



#### Contact

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# Functional Lyocell Fibers



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**TITK e.V.**  
→ Applied  
Research

[www.titk.de](http://www.titk.de)

Native Polymers and  
Chemical Research

Textile and Materials  
Research

Plastics Research

Functional Polymer  
Systems

**OMPG**  
→ Accredited  
Testing Laboratory

[www.ompg.de](http://www.ompg.de)

Textiles

Composites

Synthetic Materials

**smartpolymer**  
→ Production and  
Sales

[www.smartpolymer.de](http://www.smartpolymer.de)

Functionalized  
Lyocell Fibers

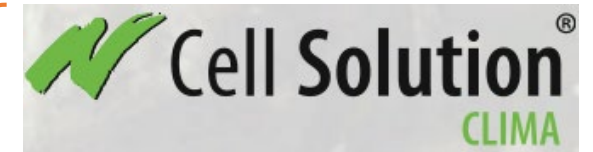
Flocked Parts  
(Applicators)

Latent Heat Storage

Bio-Based and  
Biodegradable Adhesives

Sensors

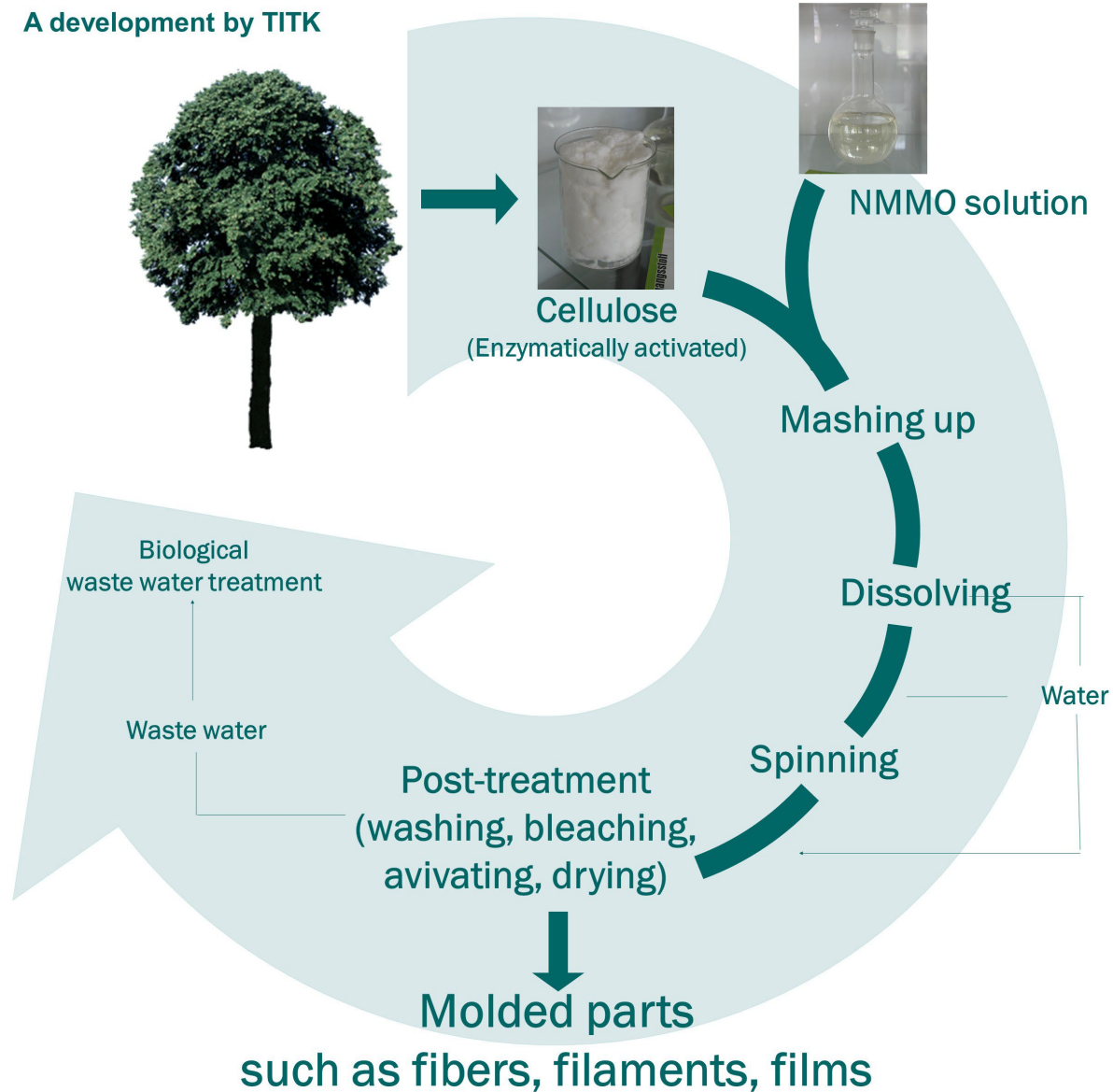
Bristles





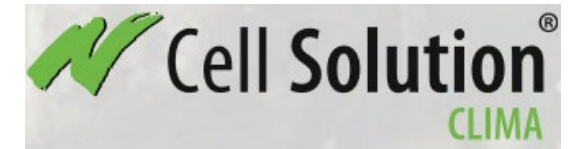
# The ALCERU method

A development by TITK




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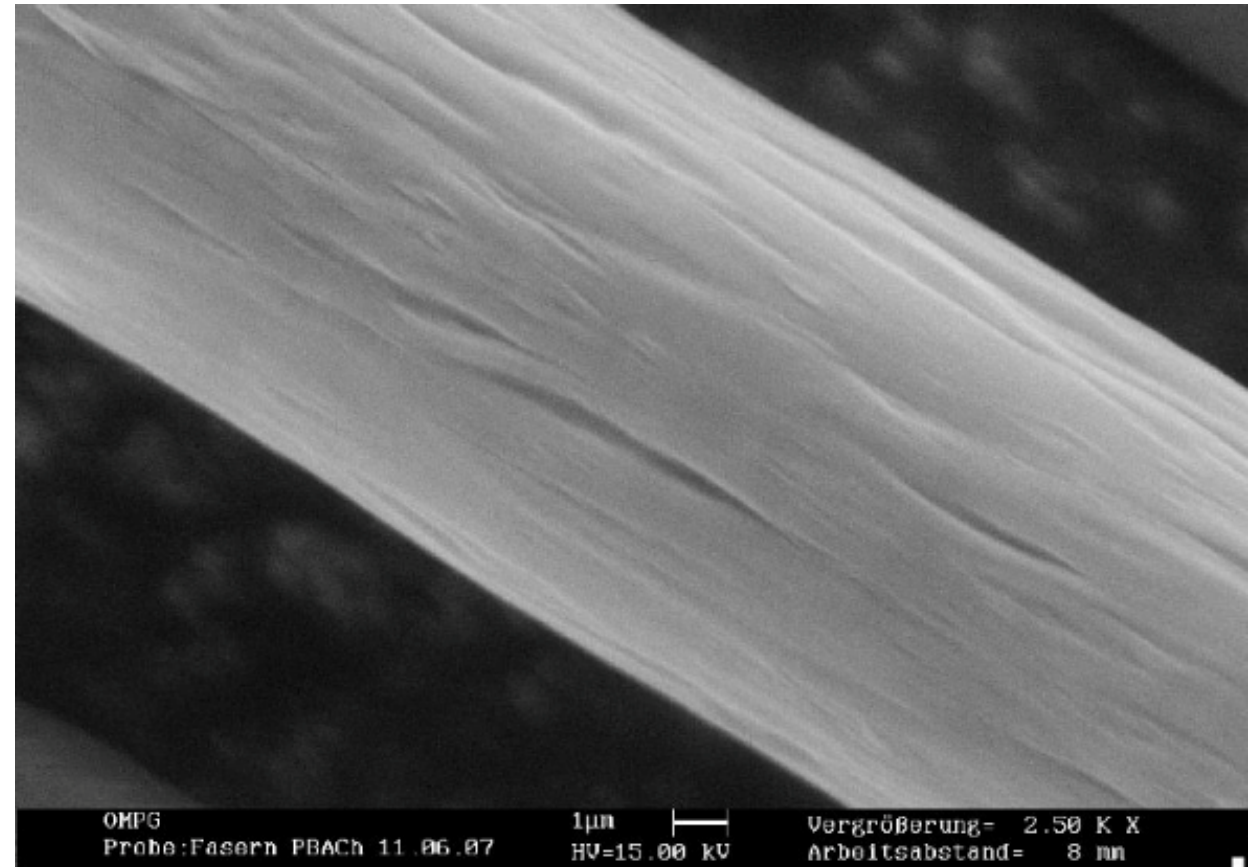
 **Cell Solution**<sup>®</sup>  
CLIMA



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- ✓ Lyocell staple fiber
- ✓ Excellent moisture management
- ✓ Smooth lyocell like surface
- ✓ Good textile processability
- ✓ Sustainable and biodegradable
- ✓ Oeko-Tex® STANDARD 100

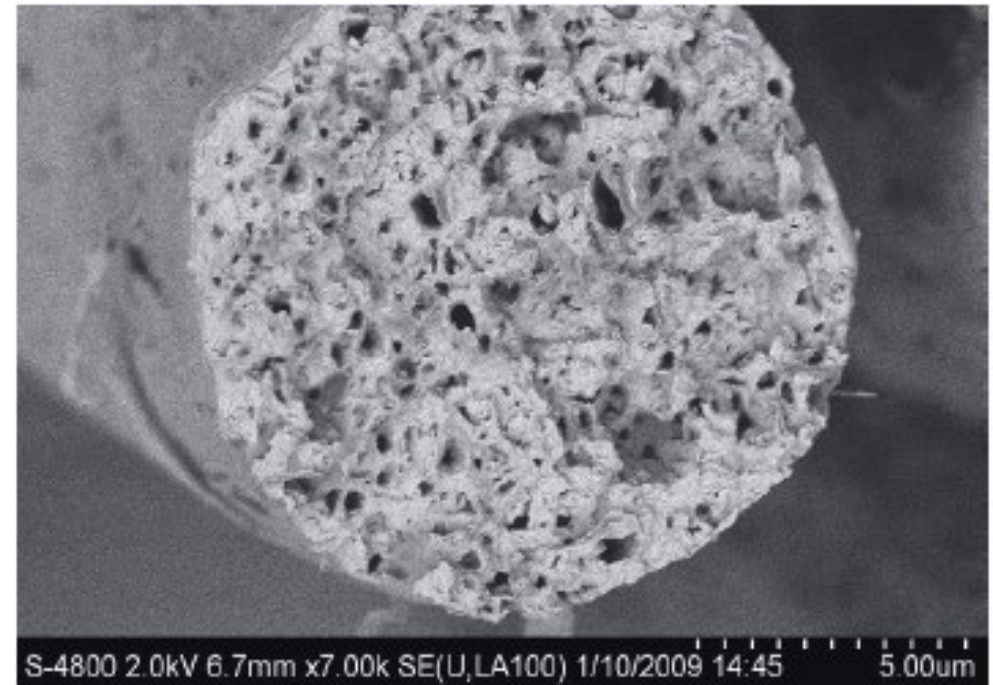




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- ✓ PCM – heat storage and release – function embedded during fiber spinning.
- ✓ Chemical bond between cellulose and paraffin.
- ✓ No micro capsules.
- ✓ Permanent lifelong functionality.
- ✓ Full textile processability.





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- ✓ Best of class → heat storage capacity:
  - ✓ 6.7 dtex 60mm: > 90 Joules / gram fiber,
  - ✓ 2.3 dtex 38mm: > 50 Joules / gram fiber.
  
- ✓ Best of class → price / heat storage capacity.
  
- ✓ 30% fiber content recommended to be arbitrarily blended.
- ✓ Cooling (storing) and warming (releasing) can be felt by contact → “USP at POS”.
- ✓ Continuous cooling or warming through product design.

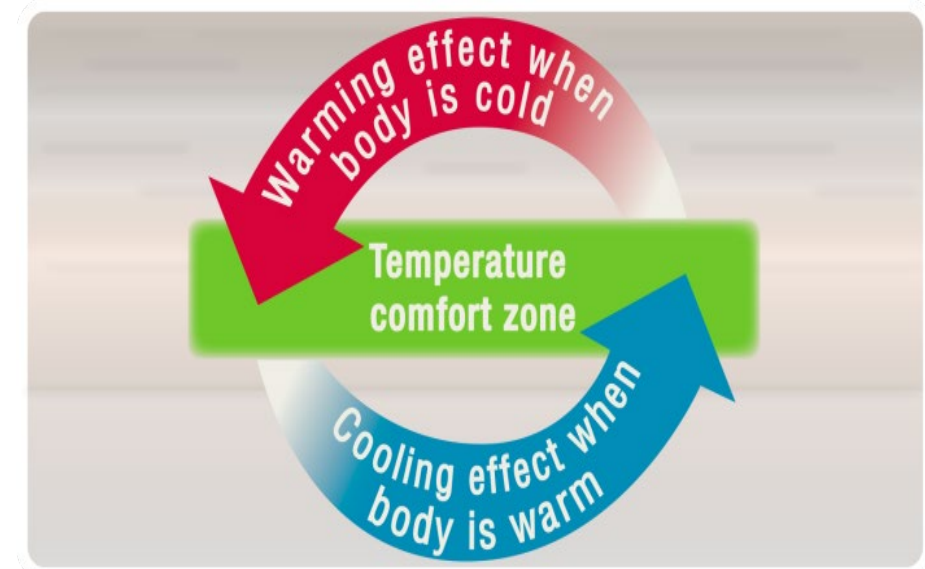




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- ✓ Temperature peaks are capped.
- ✓ Temperature hot spots are smoothed out.
- ✓ The average temperature is affected by 2°C.
- ✓ Perspiration is greatly reduced.
  
- ✓ Product development support.
- ✓ Testing and certification of product performance.





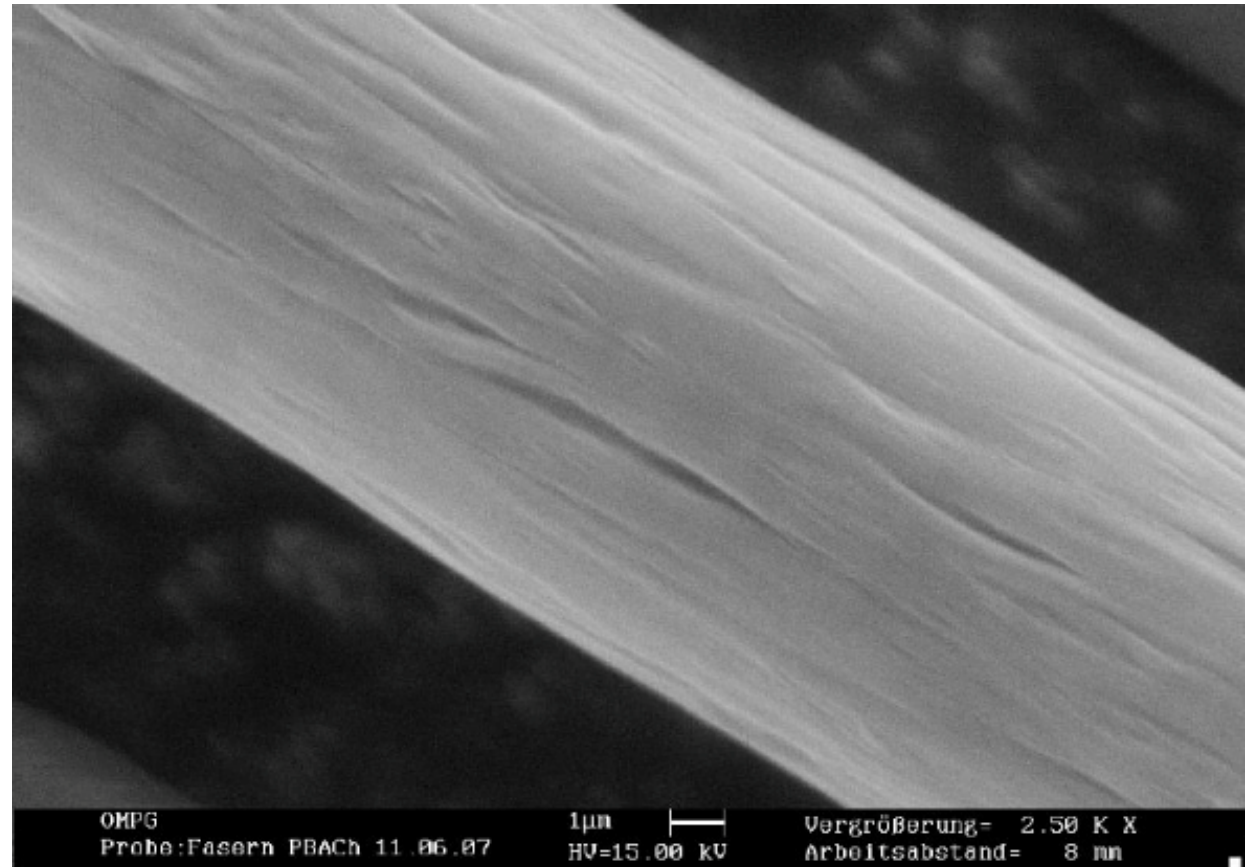
 **Cell Solution**<sup>®</sup>  
SKIN CARE



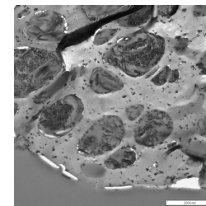
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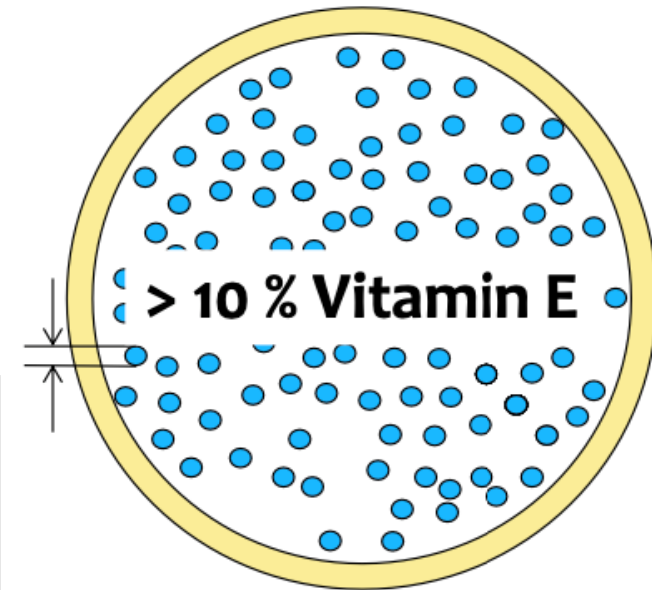
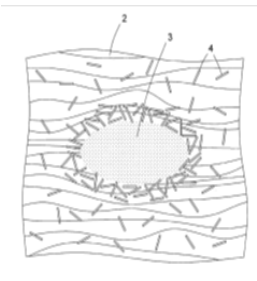
- ✓ Lyocell staple fiber
- ✓ Excellent moisture management
- ✓ Smooth lyocell like surface
- ✓ Good textile processability
- ✓ Sustainable and biodegradable
- ✓ Oeko-Tex® STANDARD 100



- ✓ Cosmetic function by “Vitamin E” embedding during fiber spinning.
- ✓ Secondary PCM function embedded (confer. CLIMA).
- ✓ Permanent livelong functionality.
- ✓ Best of class → First and only permanent cosmetic fiber.



Nanometer



→ Tested 100 Washing Cycles



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✓ “Vitamin E” the active substance for instance in jojoba and almond oil, face lotions and creams is known for its properties:

- antioxidant (anti-aging),
- moisture regulation,
- skin regeneration,
- skin repair.





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- ✓ 20% fiber content (on skin side) recommended to be blended.
- ✓ “Vitamin E” transmission by contact and friction from textile to skin.
- ✓ “Vitamin E” recharge out of the inner fiber depot.
- ✓ “Vitamin E” amount transferred like the usage of lotions and creams.
- ✓ Product development support.
- ✓ Testing and certification of product performance.





 **Cell Solution**<sup>®</sup>  
BIOACTIVE



- ✓ Lyocell staple fiber
- ✓ Excellent moisture management
- ✓ Smooth lyocell like surface
- ✓ Good textile processability
- ✓ Listed as active substance at Oeko-Tex®.
- ✓ Oeko-Tex® STANDARD 100 ongoing.

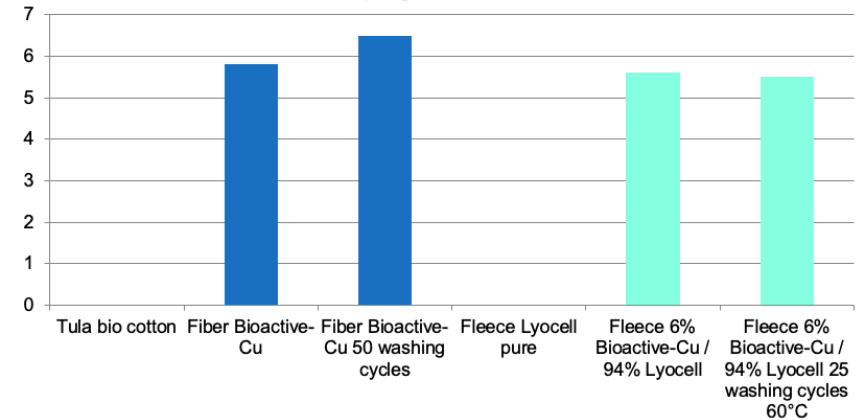
- ✓ Antibacterial function
- ✓ Antiviral function
- ✓ 50 washing cycles performance tested.



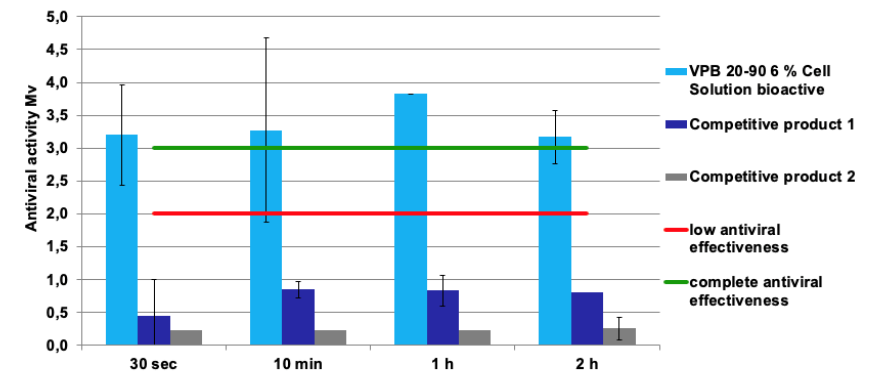
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**Antibacterial effectivity (log KBE)  
Staphylococcus A.**



**Antiviral activity acc. to ISO 18184**







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- ✓ Solution based copper integrated at a very low level in a unique manner.
  
- ✓ Fiber content depending upon level of antimicrobial efficacy:
  - ✓ 6% fiber content antibacterial efficacy log 5 and better,
  - ✓ 6% fiber content antiviral efficacy log 3 and better.
  
- ✓ Blended arbitrarily with other fibers.
- ✓ Copper related discolorations are negligible due to the low admixture.
  
- ✓ Product development support.
- ✓ Microbial testing and certification of product performance.



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Want to learn more?  
**Get in touch** with us and

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