



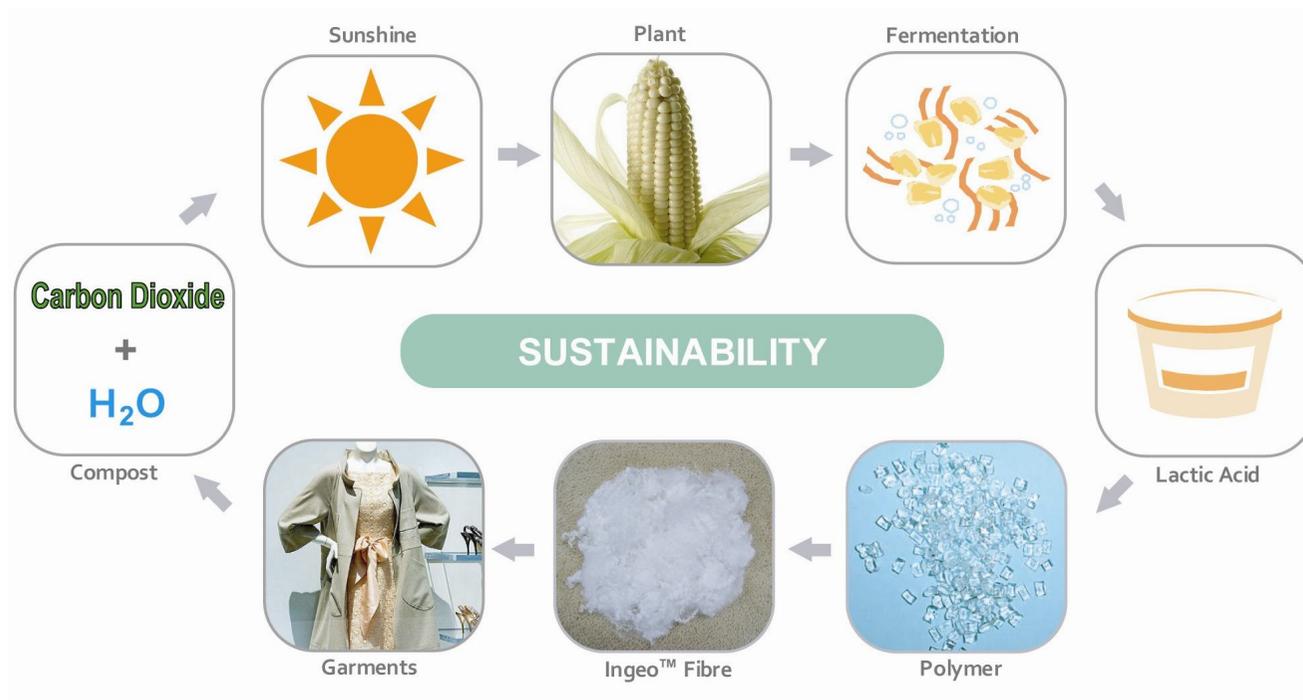
Natural selection
ingenious material made from nature

The world's first man-made fiber from 100% annually renewable resources.



What is Ingeo™(PLA) ?

Production and Life Cycle



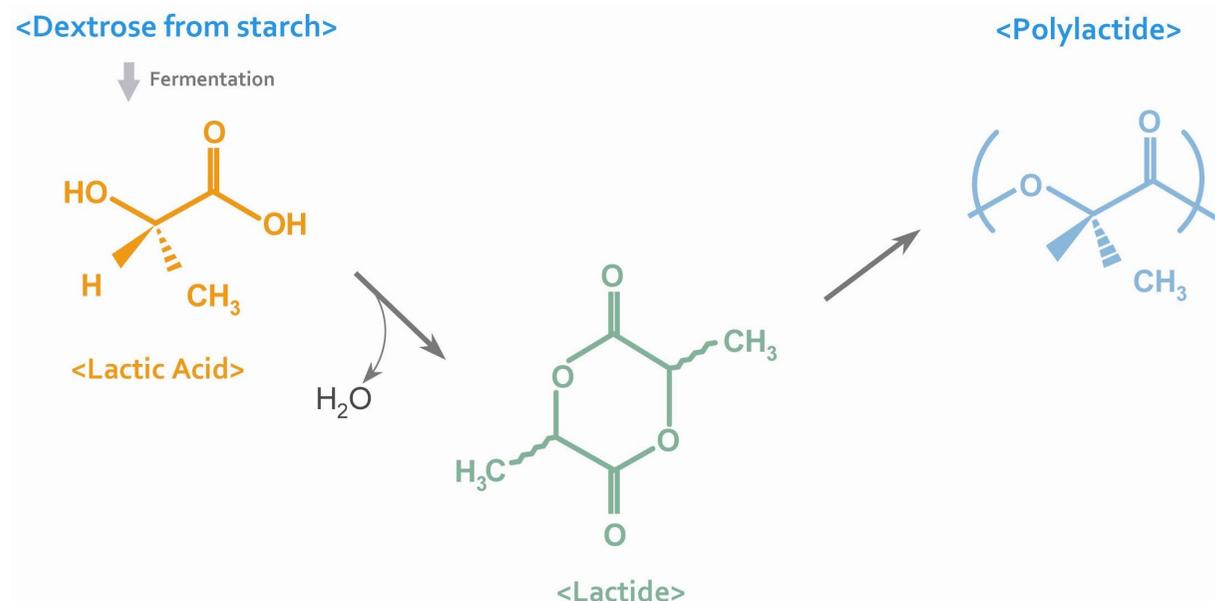
The only man-made fiber derived 100% annually renewable resource → not oil

Ingeo™ means : **I**ngredients from the Earth
geo = greek for earth



What is Ingeo™(PLA) ?

How we extract / use the carbon

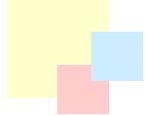


▶ High technology fiber from nature :

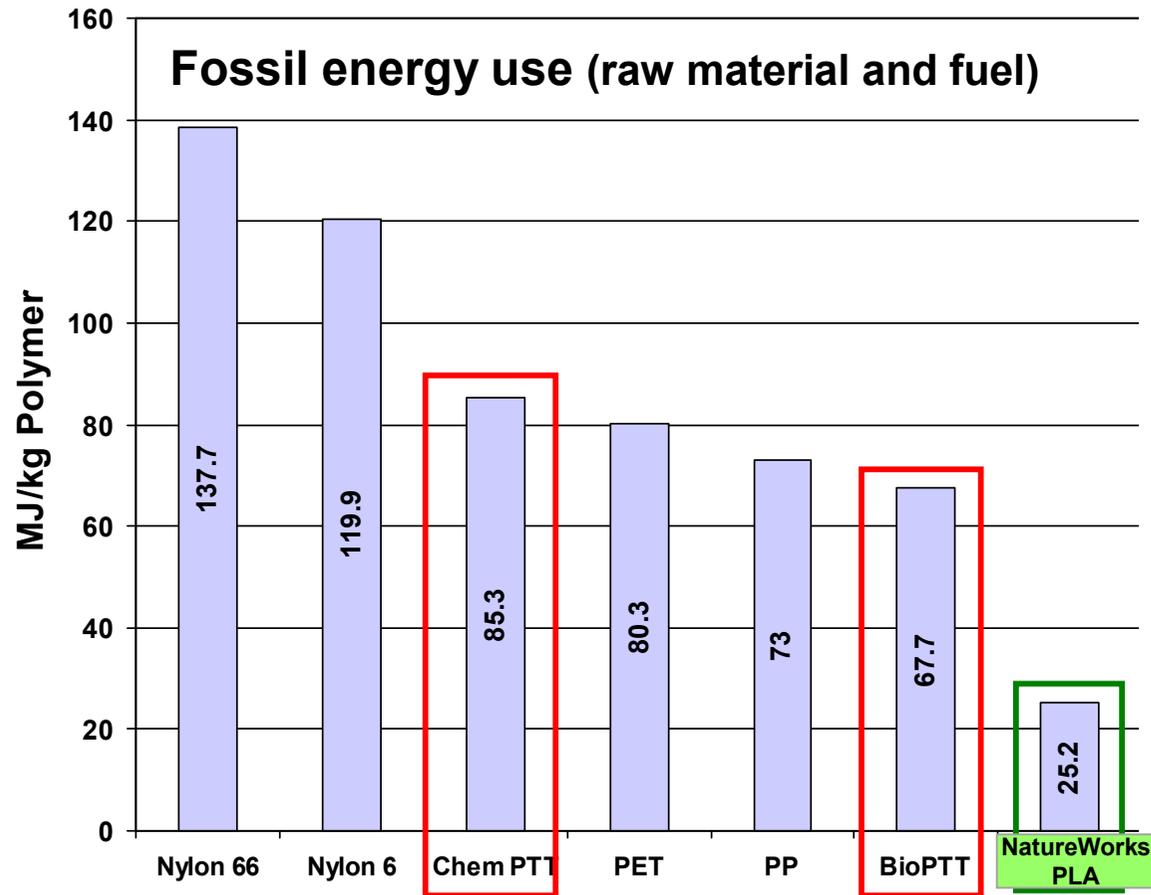
- Natural, annually renewable raw material
- Natural processes

* Fermentation * Water * Heat

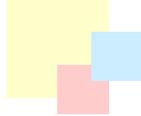
- Composts to ingredients which can help to grow more raw material



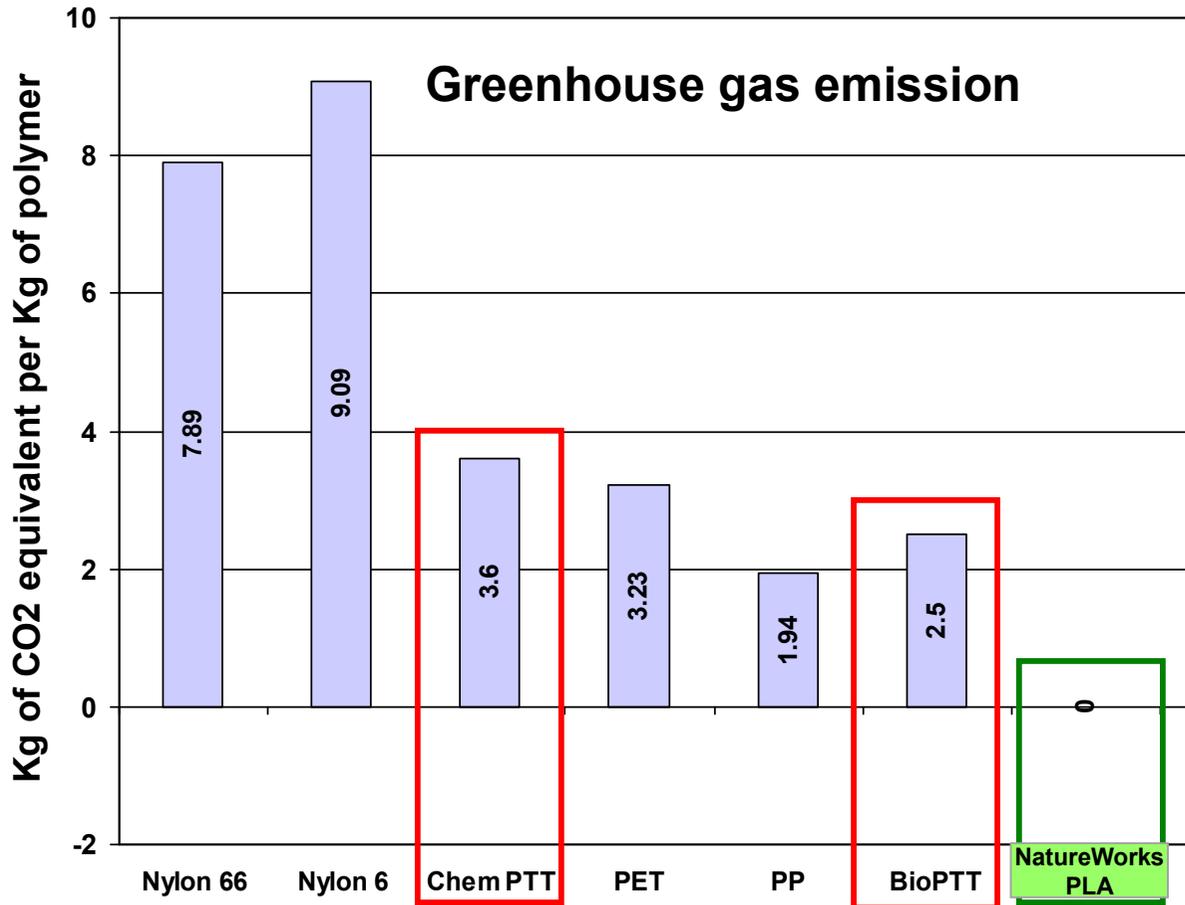
The environment - production input



PLA uses less fossil fuel from raw material to final polymer than any of its incumbents



The environment - production output



PLA gives significantly less greenhouse gas emission from raw material to final polymer than any of its incumbents



Features and Additional Performances

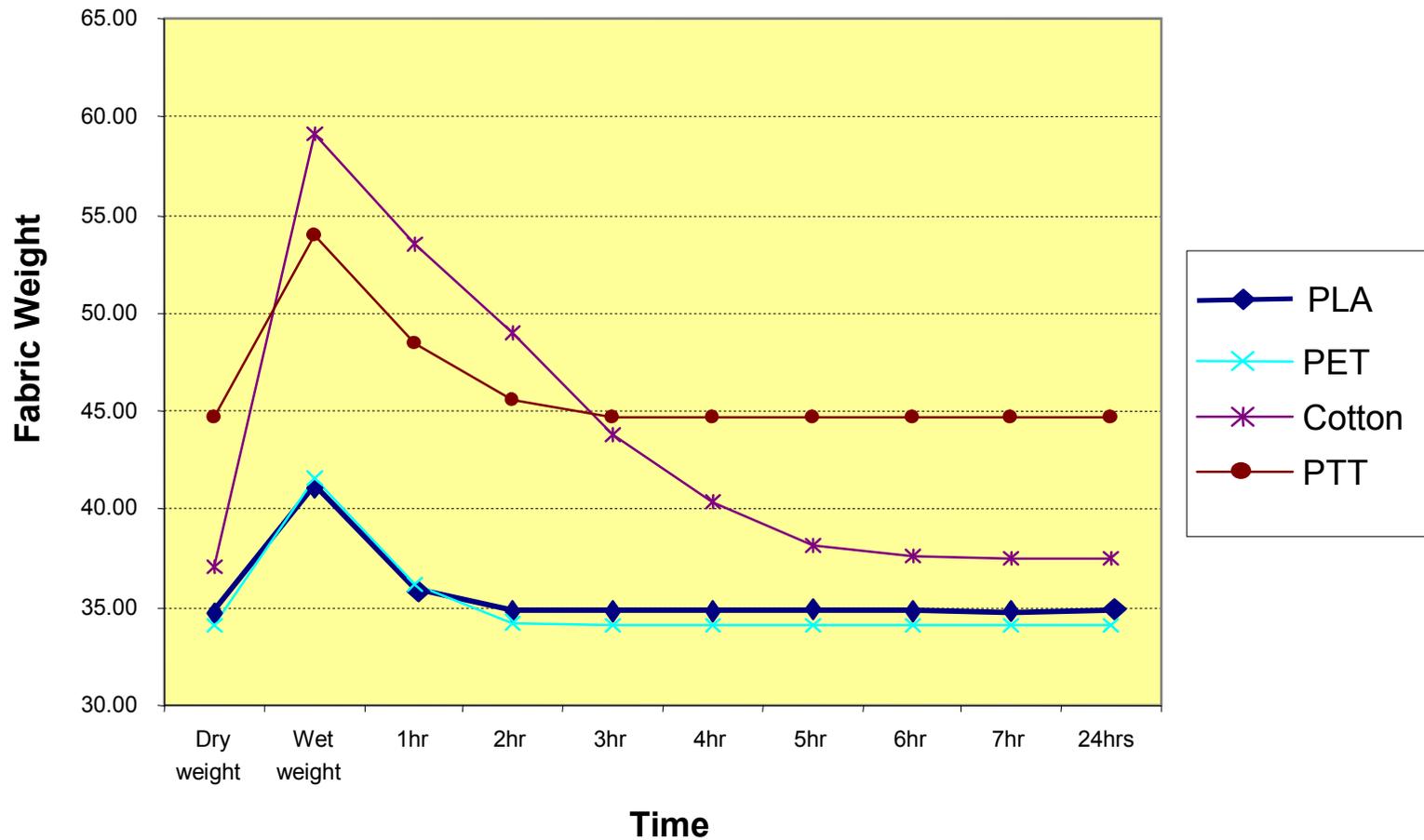
Features	Sustainability-plus performances	
Fiber from 100% plant	<ul style="list-style-type: none">▪ Excellent wicking properties▪ Moisture management	Comfort
Bio-degradable	<ul style="list-style-type: none">▪ Low odor retention	Fresh
No skin irritation	<ul style="list-style-type: none">▪ Does not support bacterial growth▪ Hypoallergenic	No skin irritation
Silky Luster	<ul style="list-style-type: none">▪ Rapid soil release▪ Quick drying▪ Excellent after wash appearance	Easy Care
Multi Functional		
Flame retardant	<ul style="list-style-type: none">▪ Difficult to ignite▪ Low heat of burning▪ Low smoke emission	Fire safety regulations



Features and Additional Performances

Superior drying rate

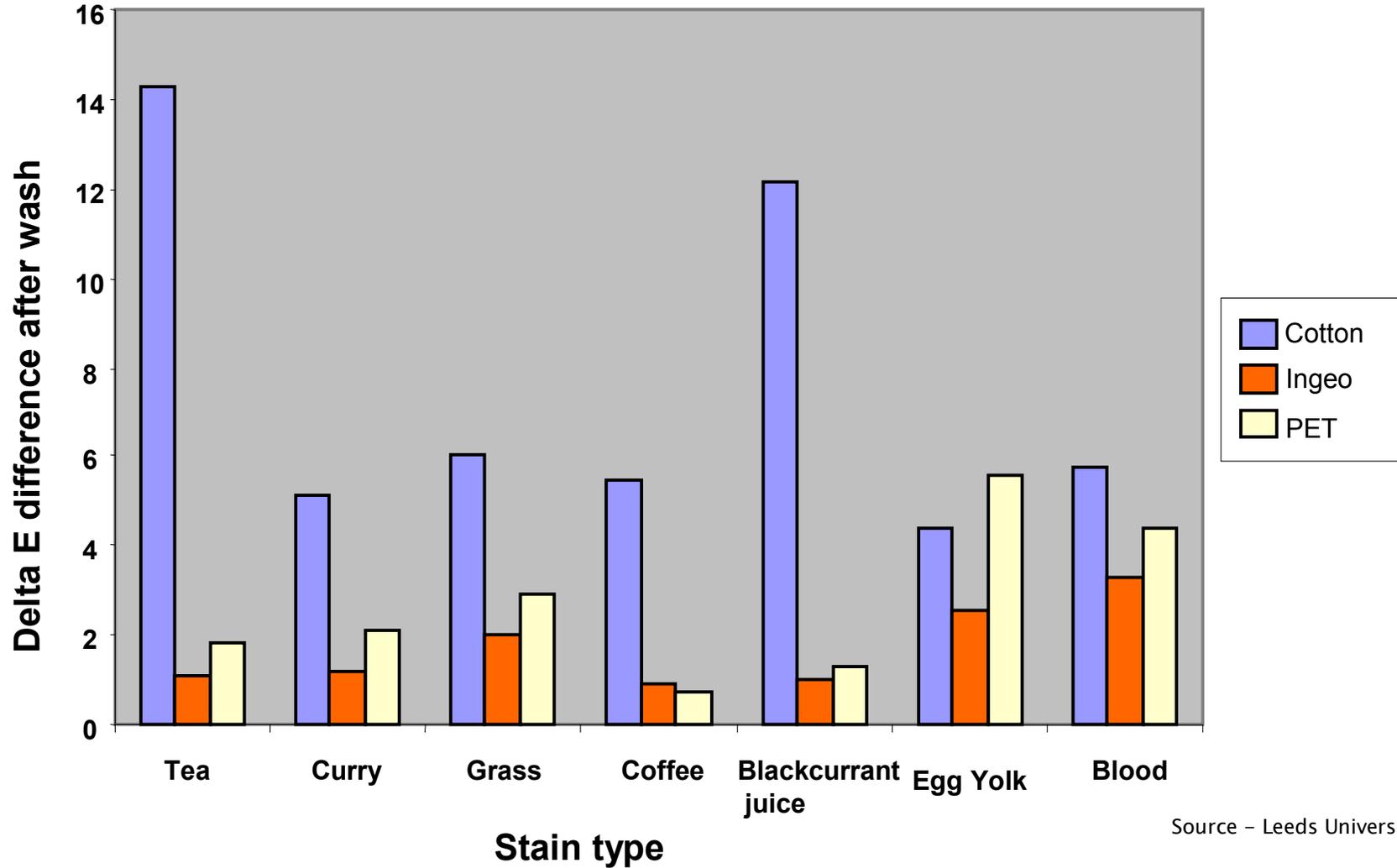
Drying Times





Features and Additional Performances

Superior stain release



Source - Leeds University



Features and Additional Performances

Comparison with Soybean and Bamboo

Fabric - Ne30, .bird's eye pique, 230gsm

Technical Bulletin 160504

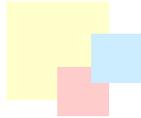
Test		Ingeo fibre	Soy	Bamboo
Wash & tumble dry shrinkage (%) AATCC 135 - 2004 IIIA	1 wash width	+0.0	-1.5	+3.5
	1 wash length	-1.3	-13.8	-15.5
	3 wash width	+0.2	-2.3	+4.8
	3 wash length	-2.2	-15.0	-17.2
Appearance after 1 and 3 washes		Satisfactory	Unsatisfactory	Unsatisfactory
Time to total dry after spin dry (hour)*		2	24	24
Pilling (ASTM D3512)		4.0	3.0	3.5
Wicking (Modified STR-TP-118) Distance in mm, after 5 min (width/length average)		15.8	1.5	7.5
Flammability (16 CFR 1615 / 1516) Char length, inch (width/length average)	Original	4.7	10+	10+
	50 x washing	4.6	10+	10+

Ingeo™ fibre has superior performance:

- Wash shrinkage
- After wash appearance
- Drying time
- Pilling
- Wicking
- Flammability

	Better
	Worse
	Similar

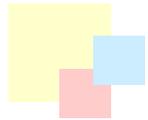
*Tested by University of Bolton, UK
All other tests by Specialised Technology Resources (HK) Ltd



Care claims

U.S.A

	Machine Wash Cold, Normal Cycle, 30°C / 85°F
	- or -
	Hand Wash Cold, 30°C / 85°F
	- or -
	Dry clean
	Non-Chlorine Bleach When Needed
	Tumble Dry, Permanent Press, Medium Heat
	Do Not Iron
	- or -
	Iron, Low Heat (110°C / 230°F)



Ingeo™ fibre apparel Guideline Specifications and Test Methods

Property	Test Method	Specification
Wash shrinkage - jersey	AATCC 135-01, IV Aiii	+/- 6%
Pilling	ASTM D3512	3 - 4
Burst Strength	ASTM D3787	65lb-f
Light Fastness	AATCC 16E, 20 hr	4
Washing Fastness	AATCC61 I A, 40 °C	3 (change) 3 - 4 (stain on nylon)
Rubbing Fastness	AATCC 8	3 - 4 (wet) 3 - 4 (dry)



Ingeo™ Apparel Adoptions



PIERLUIGI FUCCI



A-STYLE



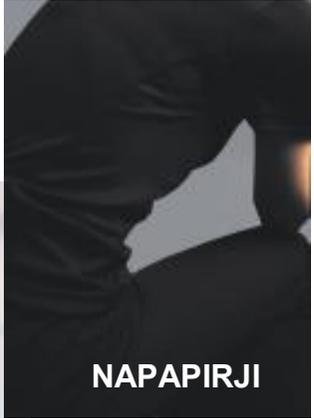
TWIN CITY



COPCOPINE



VERSACE SPORT



NAPAPIRJI



DOCARE



BAGUTTA



BILANCONI



ARMANI



Apparel Hang Tags



- Underwear/Outwear pure and blend hang tags
- Multilanguage hang tags
- Available to order with the proper order form
(considering 15 days for the delivery)



Summary

- **Ingeo™ fibre products:**
 - **Have sustainability**
 - **Have performance**

} **To meet today's market demands**
- **Ingeo™ fibre products:**
 - **Can be easily processed from fibre to end products**
 - **On existing machinery**
 - **With conventional processing**
 - **Simple technical guidelines available**
- **Using these guidelines, commercial products are now on retail counters globally**