

Environment-friendly natural new material company



# NBIO INSTITUTE

## Multi-Functional Agent





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## NBIO retained functions and features for each product

Product name	Maketing point	Retained function	Product feature
NBIO (chitosan)	Contains natural chitosan(KFDA approved raw material)	Antibacterial, Deodorization	Bacterial inhabitation inhibition
	Moisturizing & improves immunity : Edible chitosan used / Harmless to human body	Far infrared radiation	Boosts blood circulation
	The Four safety evaluation	UV protection	Skin aging prevention
	Laundry durability : 20 times stability	Antistatic	Life rhythm stabilization
ECOHOT -HEAT	Heat generation and retaining function	Raise 1~2°C	Maintains body temperature
	Far-infrared radiation effect	Far infrared radiation	Boosts blood circulation
	Laundry durability : 20 times stability	Antibacterial	Bacterial inhabitation inhibition
	Food ingredients used : Food chitosan, capsaicin contained	Deodorization	Offensive odor treatment
ECOHOT F	<b>Fiber exclusively</b> / Moisture absorption Heat generation and retaining function	Generates and maintains heat	Maintains body temperature
	Antibacterial reinforced	Antibacterial	Bacterial inhabitation inhibition
	Harmless to human body / The Four safety evaluation / edible chitosan used	Moisture absorption and quick-drying	Pleasant drying
BIO L	Light and heat generation heat retaining function / CNT Nano	Generates and maintains heat	Maintains body temperature
	Antibacterial reinforced	Antibacterial	Bacterial inhabitation inhibition
	Light and heat generation, Antibacterial, Deodorization / multi-function	Deodorization	Offensive odor treatment
	Excellent laundry performance maintained	Laundry durability	30 times or more
BIO LS	Harmless to human body / 3T heat generation technology (light, Moisture absorption , contact)	Generates and maintains heat	Maintains body temperature
	Antibacterial reinforced	Antibacterial	Bacterial inhabitation inhibition
	Natural chitosan / Chili extract / CNT Nano	Deodorization	Offensive odor treatment
	Excellent Laundry durability / oil-based / water-based	Laundry durability	30 times or more
LOHA COOL AI	Fresh Contact	Agreeable	Maintains body temperature
	Antibacterial reinforced	Antibacterial	Bacterial inhabitation inhibition
	Deodorization improvement	Deodorization	Offensive odor treatment
	Raw materials harmless to human body	High stability	For summer
ATO COOL CARE	Avoids house dust mites, atopic disease prevention	Avoids house dust mites	Atopy, allergy prevention
	Grapefruit & aloe extract contained	Antibacterial / Moisturizing	Bacteria prevention / Skin moisturizing
BIO M	Simple antibacterial agent	Antibacterial	Excellent durability
	Antibacterial reinforced	Deodorization	Offensive odor treatment



## NBIO retained functions and features for each product

Product name	Marketing point	Retained function	Product feature
ECO A	Coca Betaine extract contained	Natural stability	Harmless to human body
	High Laundry durability	Antistatic	Life rhythm stabilization
MOSPASS	Avoids Mosquito / Avoids house dust mites / insect-proof	Mosquito & mites repellent	insect-proof
	Environmentally friendly Permethrin, Phytoncide extract	Antibacterial	Bacterial inhabitation inhibition
ECO A1	Adsorption prevention of fine dust, pollen, yellow sand	Soil proof	Prevention of pollution
	Nano-silica resin coating	Antibacterial, Deodorization	Bacterial and offensive odor inhibition
	Harmless to human body, low irritation	Prevention of static electricity	Life rhythm stabilization
BIO A	Inhibition and removal of tinea pedis	Prevention of athlete's foot	Improvement in living environment
	Boosting antibacterial	Antibacterial	Bacterial inhabitation inhibition
	Economical : Low and middle priced	Deodorization	Removal of offensive odor
Flawless	organic ingredients for food additives	. Antibacterial	Bacterial inhabitation inhibition
	Washing 10~20 times or more	. Deodorization	implementation of customized washing durability
Ginkgo	Natural antibacterial activity of ginkgolide - ginkgo leaf extract.	. Antibacterial	Bacterial inhabitation inhibition
	Harmless to humans thanks to using natural ingredient	. Deodorization	Removal of offensive odor
	Washing 20 times or more	Improvement in blood circulation	Improvement in living environment
Collagen	Natural collagen contained	Moisturizing	Skin moisturizing
	The Four safety evaluation	Antibacterial	Bacterial inhabitation inhibition
	Laundry durability : 20 times stability	Deodorization	Offensive odor treatment
	Moisturizing & immunity reinforced	Far infrared radiation	Boosts blood circulation
	Laundry durability : 20 times stability	UV protection	Skin aging prevention
Chito platinum	Antibacterial reinforced : platinum contained	Moisturizing	Skin moisturizing
	Moisturizing & improves immunity : Edible chitosan used / Harmless to human body	Far infrared radiation	Boosts blood circulation
	The Four safety evaluation	UV protection	Skin aging prevention
	The Four sensitive examination evaluation: fiber heat burn, human body heat burn	Antibacterial	Bacterial inhabitation inhibition
	brainwave Safety, red blood cell blood flow changes	Deodorization	Offensive odor treatment
	Laundry durability : 20 times stability	Antistatic	Life rhythm stabilization





## NBIO retained functions and features for each product

Product name	Maketing point	Retained function	Product feature
<b>Herb</b>	herbs extract contained : Mind and body rest, Fatigue recovery	Mind and body rest	Fatigue recovery
	Moisturizing & improves immunity : herbs & chitosan	Fatigue recovery	Body rhythm stabilization
	The Four safety evaluation	Antibacterial	Bacterial inhabitation inhibition
	The Four sensitivity examination evaluation : fiber heat burn, human body heat burn	Deodorization	Offensive odor treatment
	brainwave Safety, red blood cell blood flow changes	Antistatic	Life rhythm stabilization
<b>Green tea</b>	Natural green tea ingredients contained : Moisturizing & skin protection	Moisturizing	Skin aging prevention
	Antibacterial reinforced	Antibacterial	Bacterial inhabitation inhibition
	economical : middle-low priced type	Deodorization	Offensive odor treatment
<b>Camellia oil</b>	camellia oil extract contained : Moisturizing & skin protection	Moisturizing	Skin aging prevention
	Antibacterial reinforced	Antibacterial	Bacterial inhabitation inhibition
	economical : middle-low priced type	Deodorization	Offensive odor treatment
	The Four safety evaluation	UV protection	Skin aging prevention
	The Four sensitivity examination evaluation : fiber heat burn, human body heat burn	Deodorization	Offensive odor treatment
	brainwave Safety, red blood cell blood flow changes	Antistatic	Life rhythm stabilization
<b>Propolis</b>	Propolis ingredients contained : Moisturizing & skin protection	Moisturizing	Skin aging prevention
	Antibacterial reinforced	Antibacterial	Bacterial inhabitation inhibition
	economical : middle-low priced type	Deodorization	Offensive odor treatment
<b>Bamboo</b>	Natural bamboo extract contained : Refreshing, removal of all sorts of odor	Refreshing	Proposal of seasonal product application
	Moisturizing & improves immunity : Edible chitosan used / Harmless to human body	Far infrared radiation	Boosts blood circulation
	The Four safety evaluation	UV protection	Skin aging prevention
	The Four sensitivity examination evaluation : fiber heat burn, human body heat burn	Antibacterial	Bacterial inhabitation inhibition
	brainwave Safety, red blood cell blood flow changes	Deodorization	Offensive odor treatment
	Laundry durability : 20 times stability	Antistatic	Life rhythm stabilization



Nbio retained functions and features for each product

Product name	Maketing point	Retained function	Product feature
Chito Aloe	Natural aloe extract contained : Moisturizing, skin protection	Moisturizing	Skin moisturizing
	Moisturizing & improves immunity : Edible chitosan used / Harmless to human body	Far infrared radiation	Boosts blood circulation
	The Four safety evaluation	UV protection	Skin aging prevention
	The Four sensitivity examination evaluation : fiber heat burn, human body heat burn	Antibacterial	Bacterial inhabitation inhibition
	brainwave Safety, red blood cell blood flow changes	Deodorization	Offensive odor treatment
	Laundry durability : 20 times stability	Antistatic	Life rhythm stabilization
Platinum	Antibacterial reinforced : platinum contained / economical	Antibacterial	Bacterial inhabitation inhibition
	economical : middle-low priced type	Deodorization	Offensive odor treatment
	Laundry durability : 20 times stability	Antistatic	Life rhythm stabilization

[Caution when using this product]

1. Before using this product, please make sure to conduct the pre-test and the quality assessment and if this is not observed, it shall be noted that our company will not have any responsibility for any accident.
2. Use the product after checking the product's ionicity.
3. Because the product function may be deteriorated due to the medicine used in combination with it, make sure to check it in advance.
4. Adjust the dosage according to the processing purpose or condition.
5. Because our company's products contain a large amount of natural ingredients, it is recommended to use the full amount after purchasing the needed amount only and to keep the product in a cool and dark place.

<< Super multi-functional antibacterial agent >>



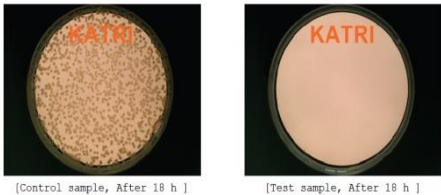
[Characteristics of the product]

- 1. Mechanism : Improved heat preservation through natural polymeric material film formation/heat generation and preservation due to far-infrared radiation/enhanced moisturizing properties due to natural hydrophobic hydration(-OH) ingredients/amino group (-NH<sub>3</sub><sup>+</sup>) anti-bacterial activity/skin protection/BIO convergence new patented technology
- 2. Natural substance: No harm for human body due to natural keto acid food materials
- 3. High Safety : US FDA(NAMSA), KOREA FITI the Four safety evaluation
- 4. Multi-functionality : Increasing immunity, heat conservation, moisturizing skin, preventing odor and disease, stabilizing human body rhythm, improving blood circulation
- 5. High durability : 20 times of washing test passed (Cautions : It is required to test washing durability in advance depending on processing conditions and fabric kinds)

[Functions]

- 1. Antibacterial: >99.9%  
(ATCC 6538, ATCC 4352)

[Safety certificates : FDA(NAMSA), FITI(4factors)]



- 2. Deodorizing effect: 90%~70% (Ammonia Gas detector tube method)
  - 3. Moisturizing effect : 10 ~ 50% improved
  - 4. Far-infrared radiation: Heat generation/Enhanced blood circulation and human rhythm Safety
    - 1) KFIA-FI-1005 Far-infrared radiation emissivity : >88% (FTIR 37℃)
    - 2) GB/T 30127-2013Temperature rise due to far-infrared radiation : ≥1.4℃
- Production increasing effect  
BOKEN II method applied)

Time (Minute)	Increasing ratio (5%)	
	#1 (Not-processed)	#2 (NBIO processed)
5	8.1	3.9
10	25.3	10.7
20	54.5	22.3
30	82.8	30.1
40	96.0	35.0
50	-	38.8
60	-	48.5

Analysis institution (FITI : H232-16-21355)

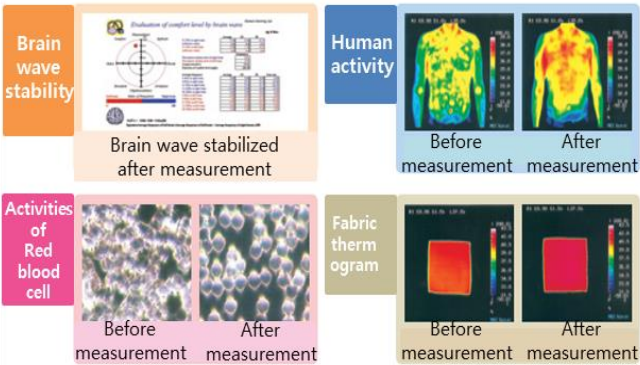
Note) 0.5 mL of distilled water was dropped on the fabric upon the request.

- 5. Heat conservation : >10~30% (heat conservation ratio: KS K 0560, air penentrance: KS K ISO 9237)

01. Heat conservation ratio (KS L 0560:2011): %  
Analysis institution (FITI:H232-16-21356)
02. Air penentrance (KS K IOS 9237:2011): mm/s  
Analysis institution (FITI:H232-16-21354)

	#1 (Not-processed)	#2 (NBIO processed)
	10.7	19.5

	#1 (Not-processed)	#2 (NBIO processed)
	196.0	150.5





<< Super multi-functional antibacterial agent >>

6. Ultraviolet rays block effect: >90%(UV-B KSK 0850)

Test Item	Test Result	
	Specimen 1(Not-processed)	Specimen 2(NBIO processed)
Ultraviolet rays block performance test: KS K 0850:2014 applied		
Ultraviolet rays block index		
UPF	8.4	12.0
Grade	5	10
Ultraviolet rays block ratio (%)		
Ultraviolet rays-A (315~400 nm)	84.6	87.6
Ultraviolet rays-B (290~315 nm)	88.8	92.4
<div>▷ Notes</div> <div>1. Test Instrument : UV Transmittance Analyzer</div> <div>2. Light Source : Xenon Arc</div> <div>3. Solar Energy : AS/NZS 4399 부록 B : 1996</div> <div>4. Ultraviolet rays block index grade: AS/NZS 4399: 1966 is used for indication.</div> <div>Analysis institution (KATRI : STAA17-00001161)</div>		

7. Electrostatic prevention effect : < 500 volt (Anti-soil function : fine dust and pollutant resistant, human body rhythm stabilization)

Test Item	Test Result	
	Specimen 1(Not-processed)	Specimen 2(NBIO processed)
Frictional electrostatic voltage (V) : KS K 0555:2010 B method (Measurement method for frictional electrostatic voltage)		
Cotton friction cloth	5 700	370
Wool friction cloth	6 800	330
* Note) Measurement condition: (20 ± 2) °C, (40 ± 2) % R.H, 400 r/min		
Analysis institution (KATRI : STAA14-00037010)		

8. Harmful formaldehyde : not detected (preventing respiratory disease)

TEST ITEM	TEST RESULT
	#1
Formaldehyde Content (mg/kg) : KS K ISO 14184-1:2009 (Water extraction method)	
N.D.	
<Note> N.D. : Not Detected(Less than 20 mg/kg)	
Analysis institution (KATRI : STAA15-00054383)	



[ Properties and purposes]

- Outlook : Yellow transparent fluid
- Main ingredients: Chitosan derivatives (Food grade)
- Odor : Unique odor
- Ionic character: Cation
- p H : 3.5 ± 0.5
- Purposes: ① For all seasons / cotton, polyester, nylon, acrylic fabric
- ② Bedding, bed, mattress, warm heat (electricity/steam)mat fabric, inner ware, underwear, pantyhose, shirts(textile/knit), Other non-skin irritation fabric products

[ Direction ]

- Recommended usage amount and conditions : ( OWF 7% )
  - ▶ Cotton : Drying    Padding    Curing  
Pick up(70~100%) 50m/min(at160°C)
  - ▶ Polyester : Drying    Padding    Curing  
Pick up(70~100%) (at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionalityand laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.





© Distinguished characteristics of environment-friendly  
Nbio chitosan antibacterial agent products

Characteristics of functional products			General antibacterial agent	Nbio antibacterial agent
Natural ingredients patented technology			None / some	World-first inventory patent registered Research and development venture company
The Four safety evaluation			Insufficient / harmful	Officially verified harmless to human body / FIT
Kind of retained functionality			Several simple functions Focused on antibacterial	Multi functionality / BIO / LOHAS
Whether to contain natural substances			Many organic compounds Some natural products	KFDA approved natural food chitosan bamboo extract
Retaining Multi Functionality	1	Antibacterial	Retaining	Elimination of bacteria and disease prevention / 99.9%
	2	Deodorization	Retaining / None	Removal of fiber odor and provision of comfort 70~90% or higher
	3	Prevention of static electricity	None	Human rhythm Safety / 500V or less
	4	Ultraviolet rays block effect	None	Prevention of skin aging / 70% or higher
	5	Heat preservation	Not sufficient	Stable body temperature and health maintenance Fiber temperature rise within 2degree
	6	Far-infrared radiation	None	Room temperature (37°C)emission / Boosting blood circulation / 89% or higher
	7	Mite repellent	None	Atopic disease prevention 90% or higher(Japan) / optional
	8	Moisturizing	None	Chitosan properly retaining water / retaining moisturizing properties
Scientific verification	1	Human body comfort(brainwave)	Unverified	Increase of mind and body Safety and comfort 1.3times enhancement
	2	Fiber thermal graphic(heat preservation)	Unverified	Fiber temperature rise by 1-2degrees Heat preservation(warmth) increase
	3	Human body thermal graphic(blood flow)	Unverified	Boosting blood circulation and improving fatigue recovery Body heat rise
	4	Change in red blood cell(comfort)	Unverified	Improving comfort / improving fatigue recovery Human rhythm improvement
Washing durability for each function			1~3 times insufficient	10~30 times stable
Characteristics of textile processing			Use of 3~4 kinds finishing agents per function, increase of cost price Lowered productivity, unstable quality	Onetime processing Productivity improvement Cost saving / Quality stabilization
Marketing Point				Multi-functional / Chitosan Warmth (heat preservation) / atopy prevention

- ※ The Four safety evaluation
- ☞ Oral toxicity : whether to have human body disorder when taking
  - ☞ Skin irritation : whether to prevent skin irritation disease
  - ☞ Mutation : whether to have mental disorder when taking
  - ☞ chromosome change : whether to have human body chromosome disorder when taking



<< Super multi-functional antibacterial agent >>



[ Characteristics of the product ]

- 1. Mechanism : Improvement in heat preservation with capsaicin(contact) and chitosan(moisture absorption) /Warmth with chitosan (far-infrared radiation emission)
- 2. Naturality : Use of natural environment-friendly capsaicin and chitosan
- 3. High Safety : US FDA(NAMSA) verification completed / Korea FITI the Four safety evaluation /harmless to human body because of food ingredients
- 4. Multi functionality : Contact / moisture absorption and heat generation, heat preservation improvement(far-infrared radiation, natural polymeric material film formation), antibacterial, deodorization
- 5. High durability : After 20 times of washing, the performance is still excellent.

(Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds)

[ Retained functions ]

1. Heat preservation :

1) Heat preservation ratio 10 ~ 30% improvement (Heat preservation ratio KS K 0560, air penetrance KS K ISO 9237)

2) Heat preservation according to changes in external temperature : 1~4℃ heat preservation effect (FITI Test Institute : H232-13-17375)

Classification	Unprocessed	ECO-HOT processing
Heat conservation ratio(%)	17.0	22.1

시간(분)	시험결과(℃)			
	#1	#2	대기	
0	20.33	20.30	20.17	▲0.03
20	2.79	-1.46	-5.33	▲4.25
40	-3.49	-5.52	-7.98	▲2.03
60	-6.28	-7.46	-8.91	▲1.18
80	-7.96	-8.37	-9.34	▲0.51
100	-8.57	-8.93	-9.60	▲0.36
120	-8.98	-9.27	-9.74	▲0.29
140	-9.20	-9.44	-9.80	▲0.24

2. Far-infrared radiation / heat generation function

1) KFIA-FI-1005 Far-infrared radiation emissivity : >88% (FTIR 37℃)

Emissivity ( 5 ~ 20 μm )	Emission Power (W/m²·μm, 37℃)
0.884	3.41×10 <sup>2</sup>

2) GB/T 30127-2013 Far-infrared radiation temperature rise : ≥1.4℃



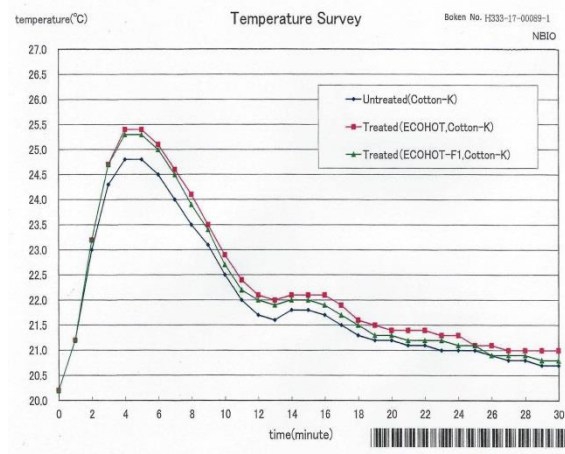
(Unprocessed)



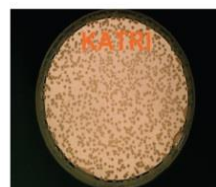
(ECO-HOT)

## << Super multi-functional antibacterial agent >>

3. Moisture absorption and heating: > 0.5°C  
(BOKEN BQE A035)



4. Antibiosis: >99.9% (ATCC 6538, ATCC 4352)



[Control sample, After 18 h ]



[Test sample, After 18 h ]

5. Deodorization : >70%  
(ammonia Gas Detector tube method)



### [ Properties and use ]

- Appearance : Reddish brown transparent liquid
- Main Ingredients : Capsaicin, chitosan derivative, natural hydrophobic ingredients
- Odor : Unique odor
- Ionicity : Cation
- pH : 3.5 ± 0.5
- Use : ① For winter season / Cotton, polyester, nylon, acrylic fiber  
② Bedding, bed, mattress, underwear, baby wear, children's wear, T-shirt, winter clothes, outdoor garment, sportswear, stocking, socks and etc.

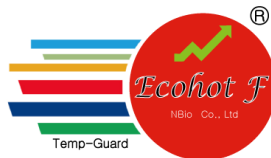
### [ Method of usage ]

- Usage recommended and use conditions : ( OWF 7% )
  - ▶ Cotton : Drying    Padding    Curing  
Pick up(70~100%) 50m/min(at160°C)
  - ▶ Polyester : Drying    Padding    Curing  
Pick up(70~100%) (at160°C)

- Cautions : Please inspect in advance before using since fabric color change may happen on ECO-HOT products after they are processed with natural capsaicin ingredients



## << Multi-functional Fiber heat generation antibacterial agent >>



### [ Characteristics of the product ]

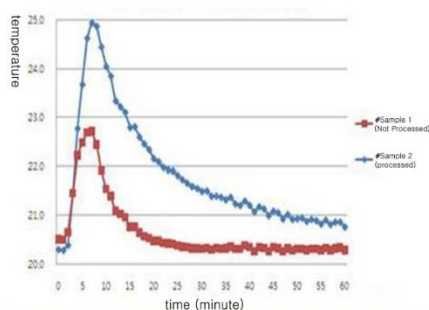
1. Mechanism : Moisture absorption and heating(moisture and sweat response)/BIO convergence new patented technology
2. Naturality : Natural environment-friendly chitosan food material harmless to human body/US FDA(NAMSA) safety certification
3. High Safety : KOREA FITI The Four safety evaluation/Same with ECO HOT
4. Multi functionality : Heat generation and preservation, odor disease prevention, moisture absorption fast dry comfort

### [ Functions ]

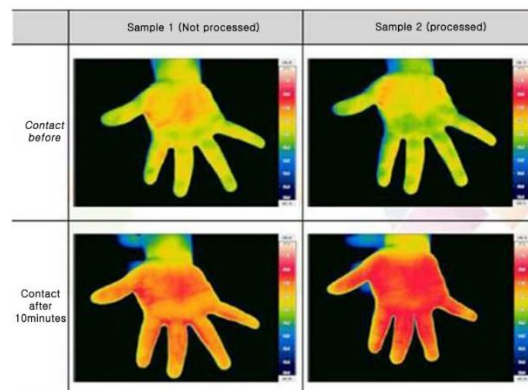
1. Heat generation and preservation : 0.5°C ~ 2.5°C increasing effect
2. Antibiosis: >99.9% (KSK0693, ATCC 6538, ATCC 4352)
3. Deodorization : >70% (ammonia Gas Detector tube method)(Option)
4. Moisture absorption and fast dry : Fast dry (Cautions: It is required spect functionality in advance depending on processing conditions and fiber)



Changes in temperature of fabric by changes in humidity



KATRI



KATRI

### [ Properties and use ]

- Appearance : ivory white translucent fluid
- Main components : hot pepper seed extract , etc.
- Odor : Unique odor
- Ionicity : Cation
- pH : 7.0±1.0 / Control pH depending upon deodorization(3.0 ±0.5)
- Use : ① Winter / Wool, Polyester, Nylon, Acyl Fiber  
② Outdoor & Bedding Fiber Fillers, Yarn

### [ Method of usage ]

- Recommended quantity and usage condition: ( OWF 7% )  
  - ▶ spray    Pick up    Curing (at160°C)
- Cautions : Since the fabric's physical properties(color, touch and etc.), functionality and laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.





## << Multi-function finishing agent >>

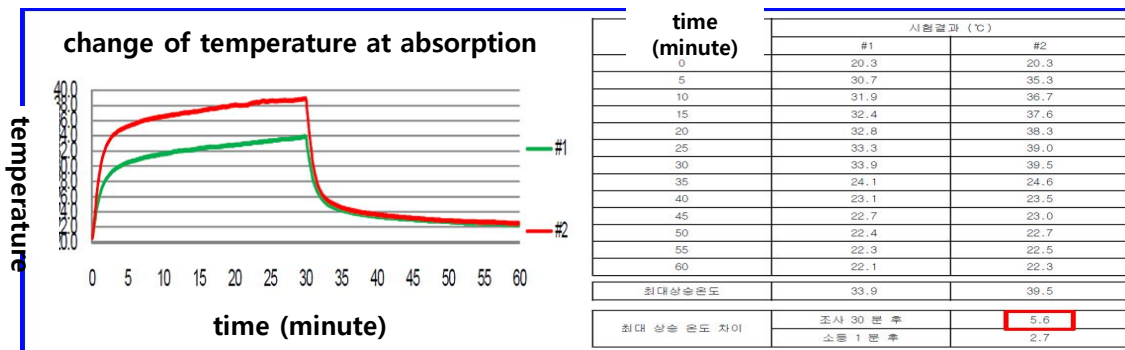


### [ Features ]

1. Produce comfortable and healthy environment by **multi-functions** to live healthy life.
2. **Solar light condensation and heating** by Multi-CNT Nano matter ( 3~6 °C)
3. **Anti-biotic and deodorization controls bacteria inhabitation of fiber fabric** as well as odor.
4. Non-ion and pH stability product has good stability of mixture with fiber production.
5. Laundry durability : 30 times (Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds / Advance inspection of fabric color change)

### [Functions ]

1. Anti-biotics : >99.9% (KSK 0693)
2. Light heating : 3~5°C or more rise Laundry durability: 30 times)
3. Deodorization : >70%(Ammonia Gas detection)(Option)



FITTest Institute (Issue No. : H232-15-09744)

### [ Properties and use ]

- Appearance : White and black liquid
- Ingredient : Multi-CNT Nano matter, Triclo series chemical and not harmful matter
- Smell : Inherent and unique smell
- Ion : Nonionic
- pH : 7.0 ± 1.0 / Control pH depending upon deodorization(3.0 ±0.5)
- Use : ①In winter: cotton, polyester, nylon, wool and acrylic fiber  
②Outdoor cloth (winter cloth, sleeping bag, tent and fishing cloth), outwear sports cloth, T-shirts, fabric shirts, jumper, jacket, gentlemen and lady garment)

### [ Method of usage ]

- Usage recommended and working condition: ( OWF 7% )
  - ▶ Cotton : Drying → Padding → Curing  
Pick up(70~100%) 50m/min(at170°C)
  - ▶ Polyester : Drying → Padding → Curing  
Pick up(70~100%) (at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionalityand laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.



<< 3T heating agent >>



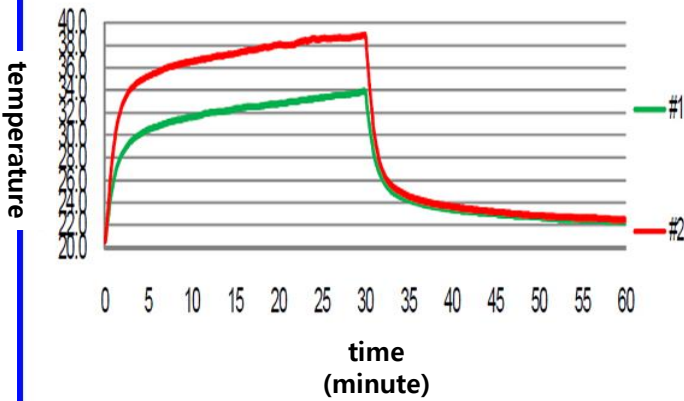
[ Features ]

- 1. Produce comfortable and healthy environment by multi-functions to live healthy life.
- 2. Solar light condensation and heating by Multi-CNT Nano matter (3~5 °C)
- 3. Feel refreshed by absorption and quick drying.
- 4. Natural element (containing red pepper seed) has heating and insulation. (contact heating and metabolism at change of human body blood flow.)
- 5. Anti-biotic and deodorization controls bacteria inhabitation of fiber fabric as well as odor.
- 6. Non-ion and pH stability product has good stability of mixture with fiber production.
- 7. Laundry durability : 30 times(Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds / Advance inspection of fabric color change)

[ Functions ]

- 1. Anti-biotics : >99.9% (KSK 0693)
- 2. Option  
Deodorization: >70%(ammonia gas detection) / pH oxidization
- 3. Light heating : 3~5°C or more rise (Laundry durability: 30 times)

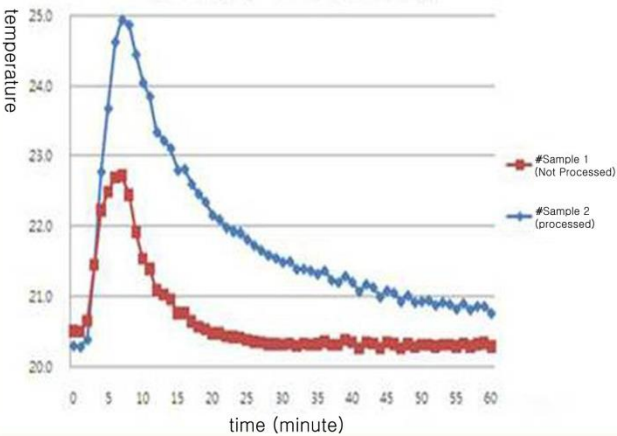
change of temperature at absorption



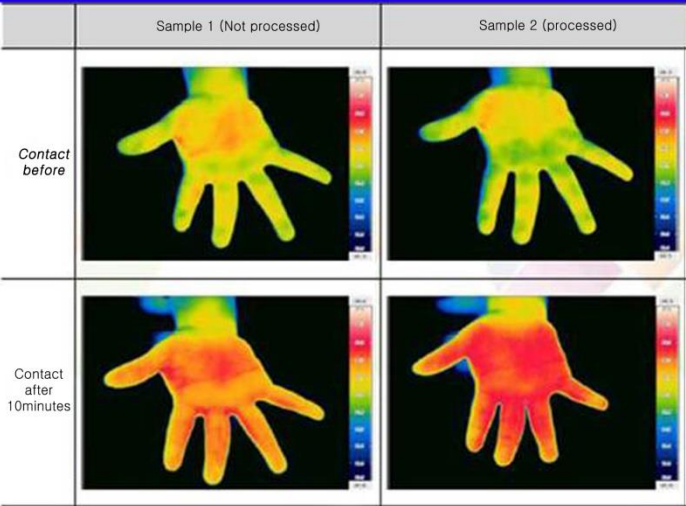
시간 (분)	시험결과 (°C)	
	#1	#2
0	20.3	20.3
5	30.7	35.3
10	31.9	36.7
15	32.4	37.6
20	32.8	38.3
25	33.3	39.0
30	33.9	39.5
35	24.1	24.6
40	23.1	23.5
45	22.7	23.0
50	22.4	22.7
55	22.3	22.5
60	22.1	22.3
최대 상승 온도		39.5
최대 상승 온도 차이	조사 30 분 후	5.6
	소동 1 분 후	2.7

4. Moisture absorption and heating : 0.5~2.5°C up

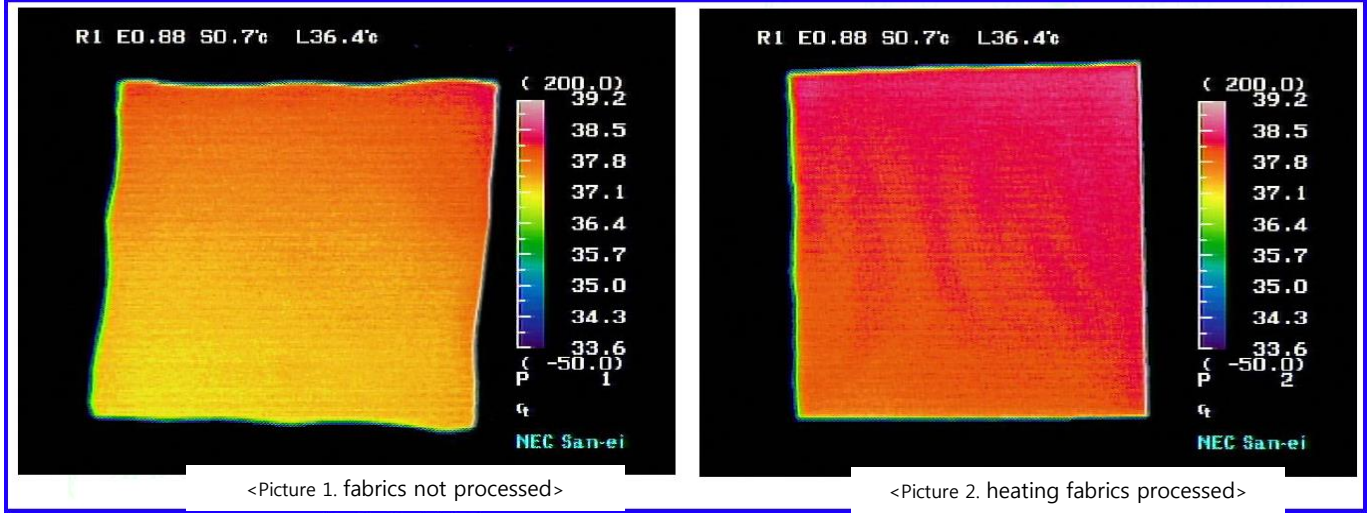
Changes in temperature of fabric by changes in humidity



FITI test institute (issue number) : H232-15-09744



5. Contact heating/ insulation



KFA Korea Far Infrared Association (Issue  
number : KFIT-147)

[ Properties and use ]

- Appearance : white black liquid
- Ingredient : Multi-CNT Nano matter, capsaicin (red pepper seed) extract, Triclo series chemical and not harmful matter
- Smell : Inherent smell
- Ion : Nonionic
- pH :  $7.0 \pm 1.0$  / Control pH depending upon deodorization( $3.0 \pm 0.5$ )
- Use : ① Winter use / cotton, polyester, nylon, wool, acrylic fiber  
② 3T heating : All kinds of fiber products

[ Method of usage ]

- Usage recommended and use conditions : ( OWF 7% )
  - ▶ Cotton : Drying    Padding    Curing  
Pick up(70~100%) 50m/min(at170°C)
  - ▶ Polyester : Drying    Padding    Curing  
Pick up(70~100%) (at160°C)

• Cautions : Since the fabric's physical properties(color, touch and etc.), functionality and laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.



## << Multi-functional high coolness antibacterial agent >>



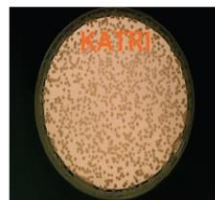
### [ Features ]

1. Mechanism : Fresh contact (Thermal conductivity is improved as contact area of absorptive silicone polymer is increased.)
2. High Safety : High safety is ensured by using raw materials harmless to human body.
3. Multi-functional : Fresh contact , antibacterial, deodorization
4. Highly durable : Washing 10 times or more (Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds )

### [ Functions ]

1. Fresh contact (Q-max) : **> 0.2W/cm<sup>2</sup>**  
(KATRI STAA18-00016764)
2. Anti-bacterial property : >99.99% (Washing 20 times)  
- Method : KS K 0639 / JIS L 1902  
- Inoculant : ATCC 6538, ATCC 4352

KATRI Korea Apparel Testing & Research Institute	
TEST ITEM	TEST RESULT
	#1
Measurement of Cool Feeling (J/cm <sup>2</sup> /s) : KES-F7 (Thermo Labo II)	
QMAX	0.236
* Remark 1. Test machine : KES-F7 (Thermo Labo II) 2. Test environment 1) Temperature : (20 ± 2) °C 2) Humidity : (65 ± 2) % R.H. 3. The temperature difference between a thermometer and a specimen : 20°C	



[Control sample, After 18 h ]



[Test sample, After 18 h ]

3. Deodorization : >70%  
-Method : Ammonia gas detector tube

### [ Properties and use ]

- Appearance : translucent liquid
- Main Ingredients : Ingredients harmless to human body besides absorptive silicone polymer
- Odor : Unique odor
- Ionicity : Cation
- pH : 3.0 ± 0.5
- Use : ① Summer / Cotton, Polyester, Nylon, Wool, Acyl Fabric  
② All of various textile products : Garment, Bedding, Household Goods

### [ Method of usage ]

- Recommended quantity and usage condition : (OWF 7% )

- ▶ Cotton : Drying    Padding    Curing  
Pick up(70~100%) 50m/min(at160°C)
- ▶ Polyester : Drying    Padding    Curing  
Pick up(70~100%) (at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionality and laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.





## << Multi-functional finishing agent >>



### [ Features ]

1. Mechanism : Access and inhabitation inhibition (inhibition of accessing to fiber product)/BIO convergence new patented technology
2. Naturality : Environment-friendly phytoncide extract harmless to human body
3. High Safety: Safety verification(Not detect oral toxicity, skin irritation, mutation, harmful ingredient) / UK Allergy Mark
4. Multi functionality : Atopy prevention, asthma prevention, rhinitis prevention, bacterial disease prevention
5. Highly durable : Washing 10times (Japan)

### [ Functions ]

1. Antibiosis : >99.9% (ATCC 6538P, ATCC 4352)
2. Mite repellent rate : > 90%(BOKEN JIS-L 1920)
3. Durability for washing : Washing10times (based on Japan: 50% or more)  
(Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds )



### [ Properties and use ]

- Appearance : Ivory white fluid
- Main components : Phytoncide extract, Pyrethrum, Cinerin, etc. Cosmetic components harmless for human
- Odor : Unique odor/ **Odorless**
- Ionicity : Nonionic
- p H : 6.0 ± 1.0
- Use : ① Four Season / Cotton, Polyester, Nylon, Wool, Acyle Fabric  
② Bedding, Pillow, Blanket, Topper, Bed, Mattresses, Thermal Mat(Electric/Steam), Carpet, Mat, Padding

### [ Method of usage ]

- Recommended quantity and usage condition : ( OWF 7% )
  - ▶ Cotton : Drying Pick up(70~100%) Padding Curing 50m/min(at160°C)
  - ▶ Polyester : Drying Pick up(70~100%) Padding Curing (at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionalityand laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.

**Quality Test Report** ORIGINAL

Test Report No. H333-14-00051 (2771400000) (Page 1 of 2)

Applicant: N-BIO

December 12, 2014

Test results to submitted sample are as follows.

Reception Date : November 21, 2014

Item Name : N-BIO Disperser

Number of Tests : 1

Test Item : Efficacy against house dust mite of textiles

Test Method : JIS L 1920 : Test of repellency : Petri dish method  
(The test is for fabric and carpet.)

Control Sample : The control sample was "standard-cloth" of JIS L 1920 7.2 untreated sample.

Test Mite : *Dermatophagoides Pteromyzomus*

Test Result:

Measurement result of population density of each 3.95g mite medium				
	3,013	2,806	2,880	2,764
Number of alive mites in 1g of mite medium : 58,215				

	Number of invasion mites of each the untreated sample				Total
Control sample	2,550	2,783	2,885	2,337	2,582
					13,157

Test sample	Number of invasion mites of each the treated sample				Total	repellency
White	287	355	197	291	1,130	91.38

NOTE: Rate of repellency (R) =  $\frac{C - T}{C} \times 100$

C: Control sample  
T: Treated sample

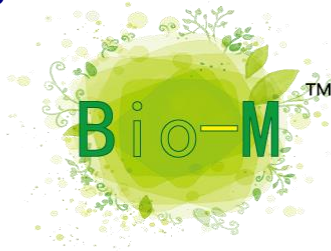
5.1 Total number of invasion mites in the treated sample

BOKEN QUALITY EVALUATION INSTITUTE  
Osaka Hinomachi Office  
Supervised by: J. Inomachi

Notice - This test result is applied to the submitted sample, not to the lot.  
Unauthorized reproduction, in whole or in part, is strictly prohibited.



## << Multi-functional finishing agent >>



### [ Features ]

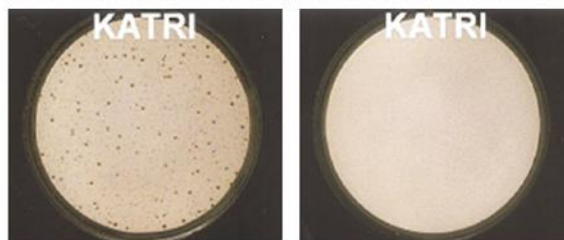
1. Mechanism : Apply to fiber processing(padding process), realization of multi functionality
2. Naturality : Organic antibacterial agent (comply with safety standards for harmful products)
3. High Safety : Low skin irritation
4. Multi functionality : Antibacterial, antifungal, deodorization
5. Highly durable : Washing 10 times or more (Available to enhance durability through adjusting contents of active ingredients)

(Cautions : Check in advance functionality and laundry durability according to processing conditions and fabric kinds)

### [ Functions ]

1. Antibiosis : >99.9% (KSK 0693)
2. Antifungal : >99% (Challenge Test)
3. Deodorization : >70%(Ammonia gas detector tube method)(Option)

Test organism①(Test bacteria ①)-Sraphylococcus aureus ATCC 6538



Control sample

Test sample

KATRI

(Korea Apparel Testing & Research institute) 2009.2

### [ Properties and use ]

- Appearance : ivory white translucent fluid
- Odor : Odorless
- Ionicity : Nonion
- pH :  $6.0 \pm 1.0$  / Control pH depending upon deodorization( $3.0 \pm 0.5$ )
- Use : ① Four Season / Cotton, Polyester, Nylon, Acyle Fabric  
② All Variety of Textile Products : Garment, Bedding, Household Goods

### [ Method of usage ]

- Recommended quantity and usage condition: ( OWF 7% )
  - ▶ Cotton : Drying    Padding    Curing  
Pick up(70~100%)    50m/min(at160°C)
  - ▶ Polyester : Drying    Padding    Curing  
Pick up(70~100%)    (at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionality and laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.



## « Multi-functional finishing agent »



### [ Features ]

1. Mechanism : Applicable to fabric processing, prevention of static electricity
2. Naturality : Contain natural environment-friendly cation coco-betaine
3. High Safety : Non-irritation and harmless to skin because it contains natural ingredients
4. Multi functionality : Human rhythm Safety, bacterial inhabitation inhibition, dust proof
5. Highly durable : Excellent laundry durability, reasonable processing costs (Caution : It is required to test washing durability in advance depending on processing conditions and fabric kinds)

### [ Functions ]

1. Anti-static : Triboelectrification 500 Volt or less(After 10 times of washing 2,000 Volt or less)  
※ Based on Japan: 2,000~2,500 Volt or less(Before washing)
2. Anti-bacterial property: After 10 times of washing >99.9% (ATCC 6538, ATCC 4352)
3. Anti-pollution : prevent dust and foreign substance from being absorbed

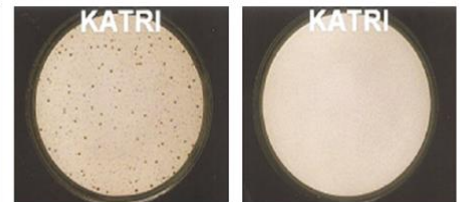


Test report			
Applicant: N.BIO CO., LTD. Address: #326 2F Mid. 3 Sihwa Industrial Complex, 1380-8 Jungwang-dong, Siheung-si, Gyeonggi-do		KATRI NO:STAA14-000411301 Received on:2014.10.16 Issued on:2014.10.17	
Submitted to: Sample name: Knitted fabric 4 tablets		Purpose:For quality control PAGE(S):1/1	
S/# Sample1:Unprocessed fabric, Sample2:ECO A 8%(W-10), Sample3:ECO 3%, Sample4:ECO A 3%(W-10)			
Test items	Test result		
	sample1	sample2	sample3
sample4 Triboelectrification(V) : KS K 0555:2010 8method(Triboelectrification method)			
Cotton friction fabric		6,000	5,100
1,100			
4,200			
Wool President of Korea Apparel Testing & Research Institute			
*Note)Conditions: (20±2)°C, (40±2)% R.H, 400 r/min			



**Prevention of static electricity**

Test organism①(Test bacteria ①)-Sraphylococcus aureus ATCC 6538



Control sample

Test sample

KATRI  
(Korea Apparel Testing & Research institute) 2009.2

### [ Properties and use ]

- Appearance : ivory white translucent fluid
- Main components : Coco-betaine and(Natural antistatic agent)
- Odor : Odorless
- Ionicity : cation
- pH : 7.0 ± 1.0
- Use : ① Winter / Wool, Polyester, Nylon, Acyle Fabric  
② Micro Fiber Bedding(Light Weight/Heavy Eeight), Blanket, Ladies & Mens Suits, Wool Coat, Chemical Fiber Garment, Sports Wear

### [ Method of usage ]

- Recommended quantity and usage condition: ( OWF 7% )  
▶ spray Pick up Curing (at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionalityand laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.



<< Multi-functional Fabric repellent >>



[ Characteristics ]

1. Mechanism : bite and approaching, prevent inhabitation (fabric products prevent approaching) / BIO Converging technology
2. Naturality : Environmentally friendly Permethrin, Phytoncide extract, Cosmesticraw materials, Other non-hazardous properties
3. High safety : Low sensitive to skin/ **Verified by the USA FDA (Bioscience)**
4. Multi functionality : bacterial disease, preventing mosquito biting(Zika virus), anti dust(prevention of atopy and asthma, rhinitis)
5. Highly durable : Laundry 30times

[ Functions ]

1. Antibiosis: > 99.9% (ATCC 6538P, ATCC 4352)
2. Mosquito repellent rate : > 50 ~ 95% (BIOGENTS German international analysis institution Cage Test)
3. Mite repellent rate : > 70 ~ 90%(BOKEN Japanese spinning inspection association JIS-L 1920)
4. Laundry durability : Laundry30 times (Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds )



Fig. 1: BG Test Cage (front view). The air ventilation system is connected to the cage (black arrow). The arm is exposed at the test window in the metal floor sheet (black rectangle). The rear side is covered by gauze.



Sample N°	Volunteer	Number of landings	Number of Bites / Time	Control of Biting-Activity	Bite Reduction
#2-1 (Untreated)	A	40	18 / 120 sec	10 / 7 sec	-
#2-2 MOSPASS		29	2 / 120 sec	10 / 10 sec	88.9%
#2-1 (Untreated)	B	25	11 / 30 sec	10 / 12 sec	-
#2-2 MOSPASS		36	2 / 120 sec	10 / 14 sec	95.5%

[ Description and purposes ]

- Appearance : Transparent or translucent liquid
- Odor : Unique odor / **Odorless**
- Ionicity: Non-ionicity
- p H : 5.0 ± 1.0
- Purposes : ① Cotton, Polyester, nylon, acrylic fabric, wool and other fabric  
② comforter, pillow, blanket, topper, pad, bed, mattress, mat, carpet, padding cotton  
③ Wallpaper and daily supplies

[ How to use ]

- Recommended usage amount and conditions: [ OWF : 7% ]
  - ▶ Cotton : Drying    Padding    Curing  
Pick up(70~100%) 50m/min(at160°C)
  - ▶ Polyester : Drying    Padding    Curing  
Pick up(70~100%) 50m/min(at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionalityand laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.



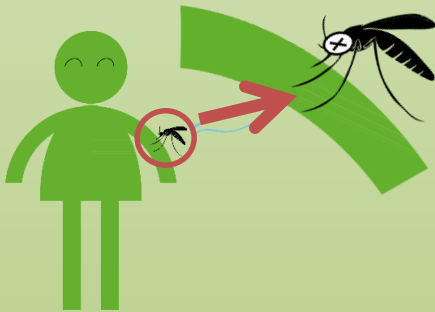


## MECHANISM OF ENVIRONMENT FRIENDLY MOSQUITO REPELLENT (MOSPASS® MECHANISM)



### 1. Long distance: avoiding ingredient preferred by mosquito, avoidance (body odor & other smell)

When working after wearing clothes of textile processed with mosquito repellent, **odor preferred by mosquito is concealed in front of** mosquito olfaction with distance of 15m~30m to prevent mosquito from approaching in order to realize mosquito repellent effect.



### 2. Short distance : Mosquito motor system is paralyzed. To prevent mosquito from biting

If wearing clothes of textile processed with mosquito repellent, the motor system of mosquito in short distance **is paralyzed, because mosquito nerve is stimulated by natural BIO extract. Thus, mosquito is unable to bite.** Although natural BIO ingredient paralyzes activity nerve of cold-blooded animal (mosquito & insect), it is safe to homeotherm (human), because it is not toxic to them.



### 3. Mosquito repellent of Nbio Co., Ltd. (MOSPASS®)

Since natural environment friendly odorless antibacterial repellent is supplied **in 3 kinds with mosquito avoidance rate of 70%, 80% & over 90%**, customers can select. Since products such as **mosquito repellent antimicrobials, spraying type, cap, scarf, arm warmers, band (foot, arm), socks, etc.** as well as **mosquito repellent product (MOSPASS) and mosquito repellent + cooling function = MOSCOOL product** are available, customers can enjoy agreeable life in summer if selecting and using products in accordance with their need. **The stability of this product is verified by US FDA.** (Refer to products brochure)

<< Multi-functional antibacterial agent >>

Eco-A1<sup>TM</sup>  
(Anti-Pollution)

[ Characteristics of the product ]

- 1. Mechanism : Metaplasia improvement because nano-silica resin file forms on fiber
- 2. High Safety : No irritation and harmless to skin with nano-silica and natural cationic ingredients harmless to human body
- 3. Multi functionality : Soil proof (fine dust/yellow sand/pollen), antibacterial, deodorization (option), prevention of static electricity (option)
- 4. Highly durable : Washing 10 times or more (available to improve durability through adjusting contents of active ingredients)  
(Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds)

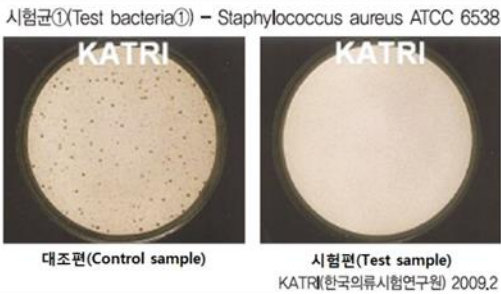
[ Retained functions ]

- 1. Soil proof : Company's own test method / charcoal powder pollution measurement method

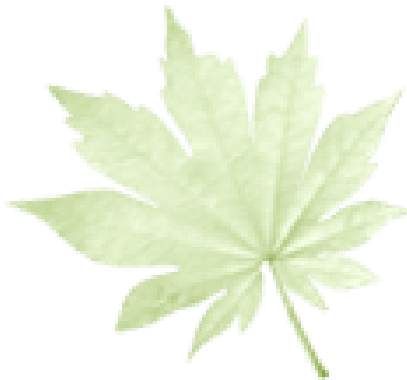
Classification	#1. Unprocessed	#2. S.R. processing (before washing)	#3. S.R. processing (washing 10 times)
※ Test Items  1. Insert samples and charcoal powder(30μm) to 5L polybag  2. Constantly mix for 100 times(1 time/sec).  3. Take samples and remove dust from them with hands  4. Analyze them with naked eye or stereoscopic microscope			

- 2. Antibacterial : >99.9% (ATCC 6538, ATCC 4352)
- 3. Prevention of static electricity : Friction to voltage 500 Volt or less (before washing) (option)

※ Based on Japan standards : 2,000~2,500 Volt or less



- 3. Deodorization : >70%  
(Ammonia Gas detector tube method)







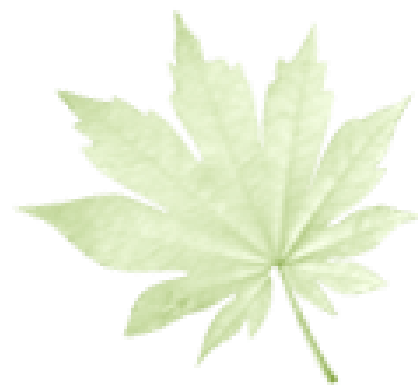
<< Multi-functional antibacterial agent >>

[ Properties and use ]

- Appearance : Translucent white liquid
- Main Ingredients : Nano-silica solution, natural cationic substance, other ingredients harmless to human body
- Odor : Odorless
- Ionicity : Cation
- p H :  $6.0 \pm 1.0$  / change depending on selection of deodorization ( $3.0 \pm 0.5$ )
- Use : ① Cotton, polyester, nylon, acrylic fiber and etc.  
② All of various fiber products : Garment, bedding, household goods and etc.

[ Method of usage ]

- Recommended usage amount and conditions : ( OWF 7% )
  - ▶ Cotton : Drying     Padding     Curing  
Pick up(70~100%) 50m/min(at160°C)
  - ▶ Polyester : Drying     Padding     Curing  
Pick up(70~100%) (at160°C)
- Cautions : Since the fabric's physical properties(color, touch and etc.), functionality and laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.



<< Multi-functional antibacterial agent >>

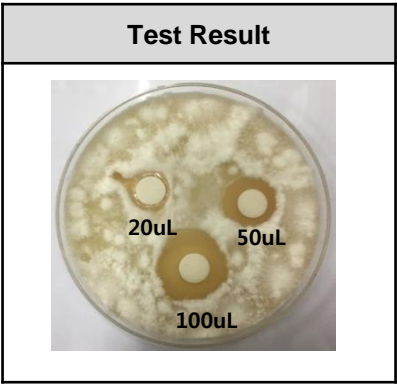


[ Characteristics of the product ]

- 1. Mechanism : Inhibition and elimination of tinea pedis with cosmetic materials(CPC)
- 2. Safety : Organic antibacterial agent (It complies with safety standards for products that may harm to human body )
- 3. Multi functionality : Anti-tinea pedis, antibacterial, deodorization(Option)
- 4. Highly durable : Washing 10 times or more (Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds)

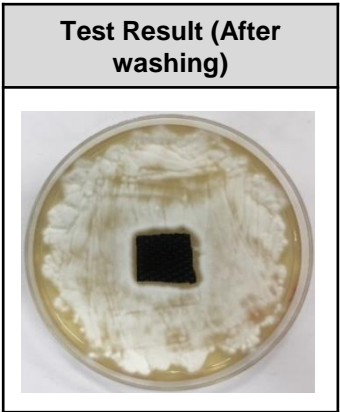
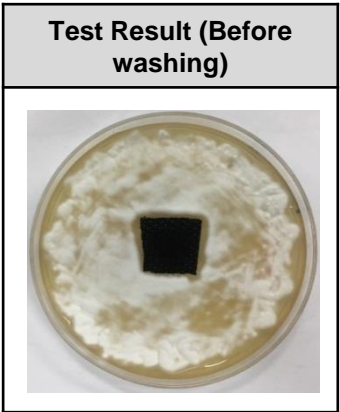
[ Retained functions ]

- 1. Anti-tinea pedis : >99% (Trichophyton rubrum, ATCC 28188)  
1) Bio-AT Liquid Test : Clear Zone Test



Dose	20 $\mu\ell$	50 $\mu\ell$	100 $\mu\ell$
Clear Zone Size	2mm	4mm	7mm

2) Processing fabric Test : Clear Zone Test

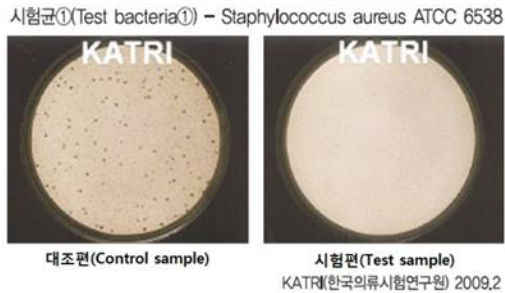


Test Result
1. Clear Zone Test Result Processing fabric before washing and after washing 20 times Antibacterial activity is realized against trichophyton rubrum
2. If there is no antibacterial activity, flora will be cultivated on fabric .



<< Multi-functional antibacterial agent >>

2. Antibacterial : >99.9% (ATCC 6538, ATCC 4352)



3. Deodorization : >70% (Ammonia Gas detector tube method)(Option)

[ Properties and use ]

- Appearance : Transparent / translucent liquid
- Main Ingredients : Cosmetic (CPC)materials, other ingredients harmless to human body
- Odor : Odorless
- Ionicity : Cation
- p H :  $6.0 \pm 1.0$  / change depending on selection of deodorization ( $3.0 \pm 0.5$ )
- Use : ① Cotton, polyester, nylon, acrylic fiber and etc.  
② All of various fiber products : Socks, gloves, shoes, fiber products and other household goods

[ Method of usage ]

- Recommended usage amount and conditions : ( OWF 7% )
  - ▶ Cotton : Drying → Padding → Curing  
Pick up(70~100%) 50m/min(at160°C)
  - ▶ Polyester : Drying → Padding → Curing  
Pick up(70~100%) (at160°C)
- Cautions : Since the fabric's physical properties(color, touch and etc.), functionalityand laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.



## << Multi-function finishing agent >>

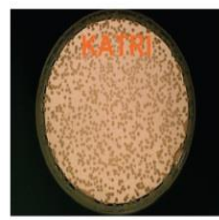
# Flawless®

### [ Features ]

1. Mechanism : Organic antimicrobial/implementation of antibiosis during post textile processing
  2. High Safety : Safe thanks to using organic ingredients for food additives
  3. Multi functionality : Antibacterial, Deodorization(Optional)
  4. Highly durable : Washing 10~20 times or more (implementation of customized washing durability)
- (Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds)

### [ Functions ]

1. Antibacterial : >99.99% (verified after washing 10~ 20 times)
  - Method : KS K 0639 / JIS L 1902
  - Inoculant : ATCC 6538(Staphylococcus aureus),  
ATCC 4352(pneumococcus)
2. Deodorization(Optional) : > 70% (Method : Ammonia Gas detector tube method)



[Control sample, After 18 h]



[Test sample, After 18 h]

### [ Properties and use ]

- Appearance : Transparent or translucent liquid
- Main Ingredients : Ingredients for food additives and other components harmless to humans
- Odor : Odorless
- Ionicity : Cation
- p H :  $5.5 \pm 0.5$  / change depending on selection of deodorization ( $3.0 \pm 0.5$ )
- Purposes : ① For all seasons / cotton, polyester, nylon, acrylic fabric  
② All of various textile products : Garment, Bedding, Household Goods

### [ Method of usage ]

- Recommended quantity and usage condition : ( OWF 7% )
  - ▶ Cotton : Drying    Padding    Curing  
Pick up(70~100%) 50m/min(at160°C)
  - ▶ Polyester : Drying    Padding    Curing  
Pick up(70~100%) (at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionality and laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products..



<< Multi-functional antibacterial agent >>

# Ginkgo<sup>TM</sup>

## [ Features ]

1. Mechanism : Natural antibacterial activity of ginkgolide - ginkgo leaf extract.
2. High Safety : Harmless to humans thanks to using natural ingredient - ginkgo leaf extract.
3. Multi functionality : Antibacteria, Deodorization(Optional), Improvement in blood circulation
4. Highly durable : Washing 20 times or more

(Cautions: It is required to test washing durability in advance depending on processing conditions and fabric kinds)

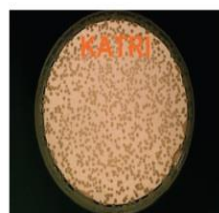
## [ Functions ]

1. Antibacterial : >99.99% (verified after washing 20 times)

- Method : KS K 0639 / JIS L 1902

- Inoculant : ATCC 6538(Staphylococcus aureus),

ATCC 4352(pneumococcus)



[Control sample, After 18 h ]



[Test sample, After 18 h ]

2. Deodorization(Optional) : > 70% (Method : Ammonia Gas detector tube method)

## [ Properties and use ]

- Appearance : Transparent/translucent ivory liquid
- Main Ingredients : Ginkgo leaf extract, other ingredients harmless to humans
- Odor : Odorless
- Ionicity : Cation
- pH :  $5.0 \pm 0.5$  / change depending on selection of deodorization ( $3.0 \pm 0.5$ )
- Purposes : ① For all seasons / cotton, polyester, nylon, acrylic fabric  
② All of various textile products : Garment, Bedding, Household Goods (bedding, bed, mattress, mat fabric, inner ware, underwear, pantyhose, shirts, other non-skin irritation fabric products)



## [ Method of usage ]

- Recommended quantity and usage condition : ( OWF 7% )

► Cotton : Drying    Padding    Curing

Pick up(70~100%) 50m/min(at160°C)

► Polyester : Drying    Padding    Curing

Pick up(70~100%) (at160°C)

- Cautions : Since the fabric's physical properties(color, touch and etc.), functionality and laundry durability may change depending on processing conditions and fabric kinds, please make sure to conduct testing or quality assessment in advance before using products.

