



# PearlTex X Lenzing

循環、永續、綠時尚

東和紡織 張嘉亨 總經理



# 永續發展是我們的核心價值 Our Core Value

## VISION

永續舒適紡織品  
解決方案的提供者

A trusted partner  
of sustainable  
and comfortable textiles.

## MISSION

環保機能短纖  
紡織專家

Specialized in  
sustainable and  
functional  
spun yarn.



**15** 條特紡線  
Production Lines

**67** 年紡紗經驗  
Years Spinning Experience



Taiwan Tainan

No.227, Gongye Rd., Madou Dist., Tainan City, Taiwan



**High Efficiency Solar Generator System**  
Similar to 4 Standard Football Field.

**270 Million Watt**

太陽能發電量

Solar Power Generation

**1,400 Tons**

減少碳排放量

Carbon Reduction



東和紡織股份有限公司  
Tung Ho Textile Co., Ltd.



## Eco Materials



- 1.天然纖維
- 2.再生環保纖維
- 3.可降解纖維

Natural Fiber  
Recycled Eco-Friendly Fiber  
Biodegradable Fiber

## Green Energy



- 1.太陽能發電系統
- 2.IBM智能空調管理系統
3. Control Union環保認證

Solar Power Generation  
IBM Smart Air-conditioning System  
Control Union Certification

## Unique Product



- 1.獨特花式
- 2.複合機能
- 3.先進紡紗工藝

Unique Patterns  
Multi-Functional  
Advanced Process

### 環保機能短纖紡織專家

Specialize in sustainable and functional spun yarn



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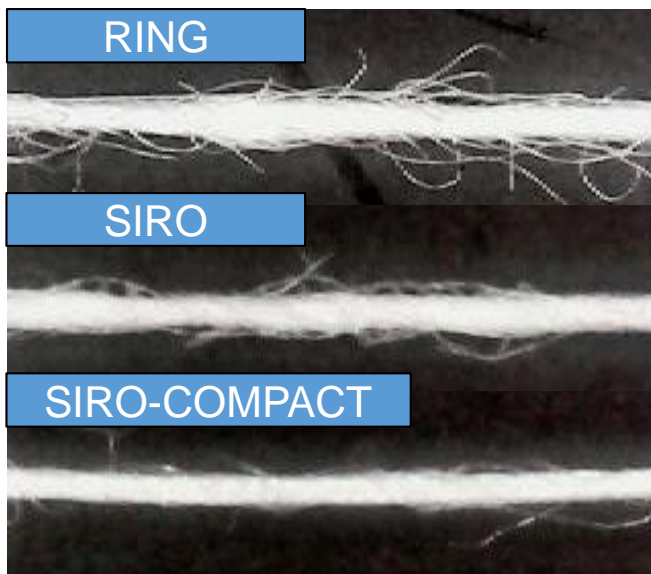
# SIRO 差異化紡紗工藝

## Advanced Spinning Process -SIRO

### SIRO-COMPACT

纖維排列平行緊密  
低毛羽抗起球

The fibers are arranged in parallel and closely.  
The yarn is clean and less hairy.



SUESSEN COMPACT設備  
Compact equipment  
from SUESSEN

### SIRO-SLUB

自由搭配長短竹節效果  
布面效果立體感強

Slub yarns with variety of patterns,  
ranging from short to very long slub.  
Give fabric more personality.

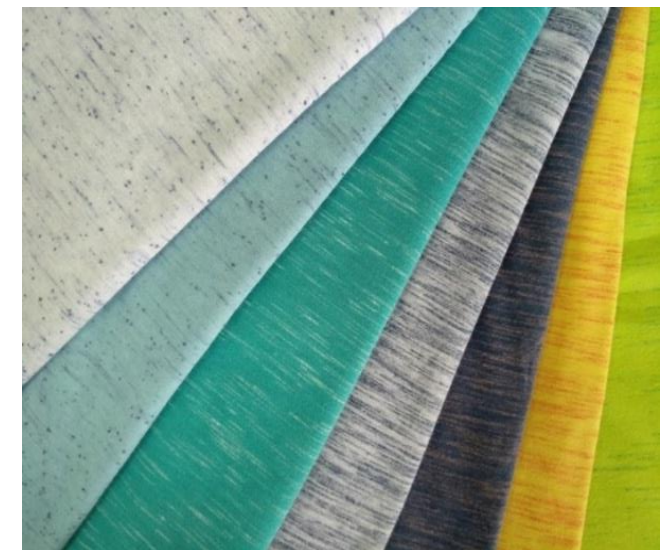


AMSLER 設備  
SLUB equipment  
from Europe

### SIRO-FUSE

客製介入紗節長/節比  
布面組織獨特

Customized injection yarn pattern.  
By injecting 2-3 two different materials  
to create a unique fabric structure.



混紡比例精準單染多色  
High precision in yarn blending ratio for  
assurance of dye effect.

A top-down view of a group of people sitting on a lush green lawn. Their hands and feet are arranged in a circle, touching the grass. Many of the hands have green nail polish. Some people are wearing colorful beaded bracelets and a black cycling glove. The scene is brightly lit, suggesting a sunny day outdoors.

永續紡織 你我同行

Let's Work Together  
To Protect Our Planet



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# 綠色浪潮 Fashion Go Green

東和紡織行銷處  
姜宇書 專員



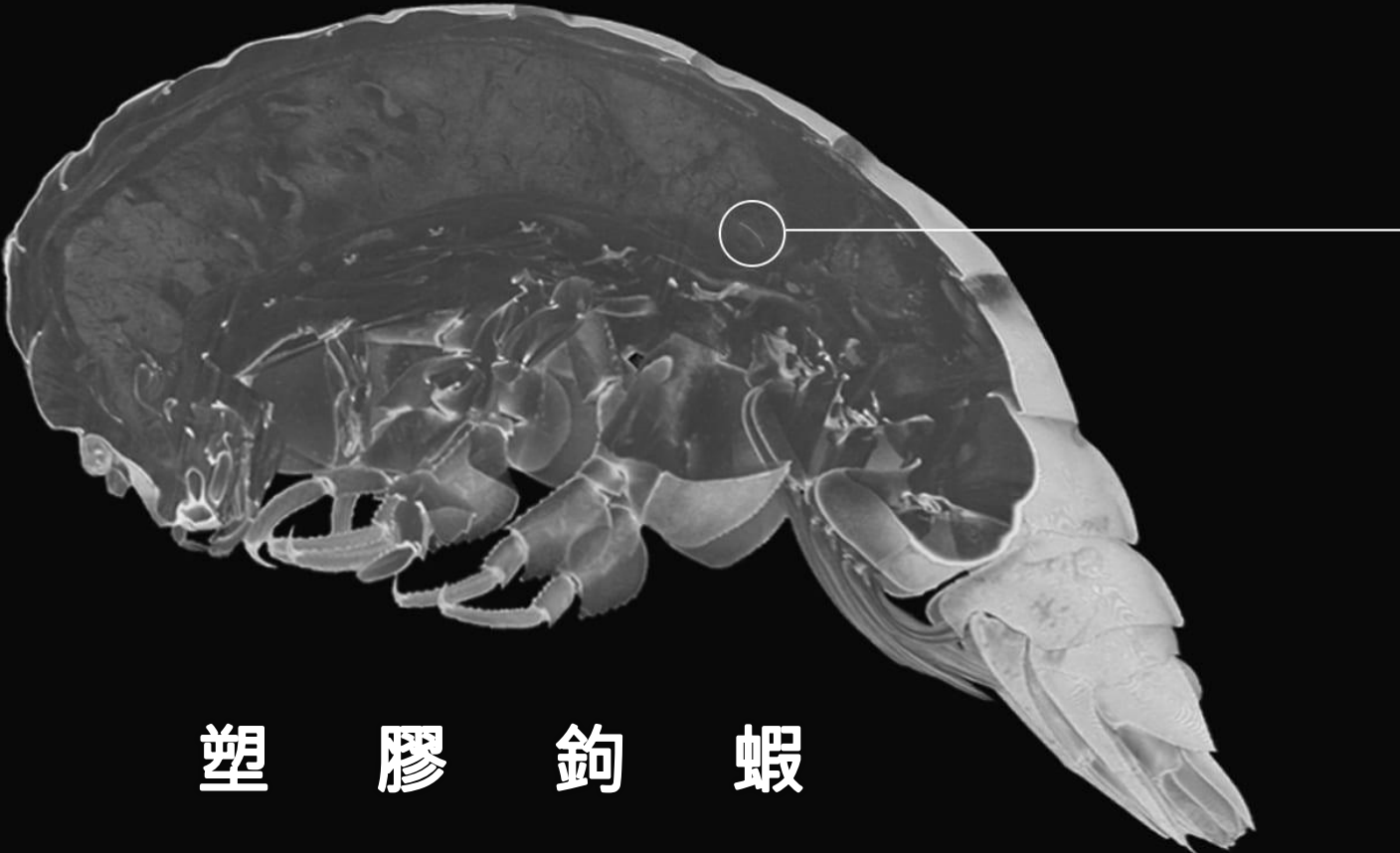
# Can fast fashion ever be sustainable?

根據樂施會(Oxfam)調查，  
每周約有1100萬件衣服和生活垃圾一起埋進地下  
Approximately 11 million pieces of clothing waste  
end up buried in landfill every week. (Oxfam survey)



英國紐卡索大學 ( Newcastle University ) 在全球最深海溝馬里亞納海溝 (Mariana Trench) 發現一種全新端足類動物 (Amphipoda) , 因體內充滿塑膠垃圾而命名為「塑膠鈎蝦」 (Eurythenes plasticus) 。

Eurythenes plasticus was named in reference to the PET plastic found in its stomach. The plastic microfibre that was found in its hindgut was 84% similar to PET plastic.



塑 膠 鈎 蝦



# 走向永續-Fashion go green

Brand	Recycled fibers	Renewable raw materials	Avoidance of micro-plastics
<b>adidas</b>	Recycled polyester, recycled nylon, More than half of the polyester products will come from recycled plastic waste., from 2024 only recycled Polyester.	100% sustainably produced cotton, Better Cotton	Member of The Microfiber Consortium(TMC)
<b>Helly Hansen</b>	Have managed to replace around 70% of fleece fabrics with recycled content.	Cotton, 100% mulesing-free Merino wool, Tencel	Member of The Microfiber Consortium(TMC)
<b>Jack Wolfskin</b>	Predominantly recycled polyester, also recycled polyamide, all GRS Certified	Organic cotton, wool, modal, Tencel	Member of The Microfiber Consortium(TMC), sales of Guppy Friend washing bags
<b>The North Face</b>	Recycled polyester, polyamide, down, cotton	Wool , Cotton	Member of The Microfiber Consortium(TMC)
<b>Vaude</b>	Recycled polyamide, polyester, down... with GRS, RCS, Federal Trade Commission Recycled Content (FTC) Taiwan Green Mark (TGM)	Plant-based plastic, vegan materials, Tencel, organic cotton, wool...	Wood-Fiber-Based Fleece Miskanti Fleece Jacket are all made with TENCEL® fleece.

資料來源：SPORTS FASHION 2020/一月；品牌官網



# 01

## Sustainability

資源耗竭將是地球最大危機  
永續將是紡織業未來的  
關鍵成功因素(KSF)

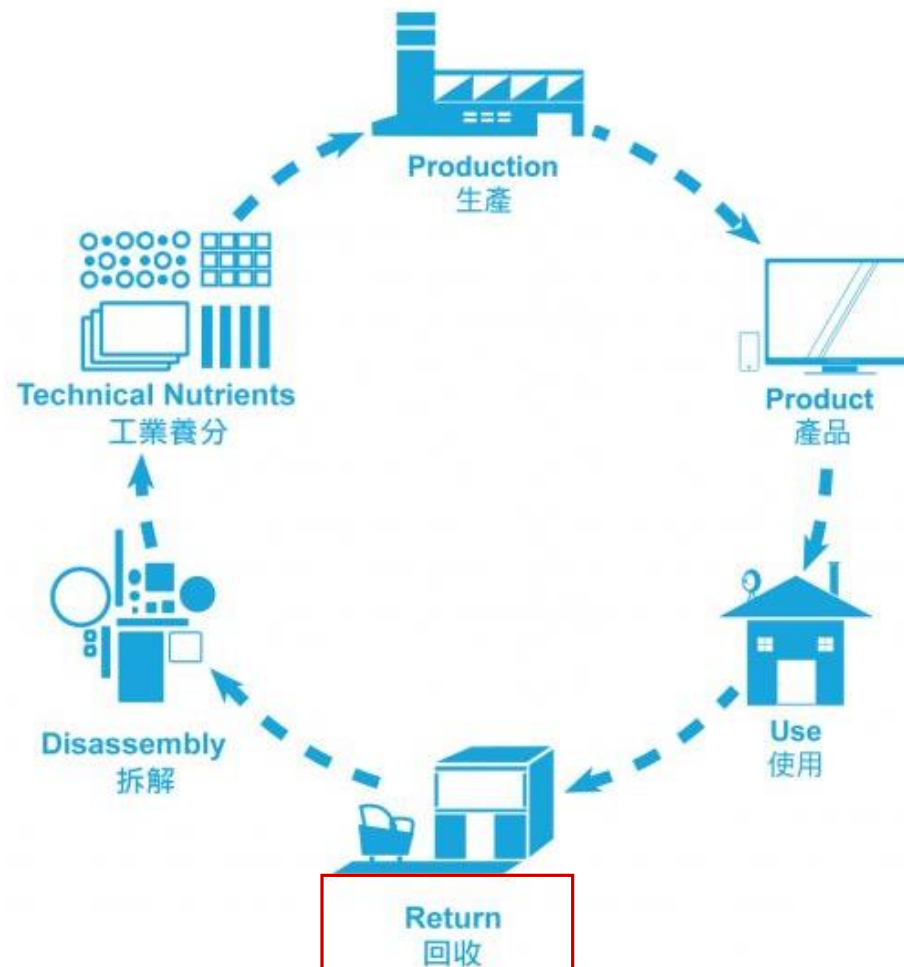
Rapid resource depletion will  
be the biggest crisis.  
Sustainability is the key success  
factor for the textile industry  
in the future.



# 搖籃到搖籃設計 Cradle-to-cradle design



**Biological Cycle**  
for Products for consumption  
生物循環



**Technical Cycle**  
for Products for Service  
工業循環

## 海廢的下一步，生物可分解材料

模擬掩埋環境 ( ASTM D5511 ) 及海洋環境( ASTM D6691 ) 試驗中，聚酯纖維均可降解回歸自然。

## 循環時尚與Upcycle

設計生產品質更好、耐用甚至可回收再利用的產品。

## 降低環境衝擊與污染

採購環保、天然纖維/布料，降低環境衝擊

## Biodegradable material is coming after rPET

Under the tests conducted in landfill (ASTM D5511) and in marine (ASTM D6691), mechanism of biodegradation was activated.

## Upcycle

Design and produce better quality, durable, and even recyclable.

## Reduce environmental impact and pollution

Using environmentally friendly and natural fibers/fabric.



# Sustainability





# 02

## 短交期 | 差異化

更快地響應趨勢和消費者需求，實現及時生產，小批量短生產週期成為新常態。

## Flexible Manufacturing

Respond to consumer needs faster. Just in time and customized production is a new challenge for the industry.

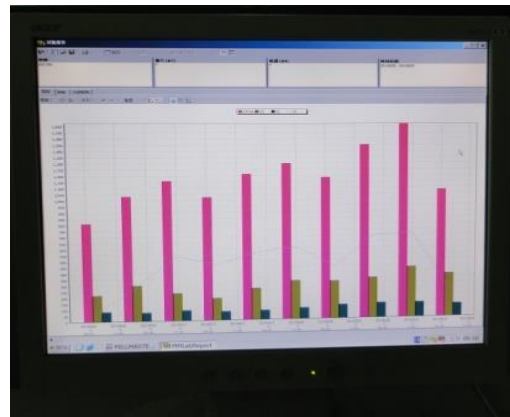
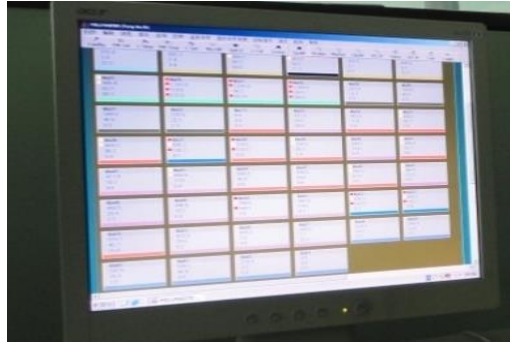


# 智能化品質監控系統 Intelligent Monitoring System

## Fully Optimized Production for a Consistent Yarn Quality



SPIDERweb  
Sliver Quality  
Monitoring



LOEPFE Millmaster  
Winding Monitoring



Individual Spindle Monitoring System

自動化和數據分析，能實現敏捷的客製生產。  
更快地回應趨勢和消費者需求。

Data analysis in manufacturing utilized and improve  
the efficiency of the production system.

# 03

機能 | 舒適 | 可靠

高品質/環保兼備機能性產品需求增溫。消費者/品牌更重視產品機能、資訊完整可信度、與供應鏈的可追塑性。

Function | Comfort | Credibility

Besides the function and quality, the credibility of product, and the supply chain are getting more and more important for customers.







## Eco-Footwear

降低人力成本40% ↑



## Upcycle

再生循環設計  
降低資源耗用



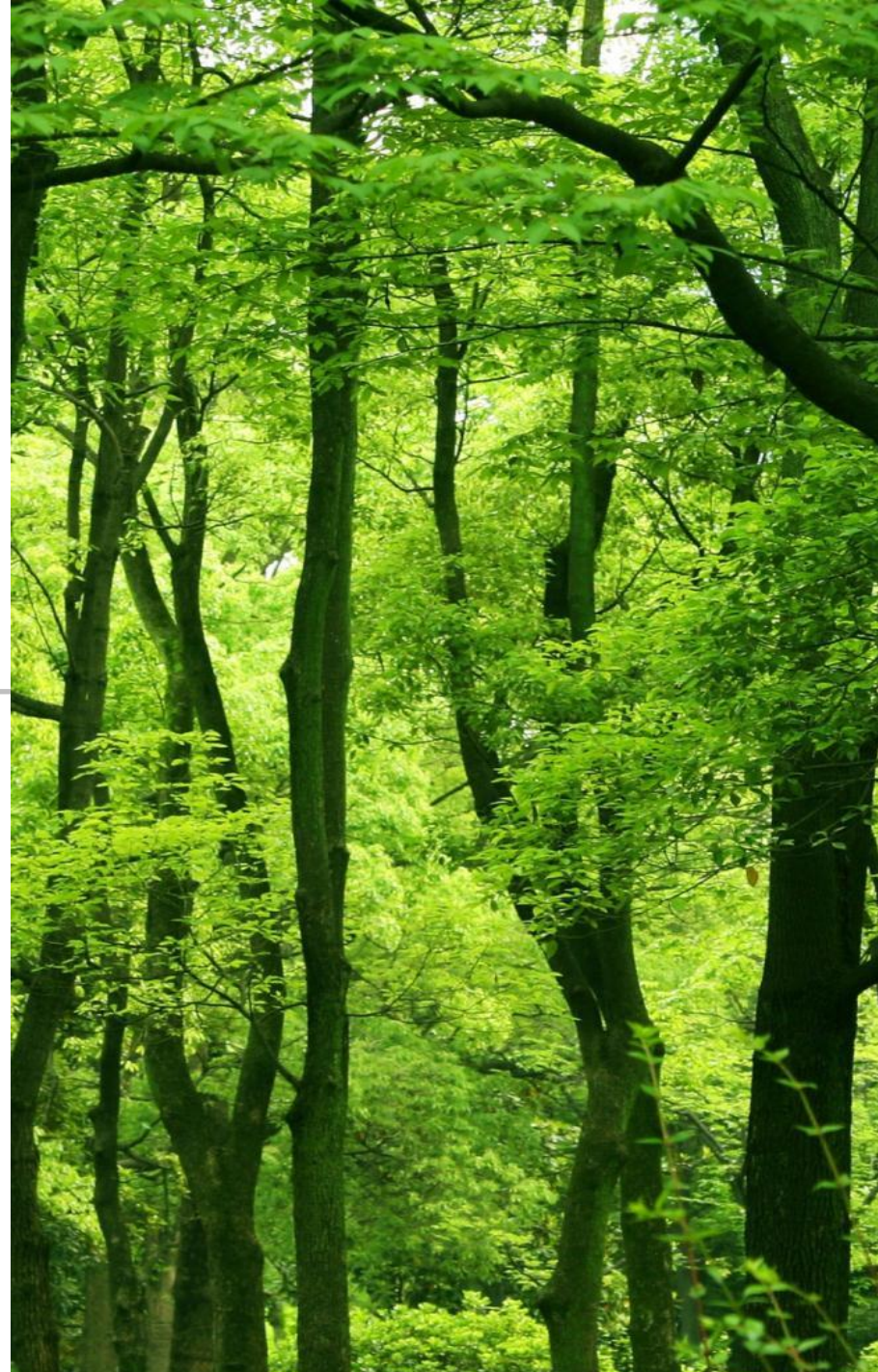
## Biodegradable

塑膠微纖與廢棄紡織品  
的解決方案



## Excellent Performance

複合機能  
效能持久



# Upcycled Eco-Footwear

根據Allied Market Research 預估針織鞋市場，  
2025年市場規模將達到 319.5 萬美元

The global shoe with knitted upper market size is estimated to reach \$3,195.1 million in 2025.(Allied Market Research)

Tencel™	Loycell	吸濕透氣，纖維表面圓滑與飽滿，親膚舒適。 Incredible absorption characteristics, and gentle for skin.
Refibra™	Loycell	30%來自製程中的回收廢棉。 Up to 30% of pulp made from upcycled cotton scraps.
rPET	PET	寶特瓶回收環保纖維，可提供GRS交易證。 GRS certificate is available upon request.
Seawool	PET	寶特瓶回收聚酯，添加奈米研磨與鍛燒的回收牡蠣殼。 具羊毛手感、保暖速乾。 Made of recycled PET bottles and recycled oyster shells.
大麻纖維 Hemp	Natural	生長迅速，相較於棉花種植過程更環保。高吸放濕特性涼爽舒適。 Grows quickly and is even more eco-friendly compared to cotton. Absorbs and discharges moisture brilliantly.

LENZING™, TENCEL™ and Refibra™ are trademarks of Lenzing AG.

# 環保鞋材應用 Eco-Footwear

Upper



Refibra™ x Recycled PET

製程廢棉再生Lyocell  
保特瓶回PET環保紗線

Upcycle | Breathable

Upper



Seawool Recycled PET x Cotton

奈米研磨與鍛燒牡蠣殼結合  
保特瓶回收PET紗線

Upcycle | Odor Absorbing

Lining



Tencel™ x Polyester

Tencel™ 優異的溼度調節  
功能運用於鞋內襯

Moisture Management



# Biodegradable

每洗一次衣服，有70萬條塑膠微纖維<sup>註1</sup>釋放到環境裡  
人工合纖占海洋微塑膠污染的1/3，為最大的污染來源<sup>註2</sup>  
未經可降解技術處理聚酯需 450年以上才可完全降解。

Each cycle of a washing machine could release more than 700,000 microscopic plastic fibres into the environment.

Polyester never treated with degradation technology, needs at least 450 years to complete degradation.

圖片Source:Pexels

註1：微纖維 (Microfibers) 的定義長度則是少於 5 毫米。肉眼幾乎不可見

註2：引用 International Union for Conservation of Nature，2019

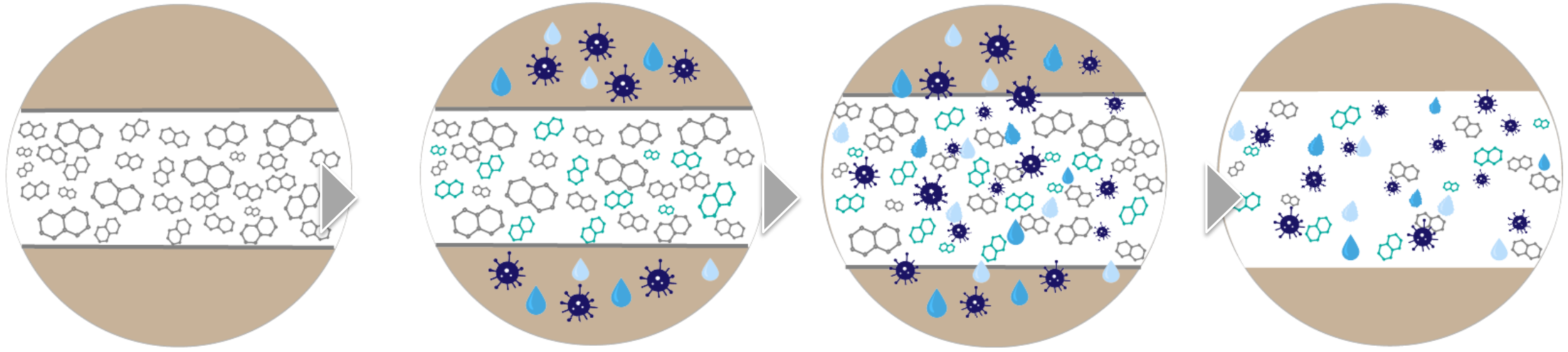


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# 生物降解機制

## Mechanism of Biodegradation

In landfill : Convert into CO<sub>2</sub> & CH<sub>4</sub>  
 In marine : Convert into H<sub>2</sub>O & CO<sub>2</sub>



初始  
Initials

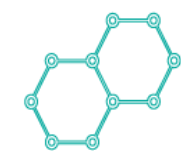
吸引微生物  
Attracting Microbes

進入纖維/膨潤  
Penetrate Expand

分解至完全分解  
Degradation



分子鍊  
Polymer Chain



生物分解添加劑  
Additive of Biodegradation



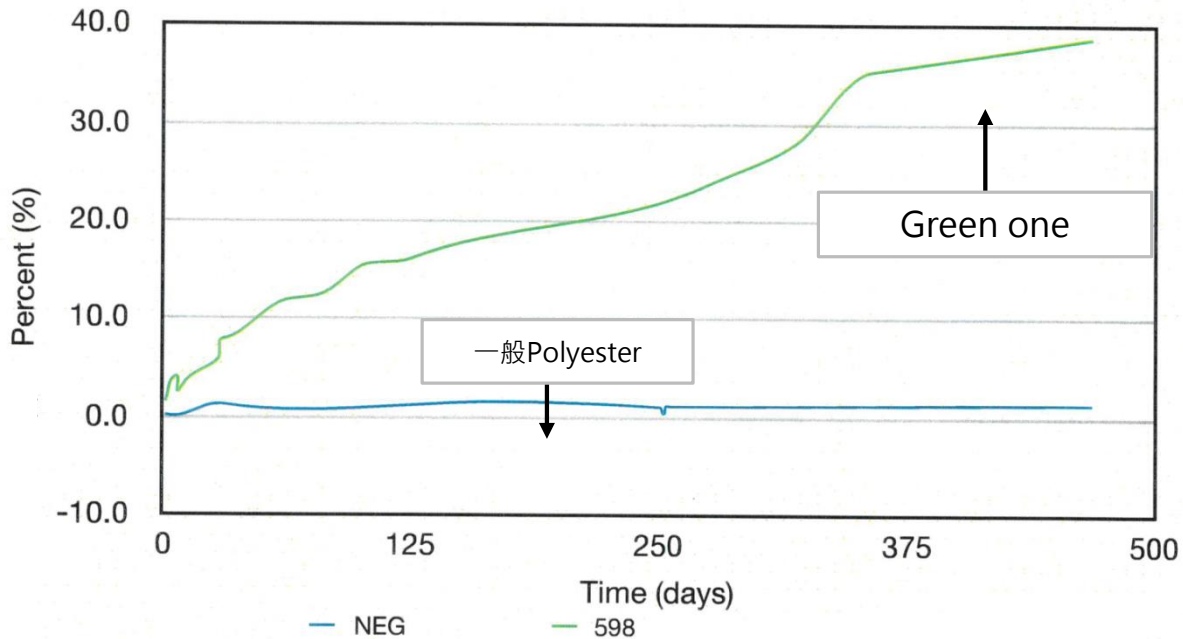
微生物  
Microbe



水分子  
Water

## 模擬厭氧土壤環境 測試法 ASTM D5511 Landfill environment ASTM D5511 test standard

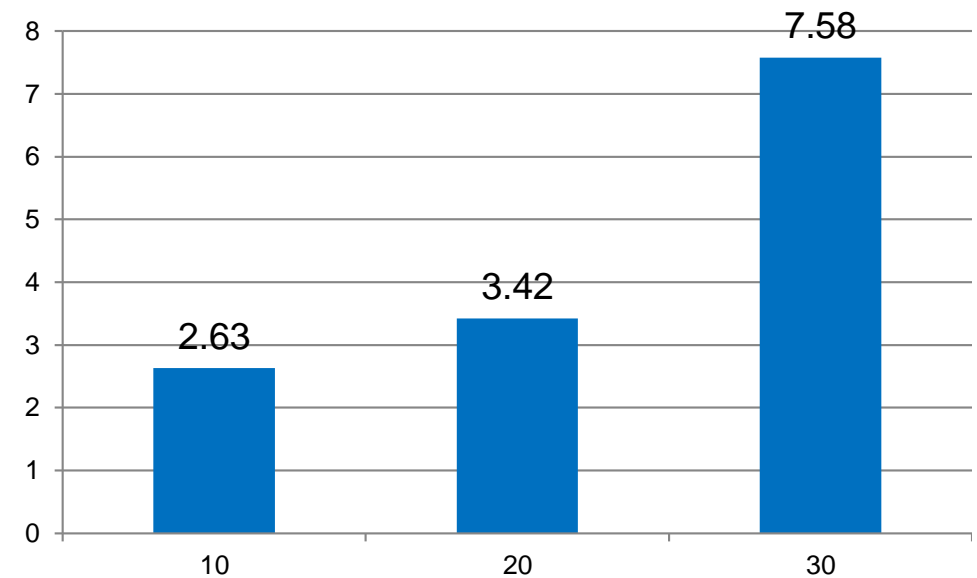
Biodegradation



- 468天降解率可達40.2%
- 在土壤環境中分解為CO<sub>2</sub>及CH<sub>4</sub>
- Biodegradation rate after 468 days reached 40.2%
- In a landfill environment, the fiber degraded into CO<sub>2</sub> and CH<sub>4</sub>

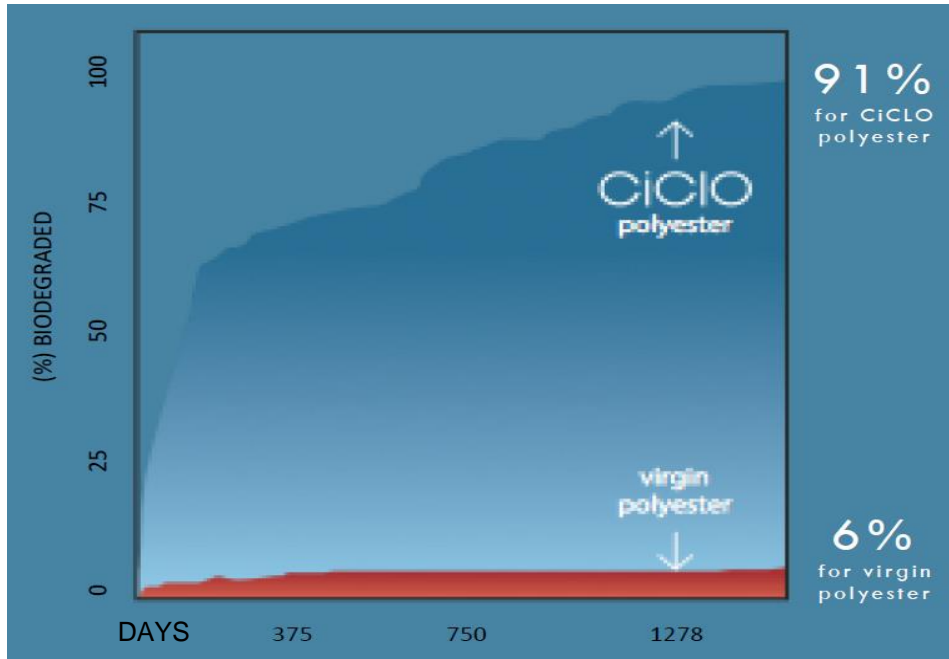
## 模擬海洋環境 測試法 ASTM D6691 Marine environment ASTM D6691 test standard

Degradation(%)



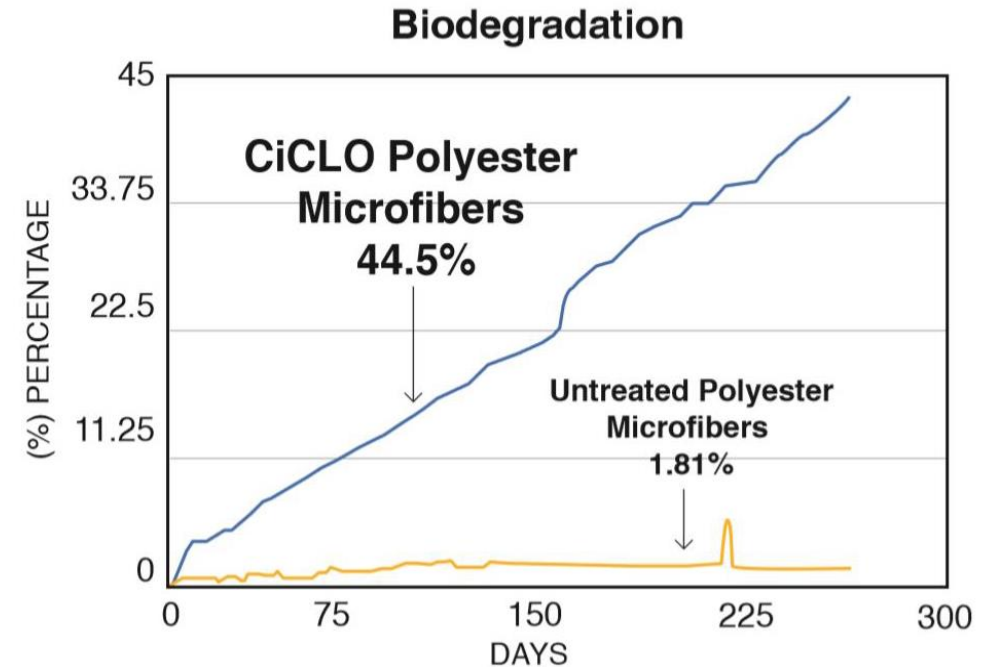
- 30天降解率7.58%
- 在海洋環境中可分解為H<sub>2</sub>O及CO<sub>2</sub>
- Biodegradation rate after 30 days was 7.58%
- In a marine environment, the fiber degraded into H<sub>2</sub>O and CO<sub>2</sub>

## 模擬厭氧土壤環境 測試法 ASTM D5511 Landfill environment ASTM D5511 test standard



- 1278天降解率可達91%
- 在土壤環境中分解為CO<sub>2</sub>及CH<sub>4</sub>
- Biodegradation rate after 468 days reached 40.2%
- In a landfill environment, the fiber degraded into CO<sub>2</sub> and CH<sub>4</sub>

## 模擬海洋環境 測試法 ASTM D6691 Marine environment ASTM D6691 test standard



- 262天降解率44.5%
- 在海洋環境中可分解為H<sub>2</sub>O及CO<sub>2</sub>
- Biodegradation rate after 30 days was 7.58%
- In a marine environment, the fiber degraded into H<sub>2</sub>O and CO<sub>2</sub>

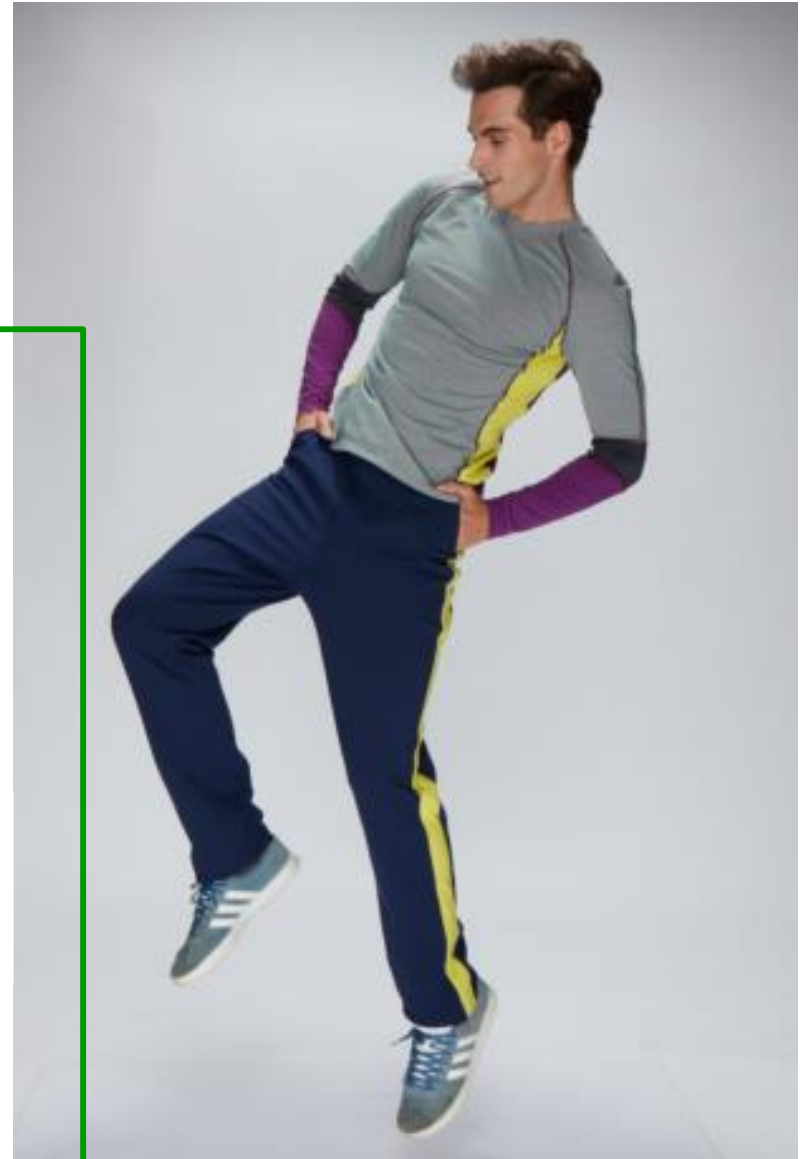
複合機能 | 耐水洗 | 親膚舒適  
Multi-functional | Durable | Comfortable

### Spandex-Free | Mechanical Stretch

PET/PTT雙組份彈性絲，自然彈力舒適保型。  
PET/PTT side-by-side bi-component fiber, Neutrally stretch, outstanding dimensional stability.

### Zinc Oxide 持久抗菌

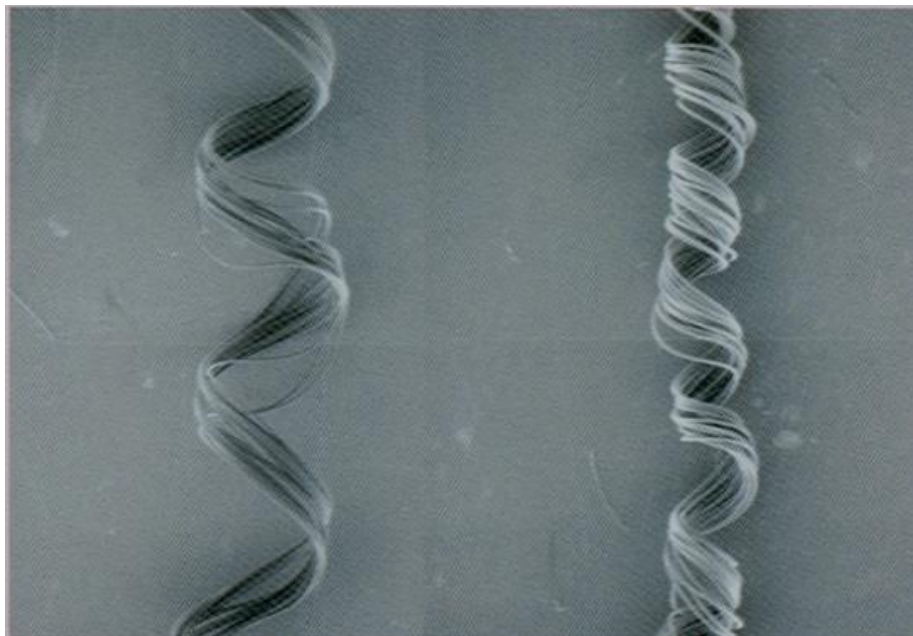
德國氧化鋅抗菌Lyocell纖維，增強肌膚防禦力。  
German technology, Lyocell Sensitive contains zinc oxides and protects the skin.





# Spandex-Free

Side-by-side bi-component self-crimping Fiber



- 雙組份彈性短纖具三維螺旋結構，可與Tencel、Ecovero、Refibra、棉、麻等纖維混紡，具舒適性與優異的彈性回復率。
- 布面彈性持久穩定，防止布面鼓包、鬆弛等缺點。
- Comfortable elasticity, brilliant touch and recovery, outstanding fabric comfort.
- Can be blended with Tencel, Ecovero, Refibra, cotton, wool, and Rayon.



rPET/ Mechanical Stretch Fiber/Ecovero



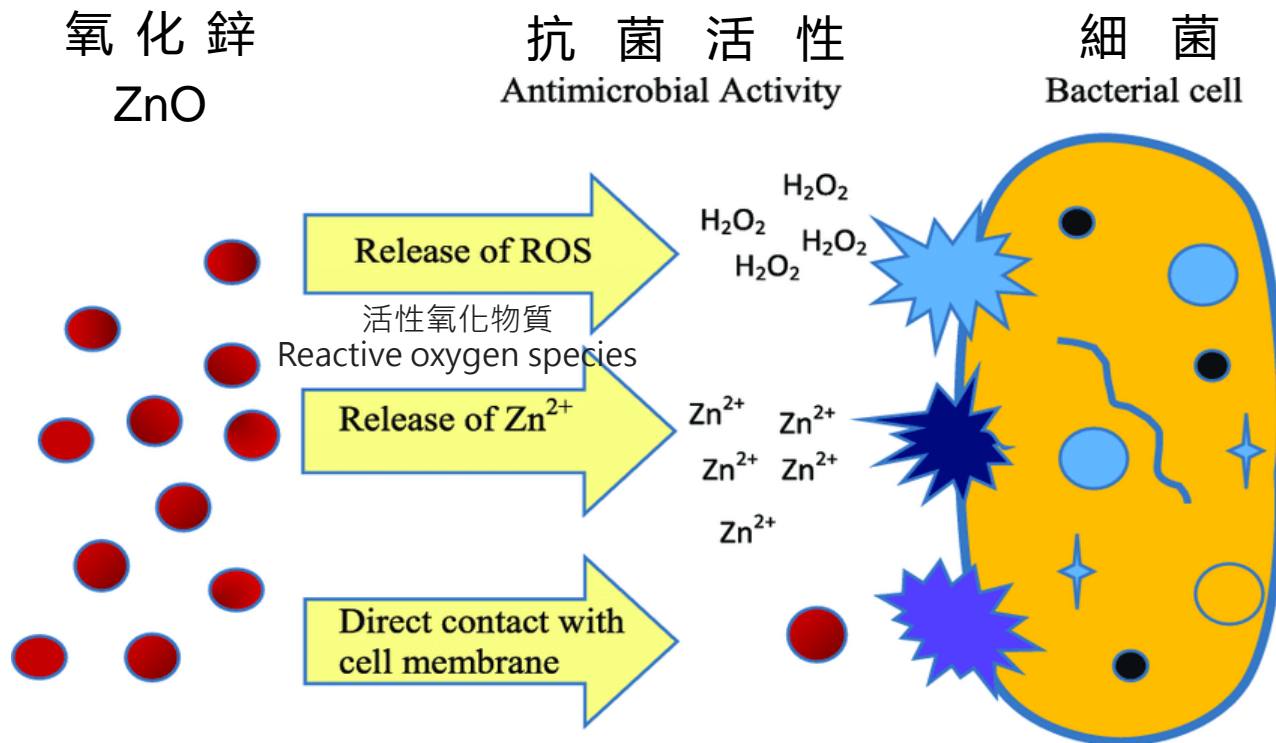
Anti-Pilling PET/ Mechanical Stretch Fiber/Tencel

# smartcel sensitive™

## Durable bacterial resistance

鋅離子進入細胞內，破壞細胞合成酶的活性，細胞喪失分裂繁殖能力而死亡。

ZnO contributes to its antimicrobial activity by decreasing amino acid metabolism and perturbing the enzymatic system.



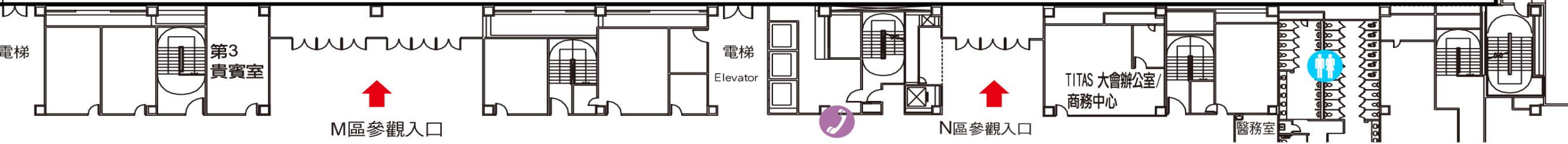
Tencel/Seacell/Sensitive/Clima

The fiber combines easily with any other fiber.

AATCC 100-2019	20 cycles
Test Items	% reduction
Staphylococcus aureus	> 99.92
Klebsiella pneumoniae	> 99.92
Fabric Content: 18% Smartcel® Sensitive	
TTRI Report No: TF908422	

M

N





全方位機能短纖紡織專家

Meet Us At  
M629a  
(紡紗公會對面)



掃QR Code 瀏覽線上型錄



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