

## COOLMAX® EcoMade Brand and COOLMAX® EcoMade PRO Brand *Sustainable Cool and Dry Technology*

COOLMAX® EcoMade brand technologies employ an effective moisture management system that transports moisture in ways that enhance cooling and drying. In addition, the COOLMAX® EcoMade brand fiber is made from recycled resources. Customers can choose from two recycled polymer types: a) product made with post consumer PET bottles, or b) products made from 100% textile manufacturing waste. Both forms of COOLMAX® EcoMade fiber perform to the same certification standards.

COOLMAX® EcoMade fibers made with textile waste have the same performance as virgin analogues, such as excellent whiteness, good tenacity and dye pick up.

Two technology platforms qualify for the COOLMAX® EcoMade brand

- 1.COOLMAX® EcoMade CORE technology
- 2.COOLMAX® EcoMade ALL SEASON technology

One technology platform qualifies for the COOLMAX® EcoMade PRO brand:

COOLMAX® EcoMade EXTRME technology

This document presents the quality standards for these technology platforms. In addition to meeting the standards, fabrics or garment must have a premium hand and appearance that are consistent with quality that consumers expect from the COOLMAX® EcoMade brand. The LYCRA Company reserves the right to approve or not approve fabrics or garments at its sole discretion.

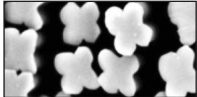
### 1.

#### COOLMAX® EcoMade CORE technology


*BRAND PROMISE: stay cool and dry, made with recycled polyester*

#### QUALIFYING FIBERS: COOLMAX® EcoMade CORE technology

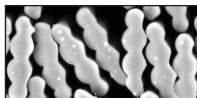
Filament Polyester			
Product	Cross-Section	Yarn Orientation	Dye Class
564DEG <sup>4</sup> /565DEF <sup>1</sup>	four-channel	DTY	disperse
564TEG <sup>4</sup>	four-channel	POY	disperse
927EF <sup>1</sup>	six-channel	FDY	disperse
594TEF <sup>1</sup>	4-channel "propeller"	POY	disperse
594DEF <sup>1</sup>	4-channel "propeller"	DTY	disperse
929EF <sup>1</sup>	scalloped oval	FDY	cationic
935TEF <sup>1</sup>	C & hollow	POY	disperse
938DEF <sup>1</sup>	scalloped oval	DTY	disperse
938TEF <sup>1</sup>	scalloped oval	POY	disperse
939DEF <sup>1</sup>	scalloped oval	DTY	disperse
988DEG <sup>4</sup>	six-channel	DTY	disperse
988TEF <sup>1</sup> /988TEG <sup>4</sup>	six-channel	POY	disperse
988TAMEF <sup>1,3</sup>	six-channel	POY	disperse
LYCRA® T400®EF fiber <sup>2</sup>	snowman (bicomponent)	FDY	disperse
LYCRA® T400®ZEF fiber <sup>2</sup>	snowman (bicomponent)	FDY	Spun-dyed black
LYCRA® T400®SEF fiber <sup>2</sup>	snowman (bicomponent)	FDY	disperse
LYCRA® T400®AEF fiber <sup>2</sup>	snowman (bicomponent)	ATY	disperse
Staple Polyester			
Product	Cross-Section		Dye Class
649NEG <sup>4</sup>	four-channel		disperse
702NEF <sup>1</sup>	scalloped oval		cationic
702WEF <sup>1</sup>	scalloped oval		cationic
729NEF <sup>1</sup>	scalloped oval		disperse
729WEF <sup>1</sup>	scalloped oval		disperse
729ZEF <sup>2</sup>	scalloped oval		spun-dyed black



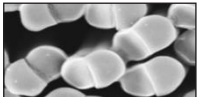
four-channel



scalloped oval



six-channel



snowman (LYCRA® T400® fiber)

**NOTES:**

- 1 EcoMade fiber, contain 100% post-consumer recycled polyester.
- 2 EcoMade fiber, contain at least 50% post-consumer recycled polyester.
- 3 Contains spun-in silver preservative for freshness. For more information see: COOLMAX® freshFX® technology: freshness requirements for fabrics, excluding legwear (Doc. Ref. #P013), and COOLMAX® brand requirements for socks (Doc. Ref. #P028).
- 4 EcoMade fiber, contain 100% recycled polyester from pre-consumer textile waste.

For information about obtaining a UPF rating, see: *Obtaining a UPF Rating for the COOLMAX® and COOLMAX® PRO Brands* (Doc. Ref. #P014)

**Yarn Orientation:** FDY = fully drawn yarn, DTY = draw-textured yarn, POY = partially oriented yarn (POY is a precursor to draw-textured yarns and is not directly processible into fabrics.)

QUALITY STANDARDS: COOLMAX® EcoMade CORE technology

	Knit		Wool Knit		Woven Denim		Woven Non-denim		Wool Woven	Seamless, Socks Gloves, Caps	Sweater
	Rigid	Stretch	Rigid	Stretch	Rigid	Stretch	Rigid	Stretch			
Qualifying yarn content	≥ 35%	≥ 35%	≥ 35%	≥ 35%	≥ 20%	≥ 20%	weight < 150 g/m <sup>2</sup> : ≥ 15% weight ≥ 150 g/m <sup>2</sup> : ≥ 20%		≥ 20%	≥ 30%	≥ 35%
Air Permeability	≥ 100 cfm	≥ 60 cfm (≤ 220 g/m <sup>2</sup> ) ≥ 10 cfm (> 220 g/m <sup>2</sup> )	≥ 100 cfm	≥ 60 cfm (≤ 220 g/m <sup>2</sup> ) ≥ 10 cfm (> 220 g/m <sup>2</sup> )	—	—	≥ 5 cfm	—	≥ 10 cfm	—	—
Shrinkage	≤ 5%	≤ 5%	—	—	≤ 4%	≤ 4%	≤ 5%	≤ 5%	—	—	—
Vertical Wicking	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	—	—	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)
Absorbency	≤ 10 sec	≤ 15 sec	—	—	≤ 30 sec	≤ 30 sec	≤ 30 sec	≤ 30 sec	—	≤ 30 sec	—
Planar Wicking	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	—	—	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	—	—	—
Halo (2-sided fabric)	Yes	Yes	—	—	Yes	Yes	Yes	Yes	—	—	—

NOTES:


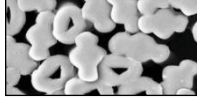


- For fabrics and garments where COOLMAX® EcoMade fiber is blended or combined with another unbranded polyester fiber, customers have a responsibility to ensure that garment content labeling is clear and not potentially misleading.
- LYCRA® elastane and LYCRA® T400® fiber are the only permitted elastomeric fibers for seamless, socks and wovens (denim and non-denim) and are recommended for all other stretch fabrics.
- Intimate staple blends are permitted for all fabrics.
- Wool knits may include blends with cashmere.
- If wool knit fabrics fail the Vertical Wicking test as-received, they may be laundered once (using method ITM 326) and retested.

2.

COOLMAX® EcoMade ALL SEASON technology

BRAND PROMISE: stay cool and dry, and warmer on colder days, made with recycled polyester

QUALIFYING FIBERS: COOLMAX® EcoMade ALL SEASON technology

Filament				 <p>hollow &amp; "C"</p>
<b>Product</b>	<b>Cross-Section</b>	<b>Yarn Orientation</b>	<b>Dye Class</b>	
934DEF <sup>1</sup>	mixed: hollow & "C"	DTY	disperse	
934TEF <sup>1</sup>	mixed: hollow & "C"	POY	disperse	
934TAMEF <sup>3</sup>	mixed: hollow & "C"	POY	disperse - disperse	
935TEF <sup>1</sup>	mixed: hollow & "C"	POY	disperse	
Staple				 <p>hollow &amp; scalloped oval</p>
<b>Product</b>	<b>Cross-Section</b>	<b>Dye Class</b>		
60SEF <sup>1</sup>	mixed: hollow & scalloped oval	disperse		
Staple Blends				 <p>hollow</p>
<b>Product</b>	<b>Cross-Section</b>	<b>Dye Class</b>		
649NEG <sup>4</sup>	four-channel	disperse		
360NEF	hollow	cationic		
727NEF <sup>1</sup> /727NEG <sup>4</sup>	hollow	disperse		
727WEF <sup>1</sup>	hollow	disperse		
727ZEF <sup>2</sup>	hollow	spun-dyed black yarn		
729WEF <sup>1</sup>	scalloped oval	disperse		
729ZEF <sup>2</sup>	scalloped oval	spun-dyed black yarn		
702NEF	scalloped oval	cationic		
<b>360NEF, 727NEF, 727NEG, 727WEF or 727ZEF with 702NEF, 729WEF, 729NEF, 729ZEF or 649NEG in a 40/60 to 60/40 intimate blend.</b>				 <p>scalloped oval</p>

NOTES:

- 1 EcoMade fiber, contain 100% post-consumer recycled polyester sourced from PET bottles.
  - 2 EcoMade fiber, contain at least 50% post-consumer recycled polyester sourced from PET bottles.
  - 3 Contains spun-in silver preservative for freshness. For more information see: COOLMAX® freshFX® technology: freshness requirements for fabrics, excluding legwear (Doc. Ref. #P013), and COOLMAX® brand requirements for socks (Doc. Ref. #P028).
  - 4 EcoMade fiber, contain 100% recycled polyester from pre-consumer textile manufacturing waste.
- For information about obtaining a UPF rating, see: *Obtaining a UPF Rating for the COOLMAX® and COOLMAX® PRO Brands* (Doc. Ref. #P014)

Yarn Orientation: FDY = fully drawn yarn, DTY = draw-textured yarn, POY = partially oriented yarn (POY is a precursor to draw-textured yarns and is not directly processible into fabrics.)

QUALITY STANDARDS: COOLMAX® EcoMade ALL SEASON technology

	Knit		Wool Knit		Wovens		Wool Woven	Seamless, Socks Gloves, Caps	Sweater
	Rigid	Stretch	Rigid	Stretch	Denim	Non-Denim			
Qualifying yarn content	≥ 35%	≥ 35%	≥ 35%	≥ 35%	≥ 20%	≥ 20%	≥ 20%	≥ 40%	≥ 35%
Air Permeability	≥ 100 cfm	≥ 60 cfm (≤ 220 g/m <sup>2</sup> ) ≥ 10 cfm (> 220 g/m <sup>2</sup> )	≥ 100 cfm	≥ 60 cfm (≤ 220 g/m <sup>2</sup> ) ≥ 10 cfm (> 220 g/m <sup>2</sup> )	—	≥ 5 cfm	≥ 10 cfm	—	—
Shrinkage	≤ 5%	≤ 5%	—	—	≤ 4%	≤ 5%	—	—	—
Vertical Wicking	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)	≥ 3 in (7.6 cm)
Absorbency	≤ 10 sec	≤ 15 sec	—	—	≤ 30 sec	≤ 30 sec	—	≤ 30 sec	—
Planar Wicking	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	—	—	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	≥ 2 in <sup>2</sup> (12.9 cm <sup>2</sup> )	—	—	—
Halo (2-sided fabric)	Yes	Yes	—	—	Yes	Yes	—	—	—
Clo	0.1-0.3	0.1-0.3	0.1-0.3	0.1-0.3	0.1-0.3	0.1-0.3	0.1-0.3	—	0.1-0.3
Thermal Resistivity	—	—	—	—	—	—	—	≥ 3.0	—

NOTES:

- For fabrics and garments where COOLMAX® EcoMade fiber is blended or combined with another unbranded polyester fiber, customers have a responsibility to ensure that garment content labeling is clear and not potentially misleading.
- The use of LYCRA® elastane or LYCRA® T400® fiber as the sole elastomeric fibers is mandatory for all end-uses.
- Intimate staple blends are permitted for all fabrics.
- Wool knits may include blends with cashmere.
- If wool knit fabrics fail the Vertical Wicking test as-received, they may be laundered once (using method ITM 326) and retested.

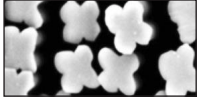
3.

**COOLMAX® EcoMade EXTREME technology**

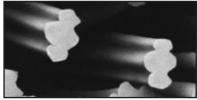
BRAND PROMISE: Advanced cool and dry technology, made with recycled polyester

QUALIFYING FIBERS: COOLMAX® EcoMade EXTREME technology

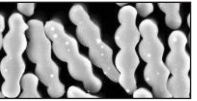
Filament Polyester			
Product	Cross-Section	Yarn Orientation	Dye Class
564DEG <sup>4</sup> /565DEF <sup>1</sup>	four-channel	DTY	disperse
564TEG <sup>4</sup>	four-channel	POY	disperse
927EF <sup>1</sup>	six-channel	FDY	disperse
594TEF <sup>1</sup>	4-channel "propeller"	POY	disperse
594DEF <sup>1</sup>	4-channel "propeller"	DTY	disperse
929EF <sup>1</sup>	scalloped oval	FDY	cationic
935TEF <sup>1</sup>	C & hollow	POY	disperse
938DEF <sup>1</sup>	scalloped oval	DTY	disperse
938TEF <sup>1</sup>	scalloped oval	POY	disperse
939DEF <sup>1</sup>	scalloped oval	DTY	disperse
988DEG <sup>4</sup>	six-channel	DTY	disperse
988TEF <sup>1</sup> /988TEG <sup>4</sup>	six-channel	POY	disperse
988TAMEF <sup>1,3</sup>	six-channel	POY	disperse
LYCRA® T400®EF fiber <sup>2</sup>	snowman (bicomponent)	FDY	disperse
LYCRA® T400®ZEF fiber <sup>2</sup>	snowman (bicomponent)	FDY	Spun-dyed black
LYCRA® T400®SEF fiber <sup>2</sup>	snowman (bicomponent)	FDY	disperse
LYCRA® T400®AEF fiber <sup>2</sup>	snowman (bicomponent)	ATY	disperse
Staple Polyester			
Product	Cross-Section		Dye Class
649NEG <sup>4</sup>	four-channel		disperse
702NEF <sup>1</sup>	scalloped oval		cationic
702WEF <sup>1</sup>	scalloped oval		cationic
729NEF <sup>1</sup>	scalloped oval		disperse
729WEF <sup>1</sup>	scalloped oval		disperse
729ZEF <sup>2</sup>	scalloped oval		spun-dyed black



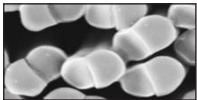
four-channel



scalloped oval



six-channel



snowman (LYCRA® T400® fiber)

NOTES:

- 1 EcoMade fiber, contain 100% post-consumer recycled polyester.
  - 2 EcoMade fiber, contain at least 50% post-consumer recycled polyester.
  - 3 Contains spun-in silver preservative for freshness. For more information see: COOLMAX® freshFX® technology: freshness requirements for fabrics, excluding legwear (Doc. Ref. #P013), and COOLMAX® brand requirements for socks (Doc. Ref. #P028).
  - 4 EcoMade fiber, contain 100% recycled polyester from pre-consumer textile waste.
- For information about obtaining a UPF rating, see: *Obtaining a UPF Rating for the COOLMAX® and COOLMAX® PRO Brands* (Doc. Ref. #P014)

Yarn Orientation: FDY = fully drawn yarn, DTY = draw-textured yarn, POY = partially oriented yarn (POY is a precursor to draw-textured yarns and is not directly processible into fabrics.)

QUALITY STANDARDS: COOLMAX® EcoMade EXTREME technology

	Knit		Seamless, Socks, Gloves, Caps
	Rigid	Stretch	
Qualifying yarn content	≥ 85%	≥ 80%	≥ 70%
Intimate blends: allowed?	Yes	Yes	No
Air Permeability	≥ 200 cfm	≥ 60 cfm	—
Shrinkage	≤ 5%	≤ 5%	—
Vertical Wicking	≥ 5 in (12.7 cm)	≥ 5 in (12.7 cm)	≥ 5 in (12.7 cm)
Absorbency	≤ 10 sec	≤ 10 sec	≤ 10 sec
Planar Wicking	≥ 5 in <sup>2</sup> (32.3 cm <sup>2</sup> )	≥ 5 in <sup>2</sup> (32.3 cm <sup>2</sup> )	—
Halo (2-sided fabric)	Yes	Yes	—

**NOTES:**

- For fabrics and garments where COOLMAX® EcoMade fiber is blended or combined with another unbranded polyester fiber, customers have a responsibility to ensure that garment content labeling is clear and not potentially misleading.
- LYCRA® elastane and LYCRA® T400® fiber are the only permitted elastomeric fibers for seamless, socks and wovens (denim and non-denim) and are recommended for all other stretch fabrics.
- Intimate staple blends are permitted for all fabrics.
- Wool knits may include blends with cashmere.
- If wool knit fabrics fail the Vertical Wicking test as-received, they may be laundered once (using method ITM 326) and retested.
- Knit fabrics can meet the standard either for planar wicking or air permeability; it is not necessary to meet both

**Summary of Internal Test Methods (ITM)**

**Qualifying Fiber Content**

To ensure long-term moisture management performance, fabrics engineered with COOLMAX® brand technologies must contain the prescribed percentage of qualifying fibers.

**Intimate Blends**

Intimate-blend yarns are those in which a qualifying fiber staple is spun with a non-qualifying fiber. For the COOLMAX® CORE and ALL SEASON technologies, intimate blends are permitted. For the COOLMAX® EXTREME technology, intimate blends are permitted if:

- The non-qualifying component is limited to a maximum of 15% of the yarn, and...
- The non-qualifying component is not a natural fiber

**Finished Garments**

To qualify for the COOLMAX® brand, finished garments should contain a minimum of 80% of qualifying fabrics engineered with COOLMAX® brand technologies.

**Shrinkage** (ITM 326, all except denim)

Fabrics are subjected to home laundering and tumble-drying. The resulting fabric shrinkage is measured and recorded.

**Shrinkage** (ITM 327, denim)

Fabrics are subjected to comparatively high temperature laundering followed by tumble drying. The resulting fabric shrinkage is measured and recorded.

**Air Permeability** (ASTM D-737-75)

An air permeability tester creates a prescribed pressure differential between two sides of a fabric. The subsequent air flow through the fabric is measured and recorded.

**Clo** (ITM 374)

Clo is a measure of the insulative value of a fabric. To test for clo, fabric samples are placed on a hot plate that produces a known quantity of heat energy. The air temperature above the fabric is then measured, and clo is recorded.

**Vertical Wicking** (ITM 348)

A fabric strip is hung vertically and the free end is dipped into distilled water to a specified depth for a specified time. The height of the water that wicks upward through the fabric strip is measured and recorded.

## **Moisture Management**(ITM725)

Fabrics can achieve moisture management either by spreading moisture for more efficient drying, or by transporting it from the inside of the fabric to the outside. For this reason, The LYCRA Company uses a modification of the industry standard absorbency tests AATCC 79 and AATCC 198 to yield three critical measures of moisture management performance:

- Absorbency
- Planar wicking
- Halo effect

All fabrics must meet the standards for absorbency. All fabrics must meet the standard either for planar wicking or for halo effect: it is not necessary to meet both.

To test moisture management, a fabric is mounted in an embroidery hoop with the fabric back facing outward. A measured amount of water is dropped onto the fabric. The time required for the puddle to become absorbed enough to lose its shine is measured and recorded as the absorbency.

After the water has been absorbed by the fabric, the wet area (length X width) is measured and recorded as planar wicking.

The hoop is then turned over to expose the fabric front. If the wet area of the fabric front is greater than that of the fabric back, then a halo effect has been achieved, indicating good moisture transport to surface.



**Visit us on the web at:** [coolmax.com](http://coolmax.com)

The LYCRA Company innovates and produces fiber and technology solutions for the apparel and hygiene industries, as well as specialty chemicals used in the spandex and polyurethane value chains. Headquartered in Wilmington, Delaware, The LYCRA Company is recognized worldwide for its innovative products, technical expertise, and unmatched marketing support. The LYCRA Company owns leading consumer and trade brands: LYCRA®, LYCRA HyFit®, LYCRA® T400®, L by LYCRA®, COOLMAX®, THERMOLITE®, ELASPAN®, SUPPLEX®, TACTEL®, and TERATHANE®. While The LYCRA Company's name is new, its legacy stretches back to 1958 with the invention of the original spandex yarn, LYCRA® fiber. Today, The LYCRA Company is focused on adding value to its customers' products by developing unique innovations designed to meet the consumer's need for comfort and lasting performance. For more information, visit [connect.lycra.com](http://connect.lycra.com) and [lycra.com](http://lycra.com).

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