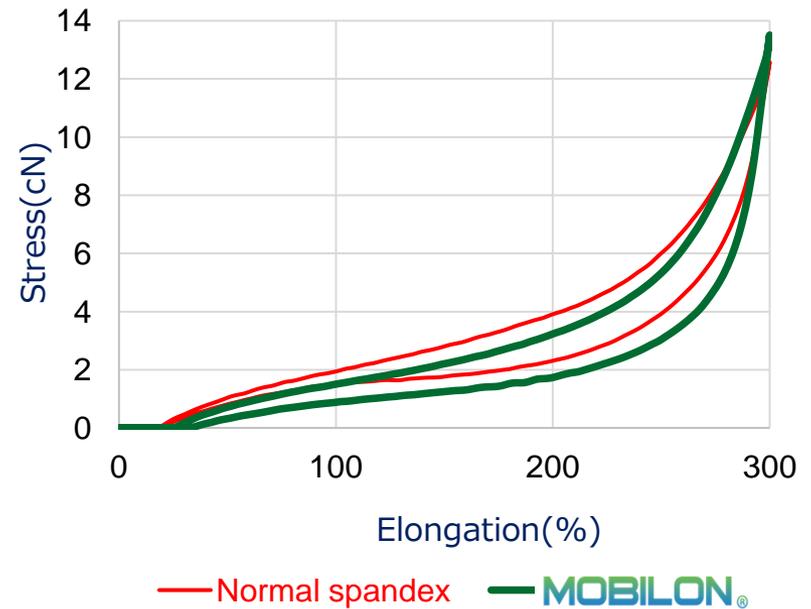
Stress-free

MOBILON has moderate tightening power compared to other normal spandex. Fabric using MOBILON is soft and easy to move when wearing.

Fig.1 Positioning map



Fig.2 SS cure for spandex



Anti-slip effect

Fabric using MOBILON is **more anti-slip effect than** normal spandex, because the contact area to skin is larger as the yarn is side by side.

Fig.1 Cross section of spandex

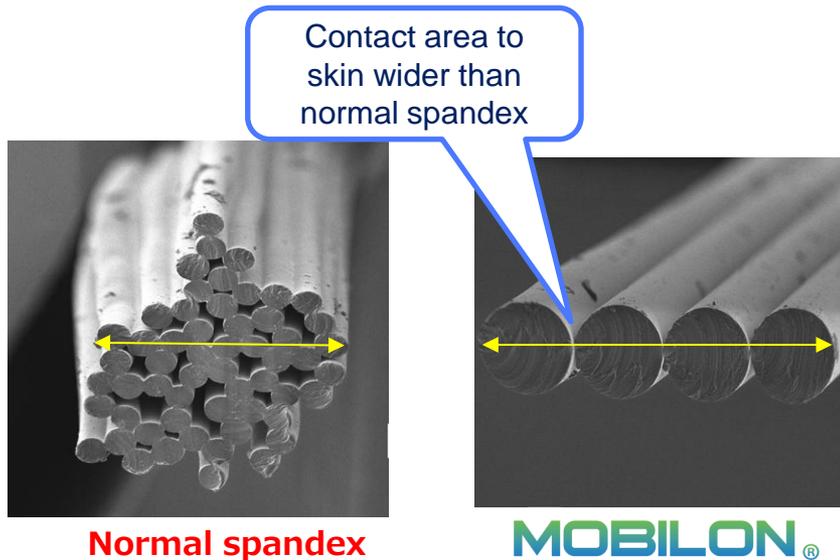
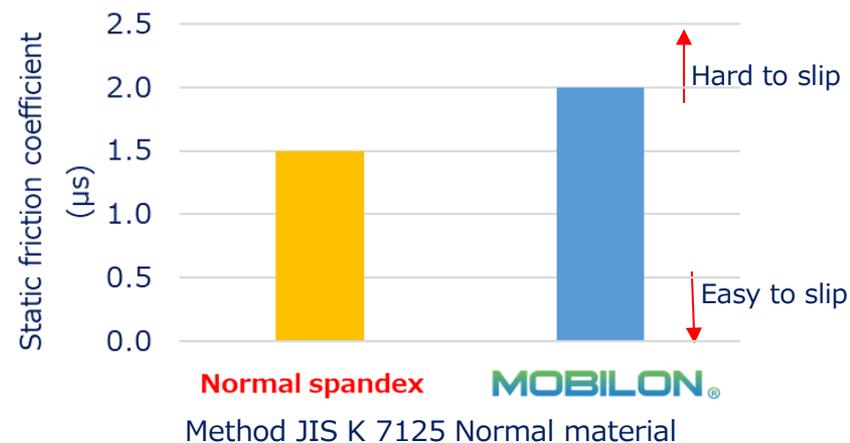


Fig.2 Anti-slip samples using MOBILON



Fig.3 Static friction coefficient



Variation of MOBILON (for leg wear)

Type	K	G	KL	KL-C	KL-F
Feature	Regular	Regular + Compression	Fusing	Fusing + Dope dyed black	Low Fusing
Fusing condition (Wet setting)	-	-	120°C×20sec	120°C×20sec	113°C×20sec
Luster	Dull	Dull	Clear	Black	Clear
Chlorine resistance	○	○	○	○	○
Fineness (dtex)	-	-	11	-	-
	17	-	17	-	-
	22	22	22	22	22
	33	-	33	-	33
	44	42	44	44	44
	-	-	56	-	-
	78	-	-	-	-
	110	-	-	-	-

Type of Regular

Type of Fusing

Introduce for under wear using MOBILON



Wacoal



Triumph



adidas



GUNZE

どこにも縫い目のないインナー



MUJI

Heat-fusing performance

MOBILON has an effect to prevent fraying by heat-fusing of each spandex, so MOBILON is used for seamless under wear.

In addition, the MOBILON is strongly fused to each other, so it's resistant to fraying even after repeated washing.

Fig1. Part of heat-fusing for spandex

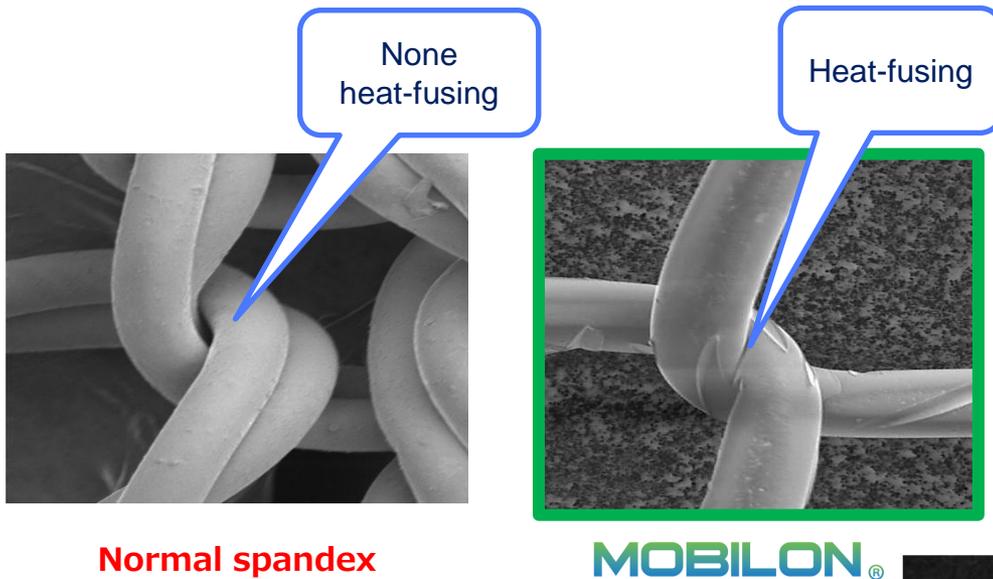
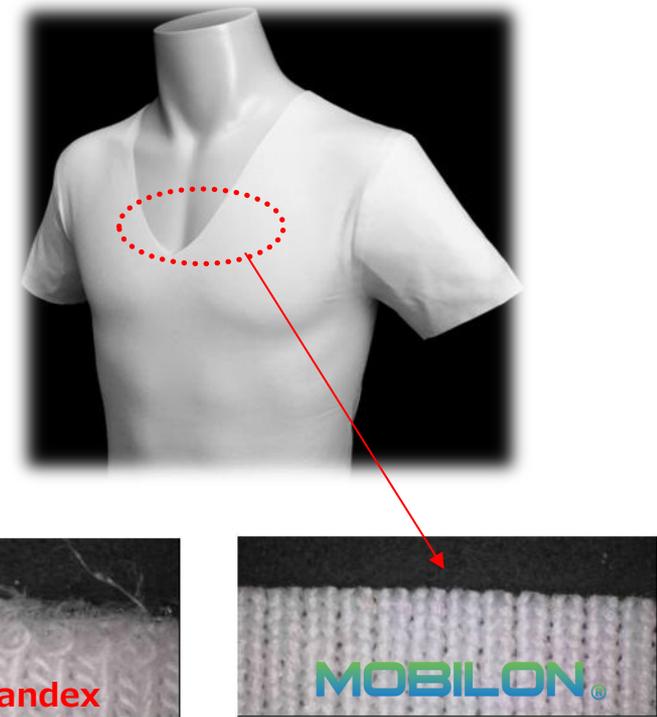


Fig2. Under wear application



MOBILON is resistant to fraying even after repeated washing

Excellent temperate set-ability

MOBILON is compared to normal spandex, heat setting at low temperatures are possible. Fabric using MOBILON **can keep soft texture after heat-setting**, so it's suitable for molding item.

Fig1. Heat setting condition

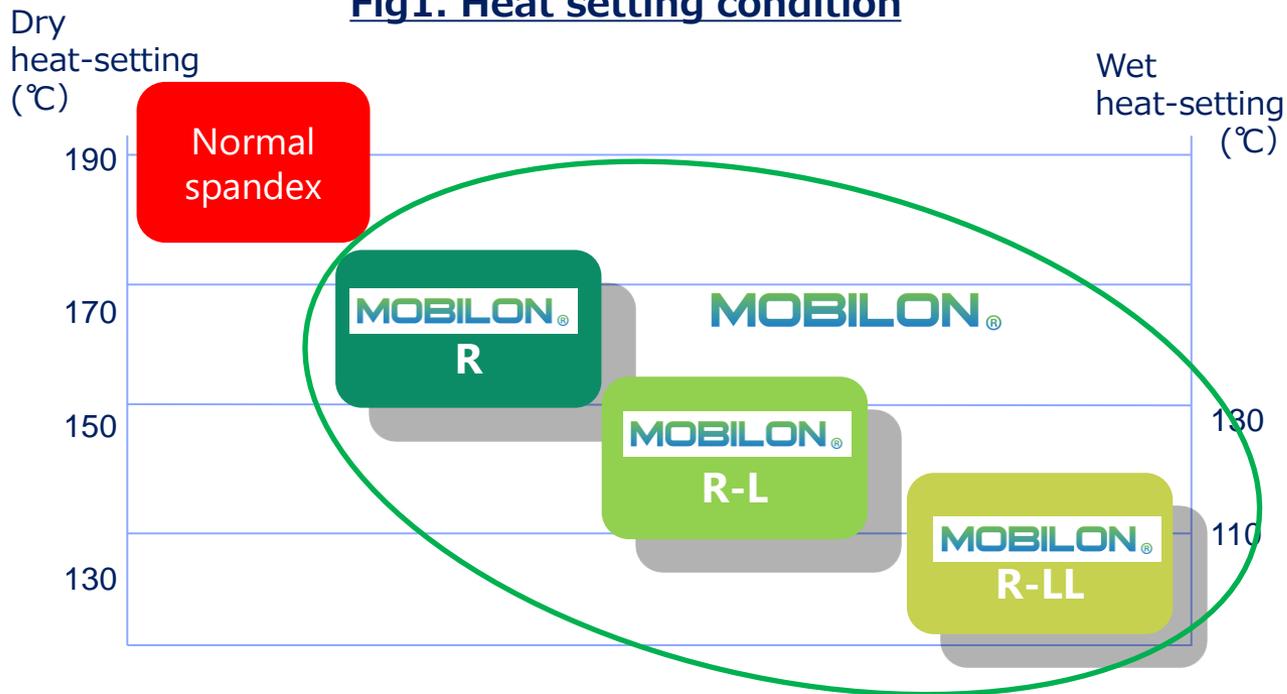


Fig2. Molding garment



Molding parts for garment

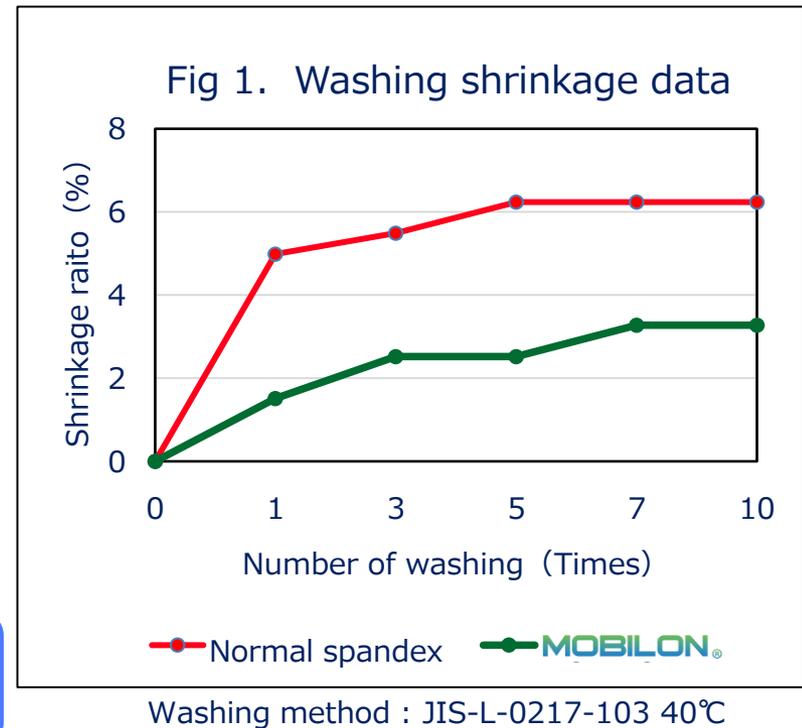
Shrink proof performance

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

Fig1. Shrink proof performance image



Fig2. Shrinkage data after washing



Variation of MOBILON (Under wear)

Type	R	R-L	R-LL
Performance	Fusing	Low fusing	Super low fusing
Fusing condition (Dry heat-setting)	175°C×60sec	150°C×60sec	130°C×60sec
Luster	Clear	Clear	Clear
Alkali resistance	○	○	○
Fineness (dtex)	22	22	-
	33	33	33
	44	44	-
	78	78	-
	110	-	110
	156		

All type of Heat-fusing

N,N-dimethylacetamide(DMAc)

Dry spinning spandex used in a kind of solvent of DMAc, but it's unusable due to restrictions on Europe market in the near future. MOBILON is melt spinning spandex using without solvent, so it's risk free.

■ ECHA Proposes Restriction on N,N-dimethylacetamide(DMAc) under Reach

(STEP①) 12th Dec, 2023~

Shall not be placed on Europa market as a substance on its own, as a constituent of other substances, or mixtures in a concentration equal to or greater 0.3%.

(STEP②) 12th Dec, 2024~

Shall not be placed on Europe market as a solvent in direct or transfer polyurethane coating processes of textiles and paper material or the production of polyurethane membranes.

(STEP③) 12th Dec,2025~

Shall not be placed on the market **as a solvent in the dry and wet spinning processes of synthetic fibers.**

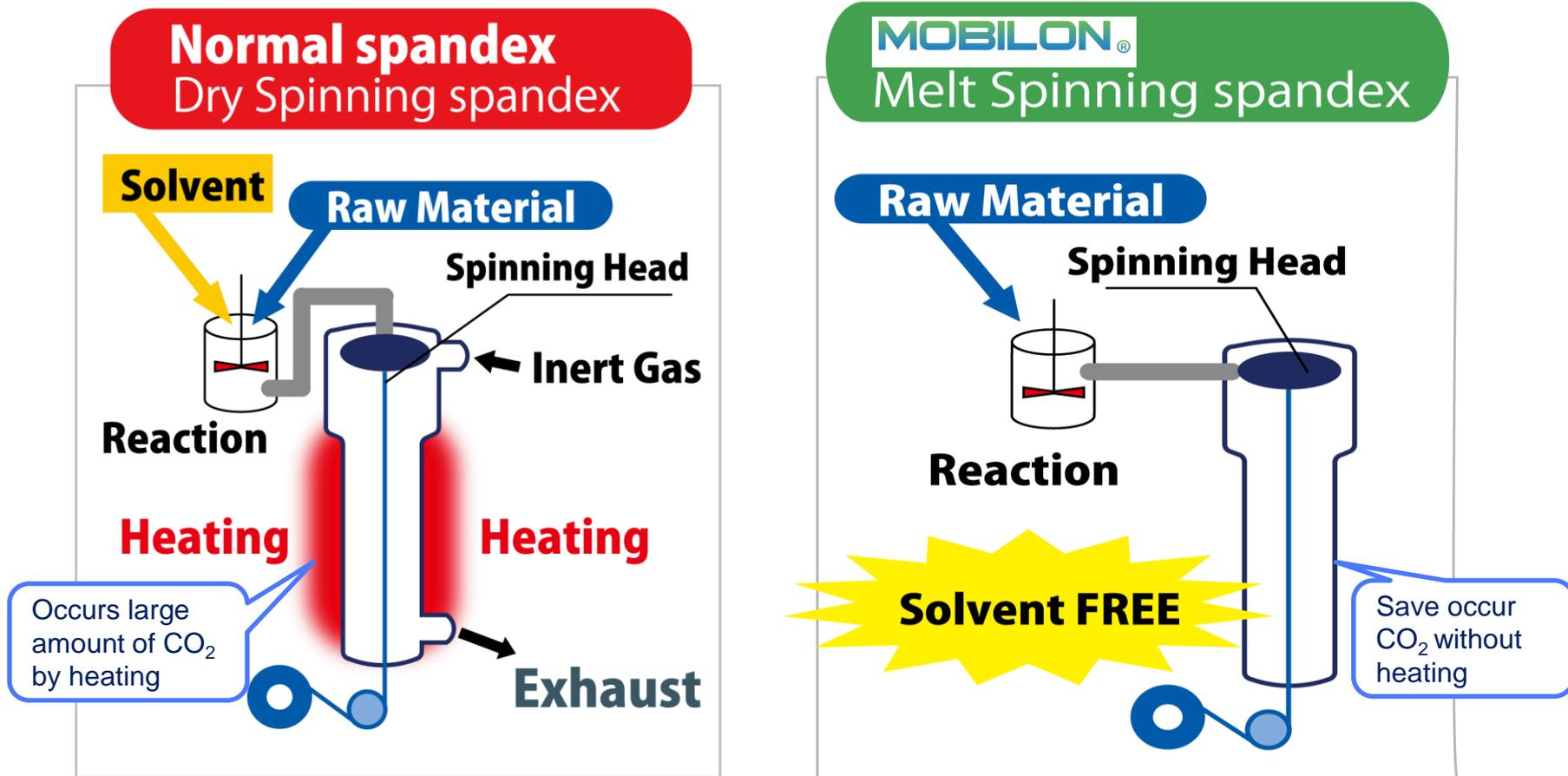


*Exemption

Manufactures, importers and downstream users have included in the relevant chemical safety reports and safety data sheet, Derived No-Effect Levels(DNELs) relating to exposure of workers of 6 mg/m³ for exposure by inhalation and 1,1 mg/kg/day for Dermal exposure.

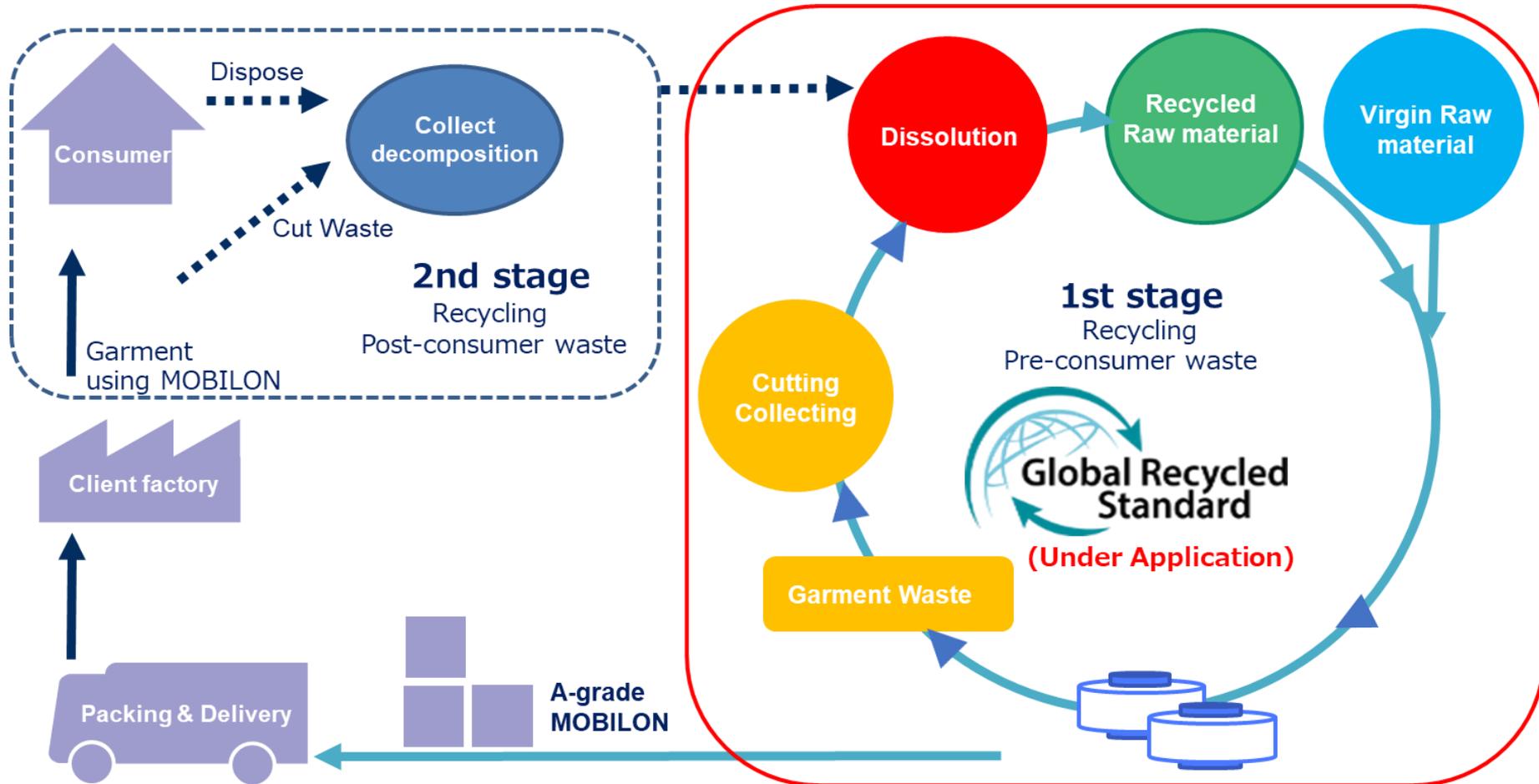
① Solvent free Material

Dry spinning spandex use DMAc of solvent, but MOBILON is melt spinning spandex, so it **doesn't use DMAc, so it's risk free.**
In addition, MOBILON will contribute to reduction of environment load with greatly **reducing CO₂ by the manufacturing method.**



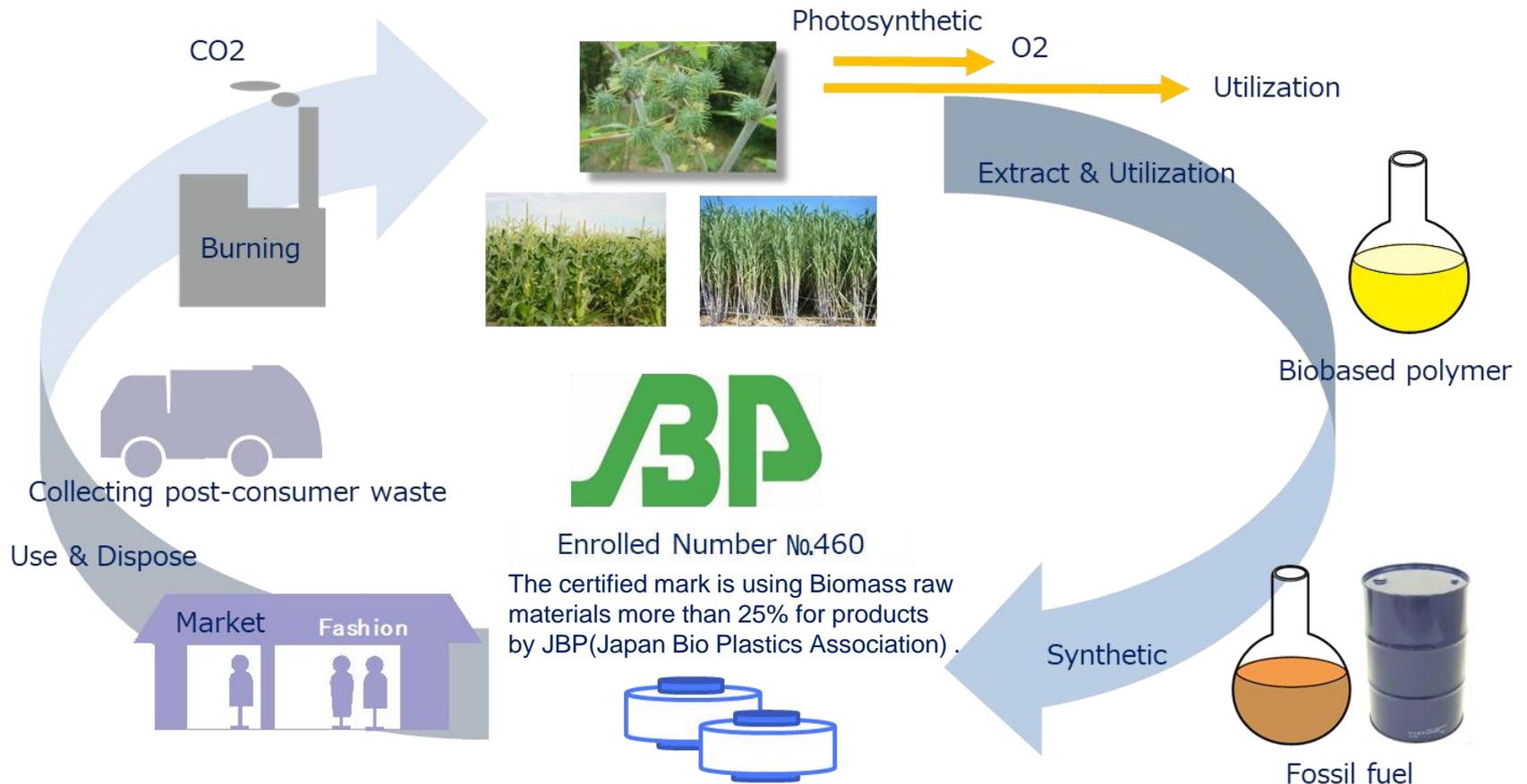
② Recycled Material

Nisshinbo is one of supplier to produce Polyurethane from pre-consumer waste recycle **can contribute to Environmental load reduction**.
Intending recycle of waste at customers in the future.



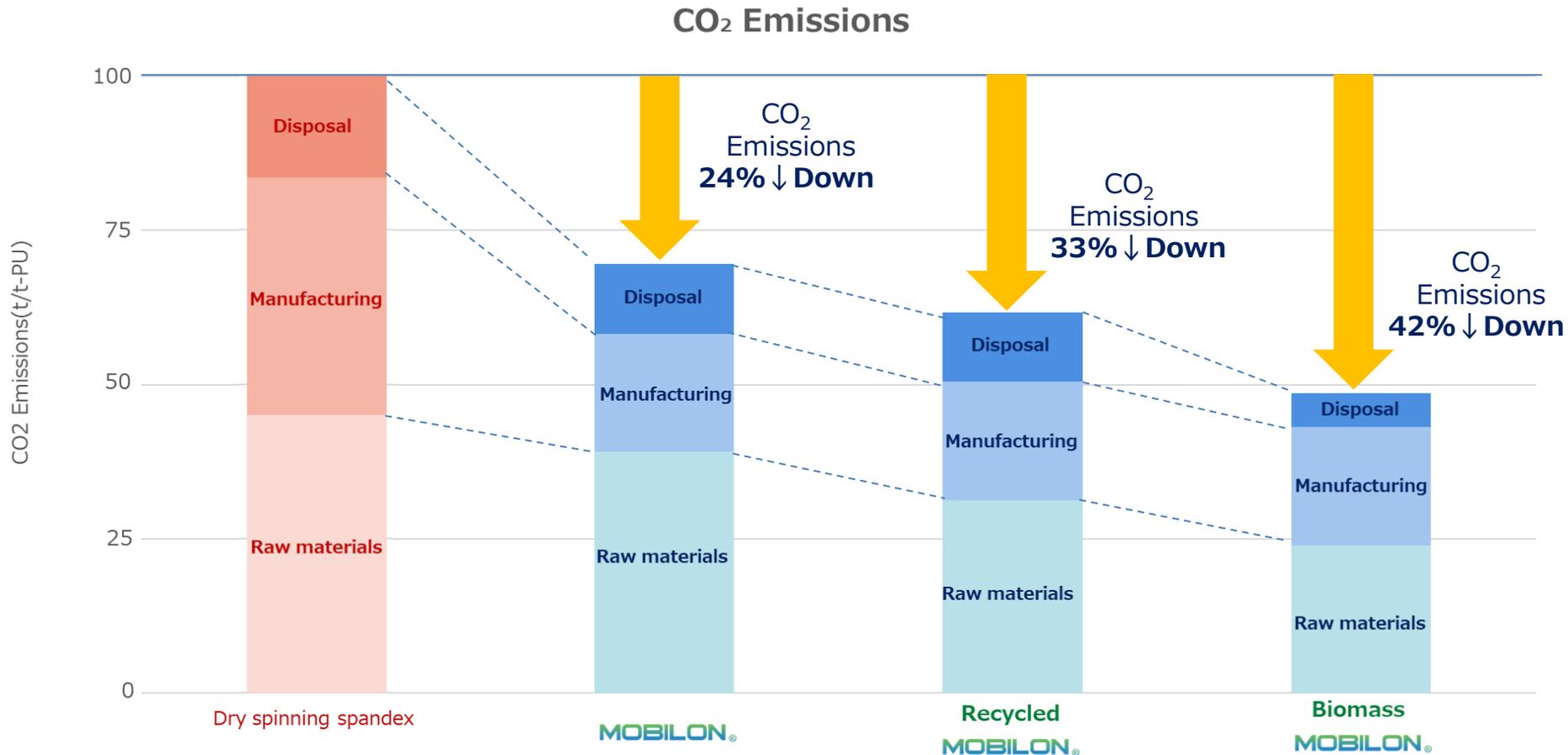
③ Biomass Material

Nisshinbo is one of supplier to produce Polyurethane from Bio-based Polymer and **can contribute to Environmental load reduction**. Promoting Biomass products in every line up.



The reduction of CO₂ Emissions

MOBILON is environmentally friendly without using solvent.
It'll greatly reduce CO₂ emissions comparing to dry spinning process.



Internal Certification

Safe & Secure polyurethane **certified from global organizations.**



REGISTERED ORGANIZATION
No.E053-ISO14001
徳島事業所



MS
CM002

ISO14001 is the international standard that specifies requirements for an effective environmental management system (EMS) and serves as the proof of our effort in improving system and management to control environmental impacts.



OEKO-TEX STAND 100 is one of the world's best-known qualification that ascertain that every component of our products has been tested for harmful substances and therefore is harmless in human ecological terms.



(Under Application)

GRS is an international, voluntary, full product stand that sets out requirements for third-party certification of recycled content, chain of custody, social and environment practices and chemical restrictions.

Variation of MOBILON (Recycled & Biomass)

Type	EL	BL	ER	RB
Feature	Recycled	Biomass	Recycled	Biomass
Performance	Fusing	Fusing	Fusing	Fusing
Fusing condition (Dry heat-setting)	-	-	175°C×60sec	175°C×60sec
Fusing condition (Wet heat-setting)	120°C×20sec	120°C×20sec	-	-
Luster	Clear	Clear	Clear	Clear
Alkali resistance	△	△	○	○
Chlorine resistance	○	○	△	△
Fineness (dtex)	22	22	22	22
	33	33	33	33
	44	44	-	44
	-	-	-	78

For leg wear

For under wear