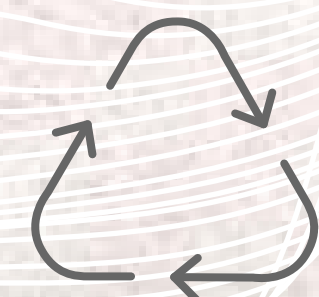


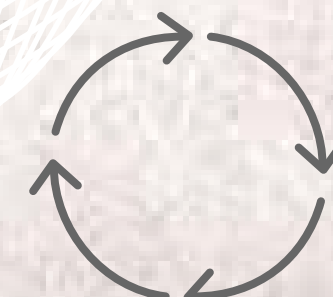


# Sustainable is **RIGHT** way.

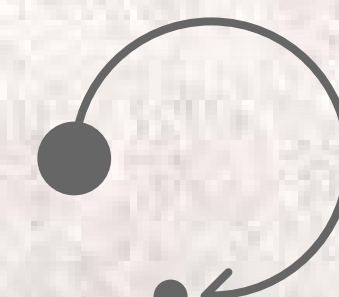
## Reuse of agricultural waste



Recycle



Reuse



Reduce



Eco-friendly



Sustainable

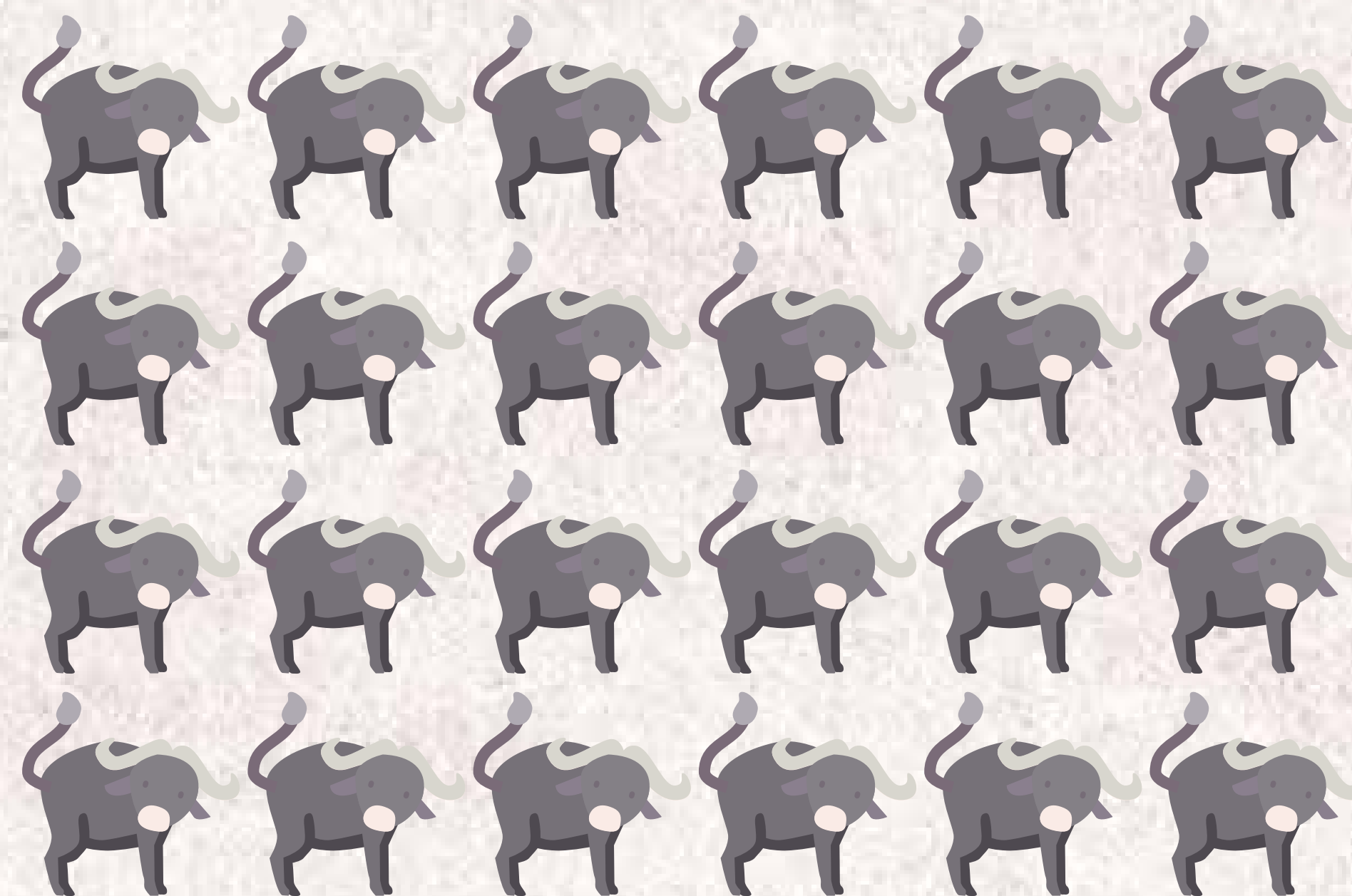




Speaking of Cacao, apart from making chocolate, do you know what else cacao can do?



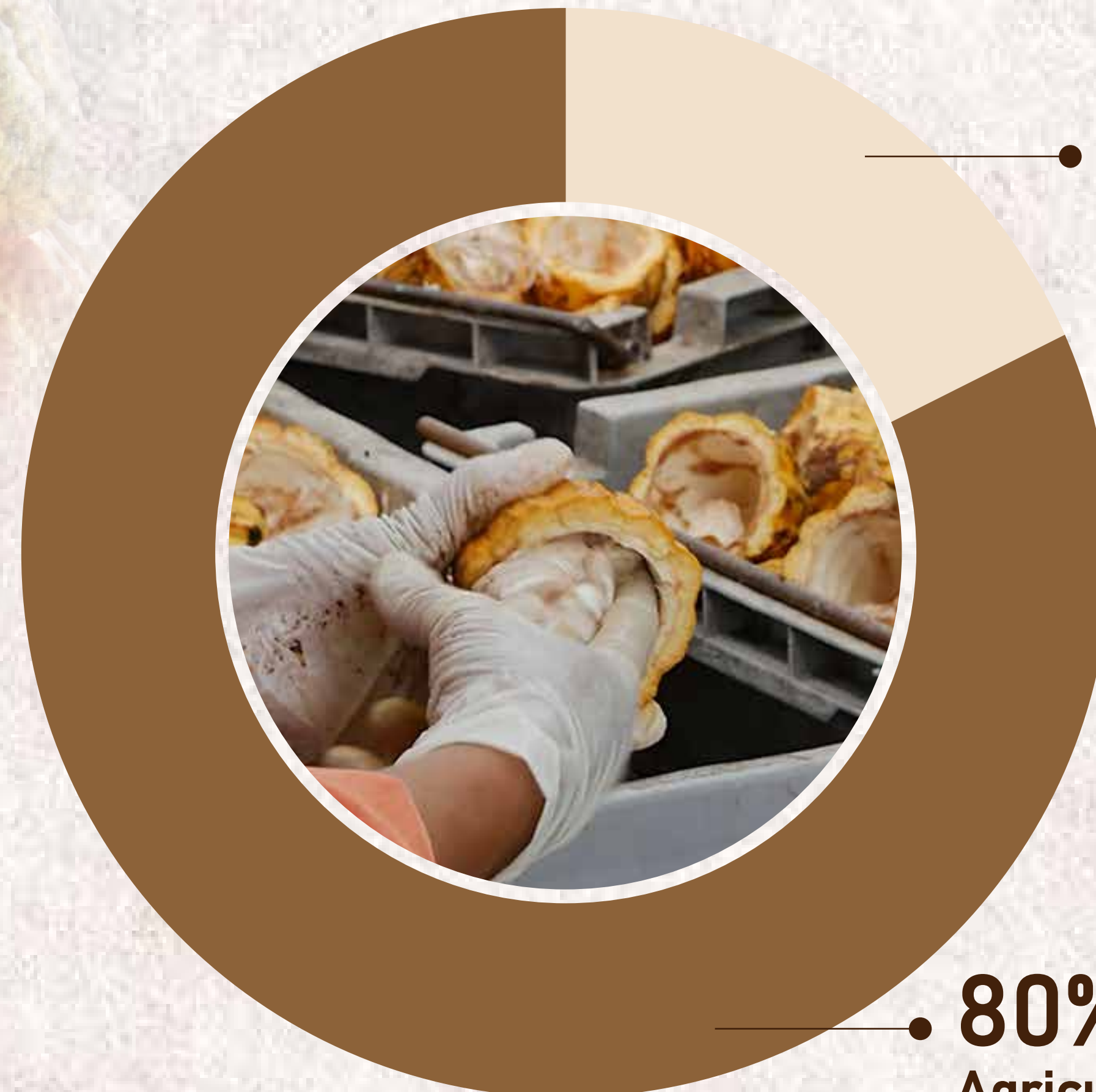
**2,000  
tons**



Every year, 2,000 tons of cacao come out of Southern Taiwan, which is a quantity equivalent to the weight of 2000 African buffaloes.



Only 20% of the pulp and seeds of cacao beans is processed, and the remaining 80% consists of the husk, which is considered agricultural waste.



• **20%**  
Pulp and seeds

• **80%**  
Agricultural waste



We have limited land in Taiwan, the rate of cacao husk composting is much slower than its growth rate, and burning it would cause air pollution...



We have finally found a way to use the waste husks as a raw material in textile technology, which has given this waste a new life in the form of Secao® cacao yarn.



#GRK5006

#GRK5015

#GRK5009

#GRK5020

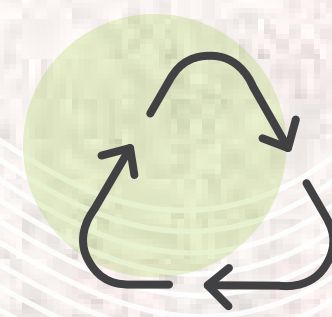


Sustainable is RIGHT way.

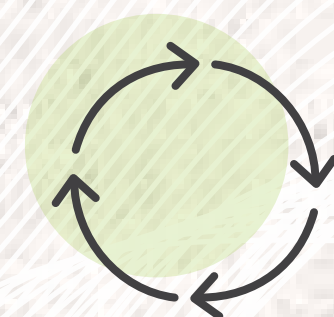
## Production Process

To ensure our whole process are both reliable and Eco-friendly, 100% of our cacao shells are from local organic agricultural industries in Taiwan. With modern textile technology, it makes a madness idea like turning cacao shells from waste into yarn come true.

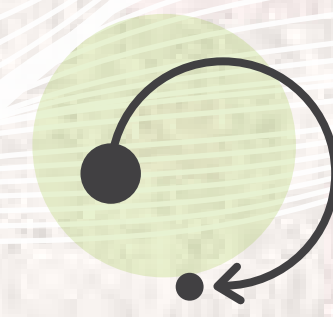




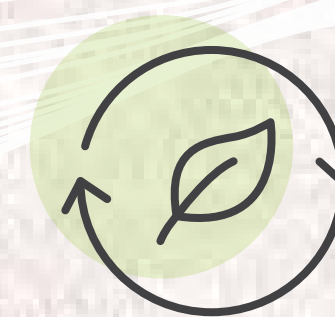
Recycle



Reuse



Reduce



Eco- friendly



Sustainable

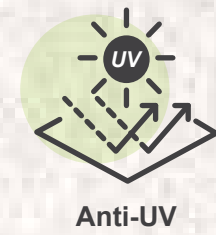
To reduce the impacts of environmental and climate change, GrandeTex devoting into create Sustainable yarn & fabrics, which can ensure longer lifetimes, better use of materials, and better options for reuse and recycling.

To extend the value of cacao, and achieve truly sustainable cycle. Cacao turns not only cacao, but something we can rely on in our everyday life.





# Additional features



Anti-UV



Anti-odor



Wicking



Anti-bacterial

**GRANDE TEX**  
Functional Textile Expert



**intertek**  
Total Quality. Assured.

## Test Report

Number: TWNT01981595

Tests Conducted (As Requested By The Applicant)

- 1 Determination Of Deodorant Property - Ammonia (ISO 17299-2:2014, By Detector Tube Method):

	Result (µl/l)	
	Testing Gas With A Specimen	Testing Gas Without A Specimen
1	75	80
2	73	80
3	75	80
	Average (A) = 74	Average (B) = 80
ORR(%)	8	

Remark : ORR is the odour reduction rate, expressed as a percentage = (B-A) / B x 100%  
B is the average concentration of testing gas without a specimen, expressed in µl/l  
A is the average concentration of testing gas with a specimen, expressed in µl/l

618/joan



Page 2 of 6

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## Test Report

Number: TWNT01981595

Tests Conducted (As Requested By The Applicant)

- 2 Textiles - Solar UV Protective Properties, Method of Test for Apparel Fabrics As Received (BS EN 13758-1:2002):

Solar Spectrum Irradiance Used : Noonday, July 3, Sunlight, Albuquerque  
No. Of Scans : 8

The Samples Are Tested In Dry And Relaxation State.

Temperature : 20±2°C

Relative Humidity : 65±2%

The Ultraviolet Protection Factor, UPF: >50

The Mean UVA Transmittance (315-400 nm): 3.06%

The Mean UVB Transmittance (290-315 nm): 1.40%

Standard Deviation Of UPF: 0.64

Standard Deviation Of UVA: 0.03

Standard Deviation Of UVB: 0.02

UPF Of Each Specimen:

1.	58.01
2.	55.84
3.	56.96
4.	56.15
5.	56.91
6.	56.85
7.	56.83
8.	56.77

618/joan



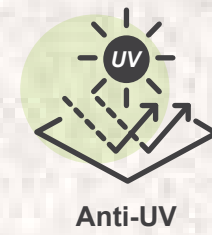
Page 3 of 6

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# Additional features



**Test Report**

Number: TWNT01981595

Tests Conducted (As Requested By The Applicant)

- 3 Far-Infrared Spectral Emissivity (FTTS-FA-010, 4.1, Wavelength 2~22 μm, Test Environment Condition : Temperature 20±2°C, Humidity 65±2% RH):

Test Results: 0.80

Remark : Test with 1 layer(s).

- 4 Vertical Wicking of Textile (AATCC TM197-2011e2(2018)e, Option A):

	Length Direction	Width Direction
-The Time That Water Level Reached 20 mm	1 min	1 min
-The Time That Water Level Reached 150 mm	16 min	19 min
-The Wicking Distance After 30 Minutes	Higher than 150 mm	Higher than 150 mm

**Test Report**

Number: TWNT01981595

Tests Conducted (As Requested By The Applicant)

- 5 Antibacterial Activity Test (Before Washing)

As per applicant's request with reference to AATCC TM100-2019.

Test Organism : *Klebsiella pneumoniae* (ATCC 4352)

Sterilization Of Sample Before Test :UV Sterilization  
Neutralizing Solution : Dey Engley Broth  
Broth Media : Nutrient Broth  
Concentration Of Surfactant : 0.05% Triton X-100  
Contact Time : 24 Hours  
Incubation Temperature : 37±2°C  
Incubation Period : 24-48 Hours  
Agar Medium : Nutrient Agar  
Swatches Weight : 1.0±0.1 g

Tested Specimen : Submitted Sample (Swatches with 3.8 X 3.8±0.1 cm)

Result :

Name Of Test Bacteria (Strain Number)	<i>Klebsiella pneumoniae</i> (ATCC 4352)
The number of bacteria recovered from the inoculated viability control fabric swatches immediately after inoculation ("0" contact time) (D)	2.3 x 10 <sup>5</sup> CFU/Sample
The number of bacteria recovered from the inoculated viability control fabric swatches incubated over 24 hours contact period (B)	1.4 x 10 <sup>8</sup> CFU/Sample
The number of bacteria recovered from the inoculated tested sample swatches immediately after inoculation ("0" contact time) (C)	1.9 x 10 <sup>5</sup> CFU/Sample
The number of bacteria recovered from the inoculated tested sample swatches incubated over 24 hours contact period (A)	<100 CFU/Sample
Growth value (F)	2.77
Percent reduction of Bacteria (R)	>99.95%

Calculation of percent reduction of Bacteria:

$$R = (C-A)/C \times 100\%$$

$$F = \text{Log B} - \text{Log D}$$

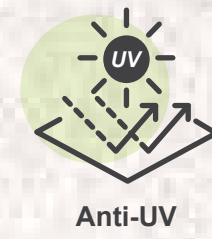
Remarks : CFU = Colony forming unit  
< = Less than  
> = More than

Viability control fabric = Cotton standard adjacent fabric(cotton No.3) specified in JIS L0803

End of Report



# Additional features



Anti-UV



Anti-odor



Wicking



Anti-bacterial

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Functional Textile Expert



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### Test Report

Number: TWNT01984850

Tests Conducted (As Requested By The Applicant)

- Determination Of Deodorant Property - Ammonia (ISO 17299-2:2014, By Detector Tube Method):

	Result (µl/l)	
	Testing Gas With A Specimen	Testing Gas Without A Specimen
1	60	90
2	63	90
3	60	90
	Average (A) = 61	Average (B) = 90
ORR(%)	32	

Remark : ORR is the odour reduction rate, expressed as a percentage = (B-A) / B x 100%  
B is the average concentration of testing gas without a specimen, expressed in µl/l  
A is the average concentration of testing gas with a specimen, expressed in µl/l

688/Sakura



Page 2 of 6

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### Test Report

Number: TWNT01984850

Tests Conducted (As Requested By The Applicant)

- Textiles - Solar UV Protective Properties, Method of Test for Apparel Fabrics As Received (BS EN 13758-1:2002):

Solar Spectrum Irradiance Used : Noonday, July 3, Sunlight, Albuquerque  
No. Of Scans : 8

The Samples Are Tested In Dry And Relaxation State.

Temperature : 20±2°C

Relative Humidity : 65±2%

The Ultraviolet Protection Factor, UPF: >50

The Mean UVA Transmittance (315-400 nm): 7.81%

The Mean UVB Transmittance (290-315 nm): 0.12%

Standard Deviation Of UPF: 3.06

Standard Deviation Of UVA: 0.07

Standard Deviation Of UVB: 0.01

UPF Of Each Specimen:

1.	121.48
2.	119.19
3.	119.05
4.	115.00
5.	113.37
6.	120.73
7.	114.63
8.	115.89

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Page 3 of 6

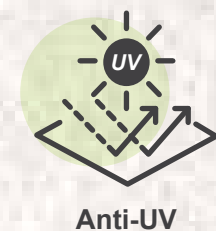
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# Additional features



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**Test Report**

Number: TWNT01984850

Tests Conducted (As Requested By The Applicant)

3 Vertical Wicking of Textile (AATCC TM197-2011e2(2018)e, Option A):

	<u>Warp Direction</u>	<u>Weft Direction</u>
-The Time That Water Level Reached 20 mm	More than 30 Minutes	More than 30 Minutes
-The Time That Water Level Reached 150 mm	More than 30 Minutes	More than 30 Minutes
-The Wicking Distance After 30 Minutes	1 mm	1 mm

4 Far-Infrared Spectral Emissivity (FTTS-FA-010, 4.1, Wavelength 2~22 μm, Test Environment Condition : Temperature 20±2°C, Humidity 65±2% RH):

Test Results: 0.81

Remark : Test with 1 layer(s).



Page 4 of 6

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**Test Report**

Number: TWNT01984850

Tests Conducted (As Requested By The Applicant)

5 Antibacterial Activity Test

As per applicant's request with reference to AATCC TM100-2019.

Test Organism : *Klebsiella pneumoniae* (ATCC 4352)  
Sterilization Of Sample Before Test : UV Sterilization  
Neutralizing Solution : Dey Engley Broth  
Broth Media : Nutrient Broth  
Concentration Of Surfactant : 0.05% Triton X-100  
Contact Time : 24 Hours  
Incubation Temperature : 37±2°C  
Incubation Period : 24-48 Hours  
Agar Medium : Nutrient Agar  
Swatches Weight : 1.0±0.1 g

Tested Specimen : Submitted Sample (Swatches with 3.8 X 3.8±0.1 cm)

Result :

<u>Name Of Test Bacteria (Strain Number)</u>	<i>Klebsiella pneumoniae</i> (ATCC 4352)
The number of bacteria recovered from the inoculated viability control fabric swatches immediately after inoculation ("0" contact time) (D)	2.2×10 <sup>5</sup> CFU/Sample
The number of bacteria recovered from the inoculated viability control fabric swatches incubated over 24 hours contact period (B)	8.6×10 <sup>7</sup> CFU/Sample
The number of bacteria recovered from the inoculated tested sample swatches immediately after inoculation ("0" contact time) (C)	1.9×10 <sup>5</sup> CFU/Sample
The number of bacteria recovered from the inoculated tested sample swatches incubated over 24 hours contact period (A)	3.7×10 <sup>8</sup> CFU/Sample
Growth value (F)	2.6
Percent reduction of Bacteria (R)	--(#)

Calculation of percent reduction of Bacteria:

$$R = (C-A)/C \times 100\%$$

$$F = \log B - \log D$$

Remarks : CFU = Colony forming unit  
# = No reduction  
Viability control fabric = Cotton standard adjacent fabric(cotton No.3) specified in JIS L0803

End of Report



Page 5 of 6

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# THANK YOU.

Grandetex Development Co., Ltd.



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