

Zinc+Cel

Be Well Yarns



ANTI-BACTERIAL



ANTI-ODOUR



MOISTURE
MANAGEMENT



SOFT
TO SKIN



STRETCHABLE

PERMA™. The Permanent Anti-Bacterial nZnO Polyester Cut Fibre

- Part of The JK Group -- Thailand's leading textiles group in Asian industrial for over decades – Perma Corp. has launched in July 2016, polyester fibre engaging their Nano Zinc Oxide technology in the brand name PERMA™.
- The Permanent Anti-Bacterial nZnO Fibres, which is the future solutions for those who concern life improvement - PERMA™ products are environmentally friendly and will provide the added value for people.
- **How it works**
 - A potential Nano Zinc Oxide a key material is embedded into the fibre via in-house technology. This results in creating the permanent anti-bacterial fibre for hale and hearty purpose.
 - This state-of- art technology also shows that this permanent ability helps to eliminate the growth of Staphylococcus aureus and Klebsiella pneumoniae. These two bacteria cause malodour, skin diseases, allergies, and other respiratory diseases. This functionality has been proven by international lab testing

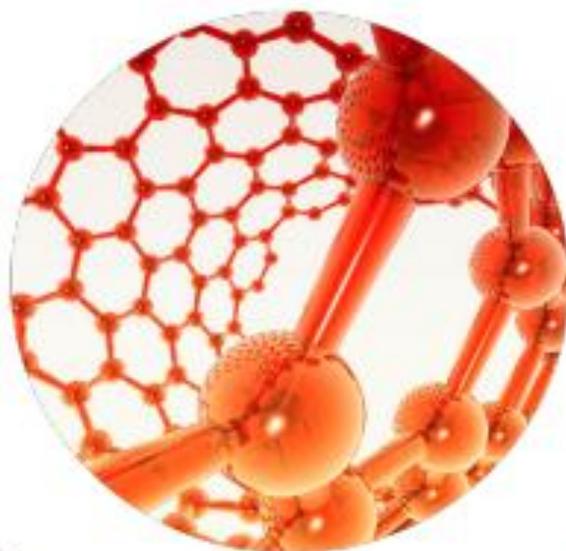
• FIBRE Properties

- Anti-bacterial, and Anti-Odour
- Moisture management
- Skin care function
 - Cytotoxicity Prove – under ISO 10993:5-2009 has been proved that Perma fibre are Nontoxic/Cytotoxicity
- UV Protection: UPF 40+
- Eco-friendly
 - FDA approval
 - Oeko-Tex standard 100
 - Non coated / Non Dilute

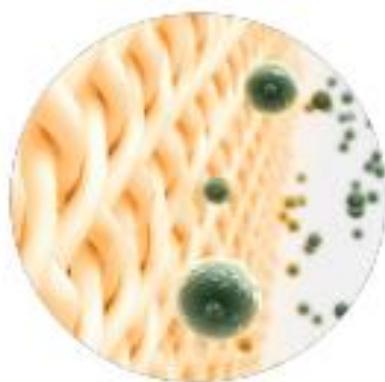


**Perma Nano Zinc Oxide Polyester
Cut fibre – 1.3D x 38mm**

Why Nano Zinc Oxide?



FDA U.S. FOOD & DRUG
ADMINISTRATION

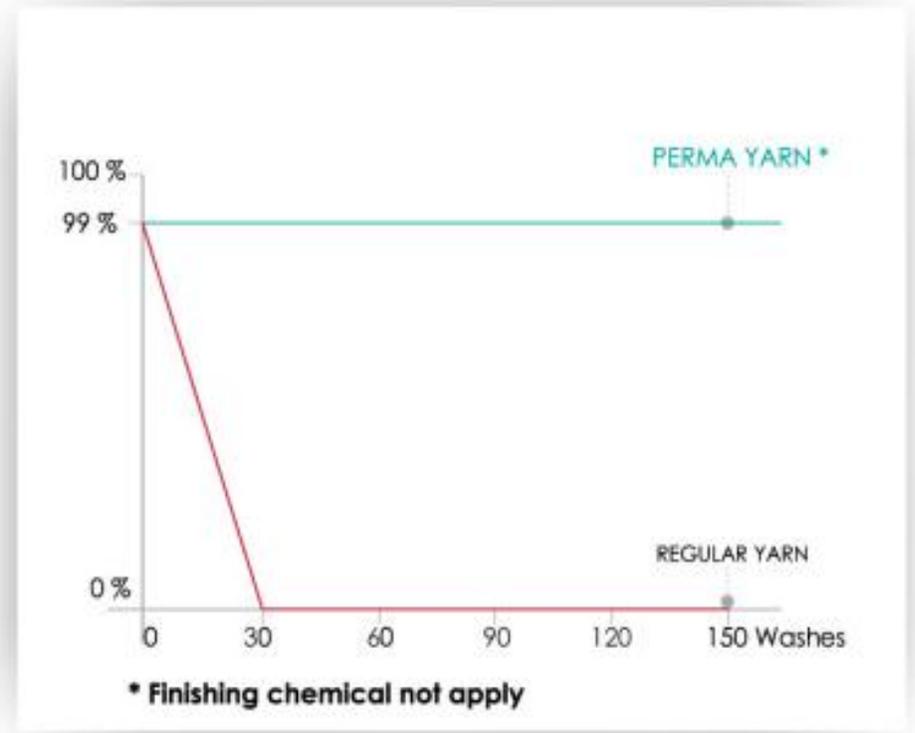
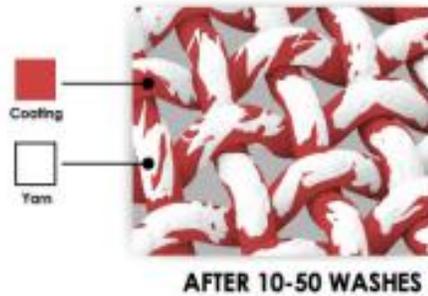
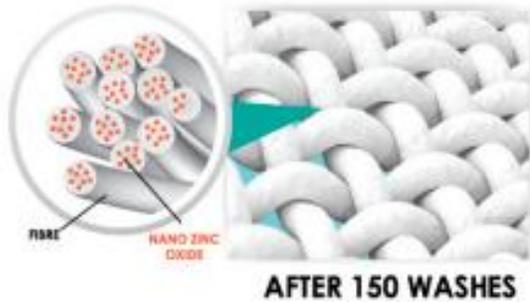
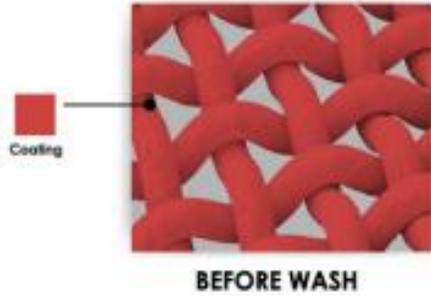
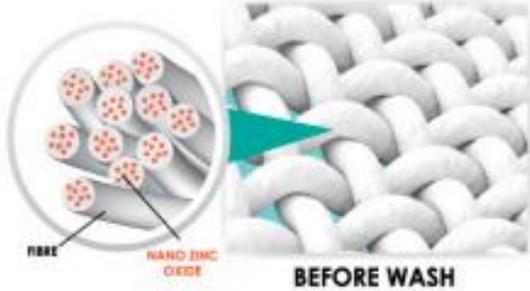
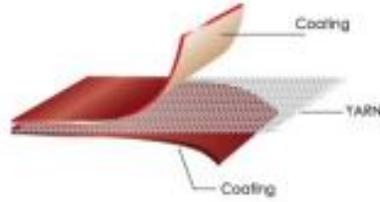
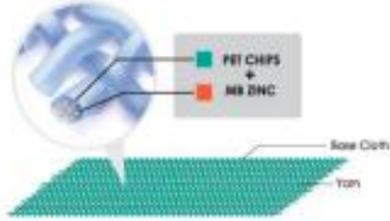


ANTI-BACTERIAL
Less Odor



NON TOXIC
On normal human HEK
cells (@20K PPM)

PERMA VS COATING



AFTER 150 WASHES



% REDUCTION (R)
>99.94

ZnSOCK

ZnMASK

MORIRIN
The Standard



PERMA KNIT FABRIC

SOCKS &
REUSABLE MASKS – NO LAND FILL

ZINC POLYESTER 38%
BAMBOO Viscose 57%
SPANDEX 5%
SINGLE JERSEY KNIT FABRIC

கிருமிபோ! KirumiPo! किरुमी पो!

REUSABLE FACE MASK



**Nano-ZINC Polyester & Bamboo Viscose
Blended Antibacterial Stretch Fabric**



Anti-bacterial



Anti-odour



Anti-UV



Soft to Skin



Eco Friendly



Stretchable



Washable

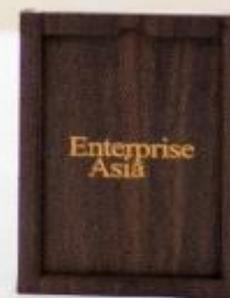


Reusable

****Recommended Usage:**

- ✓ Must contain Perma™ fibre to base fibre at least 30% on finished fabric
- ✓ No added oiling base of chemical into Yarn or Fabric





Awards :



UV-PROTECTION

TEST CONDUCTED (AS REQUESTED BY THE APPLICANT)

1. LABELING OF UV-PROTECTIVE TEXTILES#

AATCC 183-2014 ;
INSTRUMENT USED: CARY 100 CONC
WAVELENGTH RESOLUTION: 2 NM
SOLAR SPECTRUM IRRADIANCE USED: NOONDAY, JULY 3, SUNLIGHT, ALBUQUERQUE, NM.
NO. OF SCANS: 6
THE SAMPLES ARE TESTED IN DRY AND RELAXATION STATE.

	(A)	Requirement
THE MEAN ULTRAVIOLET PROTECTION FACTOR, UPF:	35.822	-
THE UV-A TRANSMITTANCE, T(UV-A):	8.843%	-
THE UV-B TRANSMITTANCE, T(UV-B):	1.974%	-
PERCENT UV-A BLOCKED:	91.157%	-
PERCENT UV-B BLOCKED:	98.026%	-
	(B)	Requirement
THE MEAN ULTRAVIOLET PROTECTION FACTOR, UPF:	44.328	-
THE UV-A TRANSMITTANCE, T(UV-A):	6.573%	-
THE UV-B TRANSMITTANCE, T(UV-B):	1.593%	-
PERCENT UV-A BLOCKED:	93.427%	-
PERCENT UV-B BLOCKED:	98.407%	-

REMARK:
#THE TEST WAS CONDUCTED BY SUBCONTRACTOR.

END OF THE TEST REPORT

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REGULAR TK 32

ULTRAVIOLET PROTECTION 35.822

PERMA ZTK 32

ULTRAVIOLET PROTECTION 44.328

品質検査報告書 QUALITY TESTING REPORT

Ver.102



項目	Item	試験方法	Test Method	1	2	3	4	5	6
検査結果 Test Result	抗菌試験 Antibacterial Test	JIS L 1902 黄色ブドウ球菌 Staphylococcus aureus	抗菌試験 Antibacterial Test	4.3					
	抗菌試験 Antibacterial Test	JIS L 1902 肺炎桿菌 Klebsiella pneumoniae	抗菌試験 Antibacterial Test	5.5					
	抗菌試験 Antibacterial Test	JIS L 1902 MRSA Methicillin resistant	抗菌試験 Antibacterial Test	5.6					

納入先 Buyer	会社名 Name	
	地区・店名 District/Store Name	
納入者 Seller	会社名 Co. Name	Perma Corporation Co.,Ltd.
	住所 Address	311 2nd Floor Soi Chotevachongkhamroon Rama3 Rd. Bangproeng, Yamaeo, Bangkok 10120 (TEL.) 02-6591999, 081-9078541

JIS L 1902 黄色ブドウ球菌 Staphylococcus aureus	洗濯前 Before wash	
	洗濯10回後 After 10 wash	4.3
JIS L 1902 肺炎桿菌 Klebsiella pneumoniae	洗濯前 Before wash	
	洗濯10回後 After 10 wash	5.5
JIS L 1902 MRSA Methicillin resistant	洗濯前 Before wash	
	洗濯10回後 After 10 wash	5.6

備考 Remark:

(値) : Grade, 変色 Change in colour, 汚染 Staining, | : 液体汚染 liquid contamination



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BOKEN QUALITY EVALUATION INSTITUTE
バンコク試験センター
Bangkok Testing Center
SGS (Thailand) Limited

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Before: This test result is applied to the submitted sample not to the lot. Unauthorized reproduction, in whole or in part, is strictly prohibited. Test report without an official seal is invalid.



Certificate
JIS L 1902 ANTI-BACTERIAL ACTIVITY
VALUE After 10 Washes
MRSA : 5.6



Test Report 3073296

Date : 2-Oct-2015

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TEST RESULTS

Test Required : Antibacterial Finishes on Textile Materials (Quantitative) (Test 2 Bacts : Staphylococcus aureus and Klebsiella pneumoniae), Test condition
 1.Before wash
 2.After 10 washes; 40C tumble dry low
 Test Method : AATCC 100 : 2012

Before wash	
Tested Microorganism	(%) Reduction
Staphylococcus aureus (ATCC 6538)	18.75
Klebsiella pneumoniae (ATCC 4352)	0

After 10 washes	
Tested Microorganism	(%) Reduction
Staphylococcus aureus (ATCC 6538)	>99.94
Klebsiella pneumoniae (ATCC 4352)	85.00

***** End of Report *****

Tested Microorganism	(%) Reduction
Staphylococcus aureus (ATCC 6538)	>99.94

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**Quantitative Proven
 (After wash)**
 (AATCC 100) Bacteria Reduction Rate
 : *Staphylococcus aureus* > 99.94%
Klebsiella pneumoniae > 85.00%



TEST REPORT

REPORT NUMBER: G 0816/61
APPLICATION FORM No.: -
ISSUE DATE: 28/02/18
PAGE: 2/2

G 0814-1/61				CLIENT'S REQUIREMENT
ANTIBACTERIAL FINISHES ON TEXTILE MATERIALS: AATCC TM 100: 2012				
TESTED MICROORGANISM:	0 HOUR (C)	24 HOURS (A)	% REDUCTION (R)	
- Staphylococcus aureus ATCC 6538	1.8 x 10 ⁵	<100	>99.94	
G 0814-1/61 (AFTER 150 WASHES) ⁽¹⁾				
ANTIBACTERIAL FINISHES ON TEXTILE MATERIALS: AATCC TM 100: 2012				
TESTED MICROORGANISM:	0 HOUR (C)	24 HOURS (A)	% REDUCTION (R)	
- Staphylococcus aureus ATCC 6538	1.4 x 10 ⁵	<100	>99.93	

REMARK(S): ⁽¹⁾ WASHING PROCEDURE

- TEST APPARATUS : AUTOMATIC WASHING MACHINE (WHIRLPOOL MODEL 3XGSC9455...)
- WASHING PROCEDURE : NORMAL CYCLE, WASH LOAD BALLAST TYPE 1 (1.8 KG)
WASHING TEMPERATURE AT 60 ± 3 °C, TUMBLE DRY LOW
- TYPE OF DETERGENT : 1993 AATCC STANDARD REFERENCE DETERGENT
- TOTAL MASS OF THE SPECIMENS AND LOADING FABRICS : 1.8±0.1 KG

• ANTIBACTERIAL TESTING

- THE TEST SPECIMENS WERE STERILIZED BEFORE TESTING BY USING THE AUTOCLAVE AT 121 °C, 15 psi, 15 MINUTES.
- % REDUCTION (R) = 100 (C-A)/C
- WHERE: (A) = THE NUMBER OF BACTERIA RECOVERED FROM THE INOCULATED TREATED TEST SPECIMEN SWATCHES IN THE JAR AFTER "24 HOURS" CONTACT TIME.
- (C) = THE NUMBER OF BACTERIA RECOVERED FROM THE INOCULATED UNTREATED CONTROL SWATCHES IN THE JAR AT "0 HOUR" CONTACT TIME.



THAILAND TEXTILE INSTITUTE
สถาบันพัฒนาอุตสาหกรรมสิ่งทอ

Certificate
PAGE 2

G 0814-1/61 (AFTER 150 WASHES) ⁽¹⁾		
ANTIBACTERIAL FINISHES ON TEXTILE MATERIALS: AATCC TM 100: 2012		
0 HOUR (C)	24 HOURS (A)	% REDUCTION (R)
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ANTIBACTERIAL FINISHES ON TEXTILE MATERIALS: AATCC TM 100: 2012		
0 HOUR (C)	24 HOURS (A)	% REDUCTION (R)
1.4 x 10 ⁵	<100	>99.93

AFTER 150 WASHES

143728

การปล่อยรายงานผลการทดสอบ ไม่ว่าจะเป็นการปล่อยทั้งฉบับหรือเป็นส่วนหนึ่งส่วนใด หรือใช้รายงานผลการทดสอบปลอม เป็นความผิดทางประมวลกฎหมายอาญา

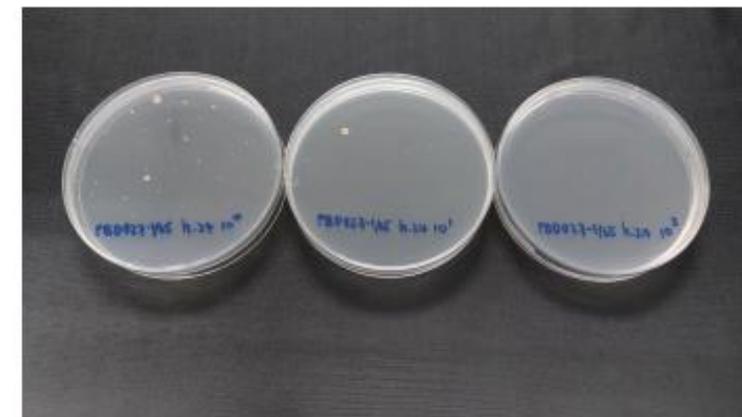
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TEST RESULTS



0 HOUR (C)



24 HOURS (A)

FIGURE 1: TEST RESULTS OF SAMPLE NUMBER PBD 027-1/65 (AFTER 3 WASHES) IN *Staphylococcus aureus* ATCC 6538.

Test Organisms used		M2200299-1	
Described by the customer : Fabric: Sock-Bamboo Viscose:48% Nano Zinc Polyester Perma:32% Polyamide:18% Polyurethene Mobilon Spandex 2%			
	No.of Swatches	Result	Bacterial Reduction(%)
<i>Staphylococcus aureus</i> ATCC 6538	1	A	99.99
<i>Klebsiella pneumoniae</i> ATCC 4352	1	A	99.99
Result : :The sample showed 99.99% antibacterial activity against <i>Staphylococcus aureus</i> ATCC 6538 and 99.99% antibacterial activity against <i>Klebsiella pneumoniae</i> ATCC 4352 when tested according to AATCC 100- 2019 test method.			

MORIRIN
The Standard



Nano-ZINC Polyester & Bamboo Viscose



ANTI-BACTERIAL



ANTI-ODOUR



MOISTURE
MANAGEMENT



SOFT
TO SKIN



STRETCHABLE

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ZINC+CEL SOCKS

Zinc+Cel

Be Well Yarns

THANK YOU

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Thailand

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