

# Acteev<sup>®</sup>

## MED

Hosiery Applications



# Ascend Performance Materials



- 70-year history in revolutionizing safety in everyday products
- Leading innovator in performance materials **made in the USA**
- **World's largest** fully integrated polyamide 6,6 resin manufacturer
- Currently generate \$2.5 B in annual revenue
- **Pioneering** path for new standards in bacteria-, virus- and microbe-fighting technologies

## Backed by Science



Acteev Medical  
Advisory Board



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# What is Acteev?

Acteev™

## Innovative

Winner of Outdoor Retailer 2021 Innovation Award, ISPO 2022 and protected by more than 100 patents globally.

## Antimicrobial

Active zinc ions protect the article from bacteria and fungi.

## Permanent

Protected with embedded zinc ion technology directly into the matrix of polyamide 66 polymer to provide permanency, preventing it from washing out like some topical treatments.

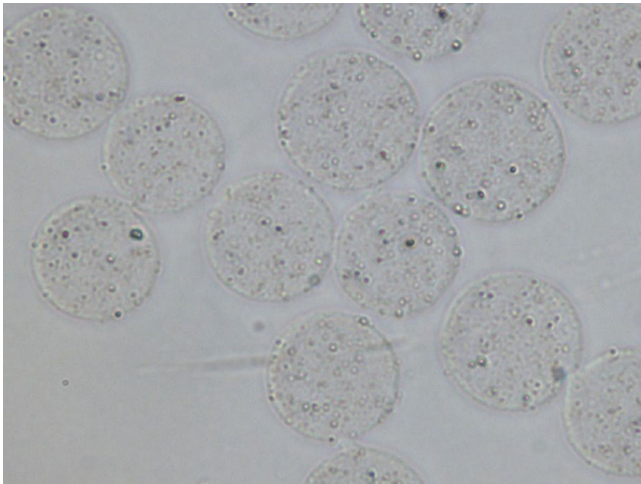
## Natural

Zinc Oxide is a natural ingredient known to sooth the skin. It is non-irritant and non-cytotoxic.

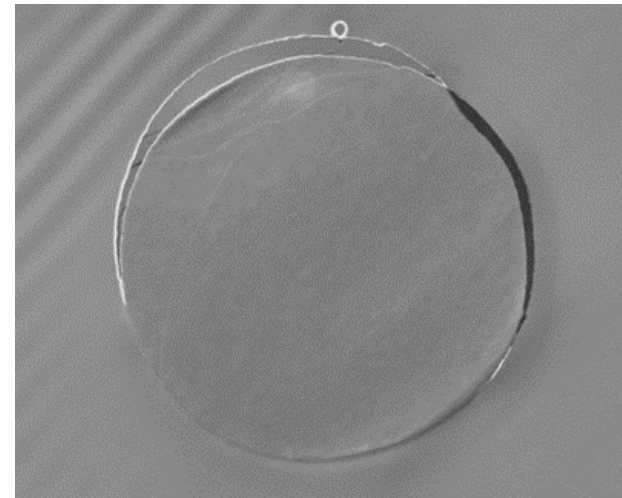
The active ingredient is added in such a way as to be distributed throughout the polymer matrix to **be effective through all the yarn.**

- The result is a high-durability antimicrobial yarn that can be **dyed** while keeping the **most comfortable** next to skin feel.

**Not Polymerized**



**Polymerized**



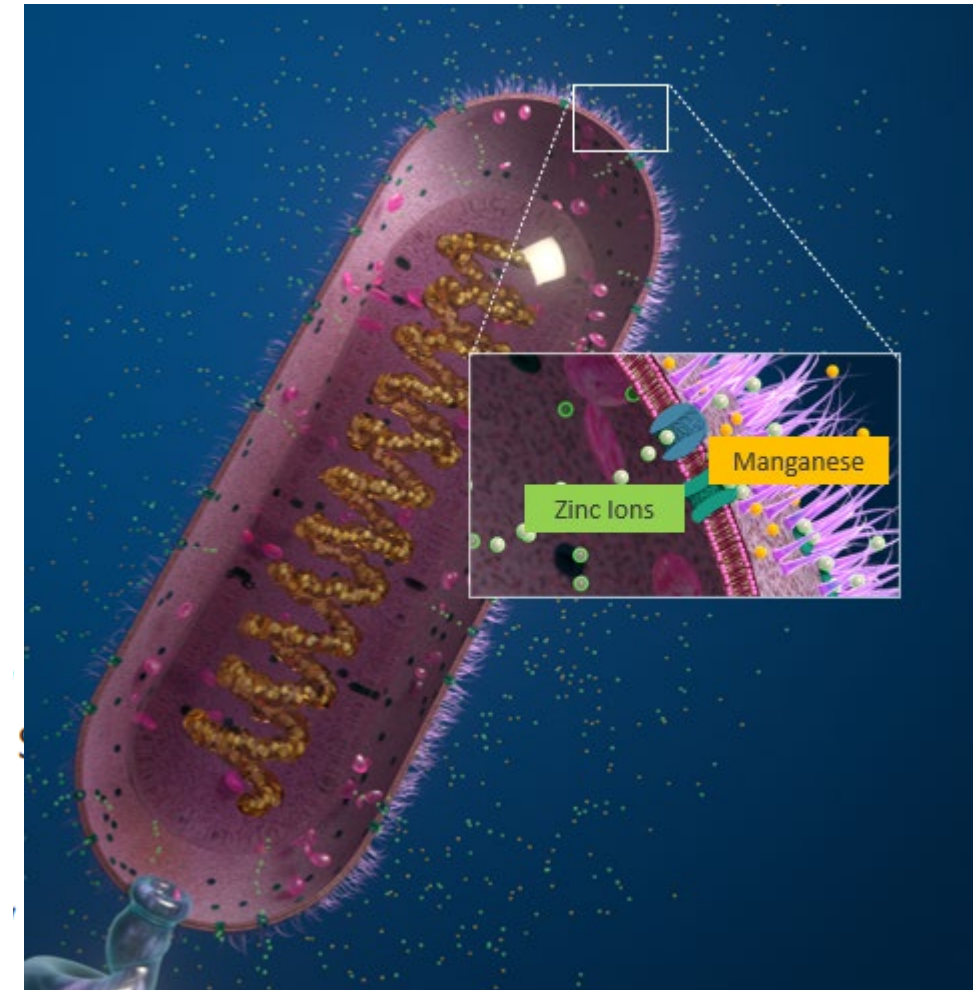
## How it works

Bacteria are living creatures — and they need nutrients to survive. When bacteria contact Acteev, the active zinc ions block their ability to process essential nutrients. Without these nutrients, the bacteria “starve” and are unable to survive.

## Safety First

Unlike the few bacteria -killing, chemical coatings currently available, zinc active is safe and all -natural.

- Acteev’s active ingredient zinc is labeled GRAS, or **Generally Regarded as Safe** by the U.S. Food and Drug Administration.
  - **Non-cytotoxic**
  - **No skin irritant**
  - **“Dermatology tested”**



# Backed by science

Independent laboratories have tested Acteev technology for efficacy against common bacterial and fungal strains.\*

Microbe	Test Method
Staphylococcus aureus	ISO 20743
Klebsiella pneumoniae	ISO 20743
Escherichia coli	ASTM E3160
Candida albicans Aspergillus brasiliensis Penicillium funiculosum Chaetomium globosum Trichoderma virens Aureobasidium pullulans	ASTM G21

*\*Acteev's antimicrobial technology is embedded to protect the product. The product does not protect users or others against disease-causing bacteria, viruses, germs or other organisms. Bioefficacy data (including antibacterial and antifungal) cannot be used on marketing materials, packaging or digital content in association with Acteev Protect even when referencing Acteev Technology. Regulations in other countries may differ. This presentation is for discussion purposes only. Consumer-facing literature and claims need to follow the appropriate regulatory and legal validation and review process. Testing conducted on various end forms. Please refer to technical data sheet for data on specific products.*

<sup>1</sup> Testing conducted on Acteev Protect fabric made with 70 denier/68 filament yarn and filaments.

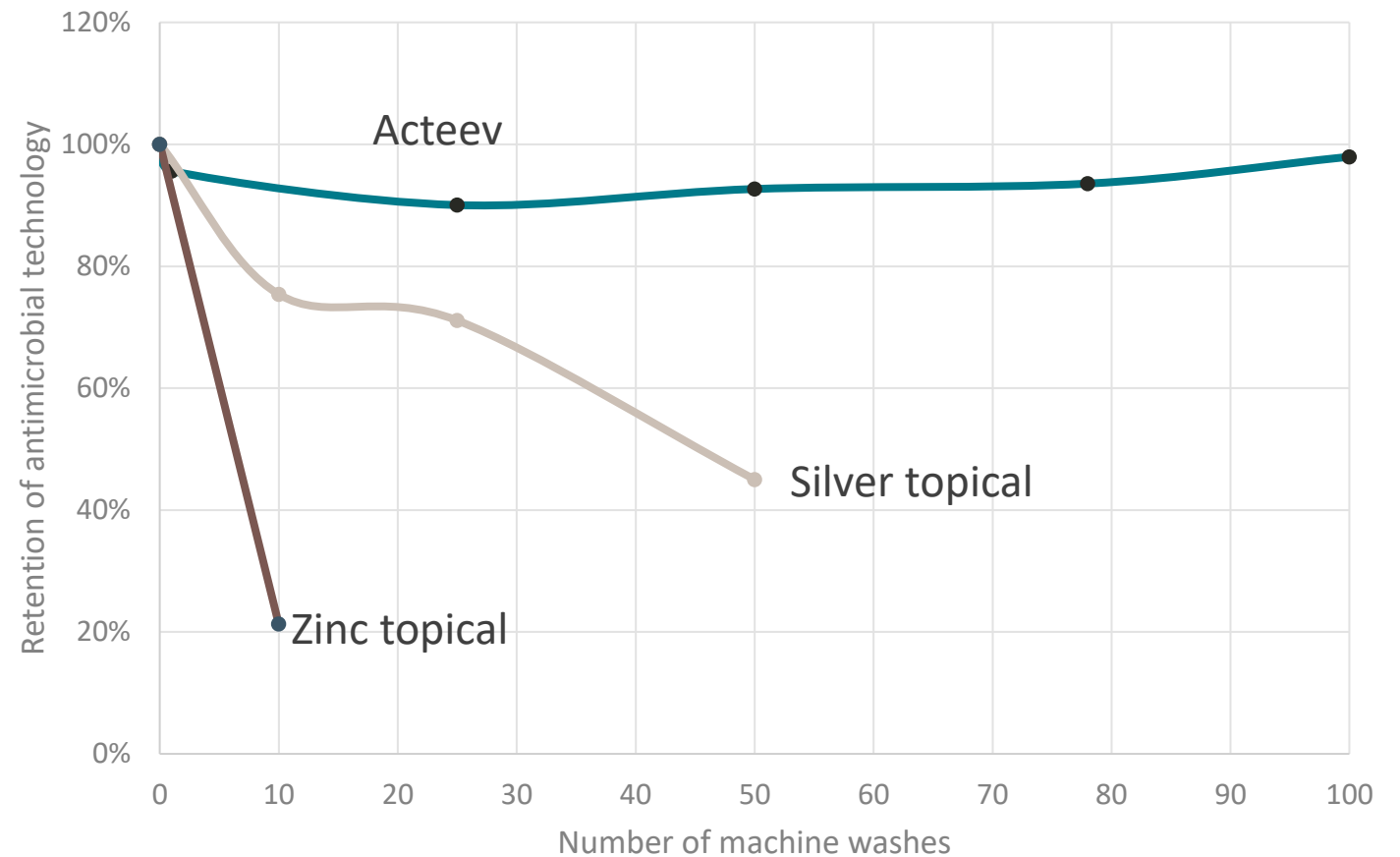
# Measuring efficacy after laundering

Acteev is permanent, last over 100 washes.

Active ingredients of each sample and Acteev sample measured

Samples washed for a prescribed number of times per AATCC protocol

Active ingredients measured with ICP to determine loss

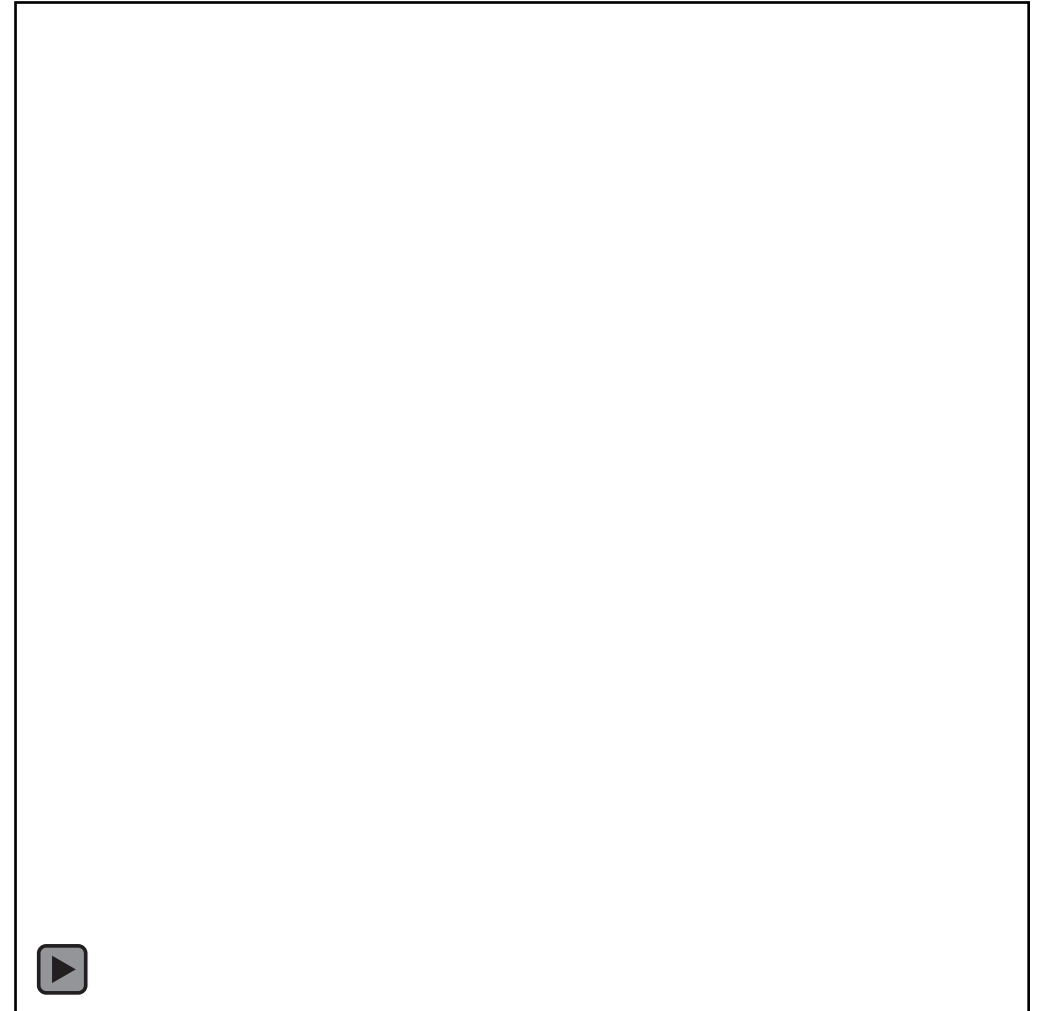


# Optimal skin contact materials

Acteev is novel material for skin contact applications.

Polyamide 6,6 in Acteev is the optimal material for skin contact applications, used today in medical compression and wound care applications.

Acteev fabrics can move moisture effectively, wicking sweat that can result in cooling and comfort.



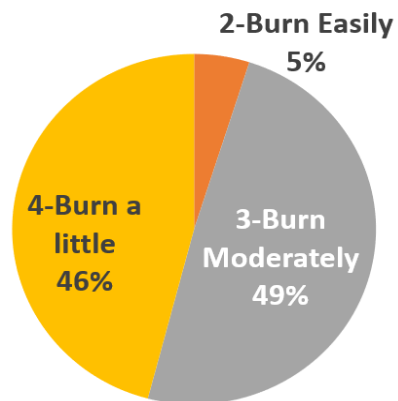


# Human Skin Testing

Acteev Substrates were “*dermatologically tested* and under the conditions of this study there was *no indication of a potential elicit dermal irritation or sensitization (no contact allergy) noted.*”

**METHODS:** 24-hour exposures 3 times a for 4 consecutive weeks

Fitzpatrick Skin type:<sup>1</sup>

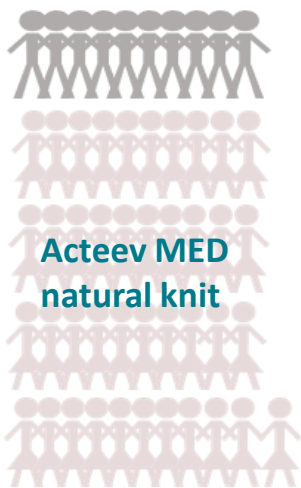


**RESULTS:**

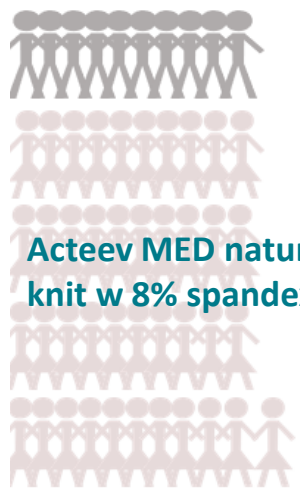
According to the International Contact Dermatitis Research Group scoring scale<sup>2</sup>,  
**100% of the subjects scored 0 = No reaction**



Acteev MED  
spunbond



Acteev MED  
natural knit



Acteev MED natural  
knit w 8% spandex

<sup>1</sup> Agache P, et.al. Measuring the skin, Springer-Verlag Berlin Heidelberg, 2004, p473

<sup>2</sup> Rietschel, R.L, et.al. Fisher's Contact Dermatitis 4<sup>th</sup> ed. Baltimore, Williams & Wilkins, 1995

# Compression Sock Blind Wear Trial



Participants in the blind study can tell the difference! The Acteev compression sock was statistically significantly different than the equivalent non-Acteev.

## Methods:

Demographics	22 participants, >60% in 26-44 yrs. old age group; 60% Male
Wear Time	Average Continuous Wear time: 6.25 Hours Range of Wear time: 3:51 – 7:45
Washing	Socks washed daily using AATCC non-scented standard detergent and dried in a dryer cycle
Evaluation	Evaluation Test Method: ISO 5495:2005(E) Sensory Analysis-Methodology-Paired Comparison Test

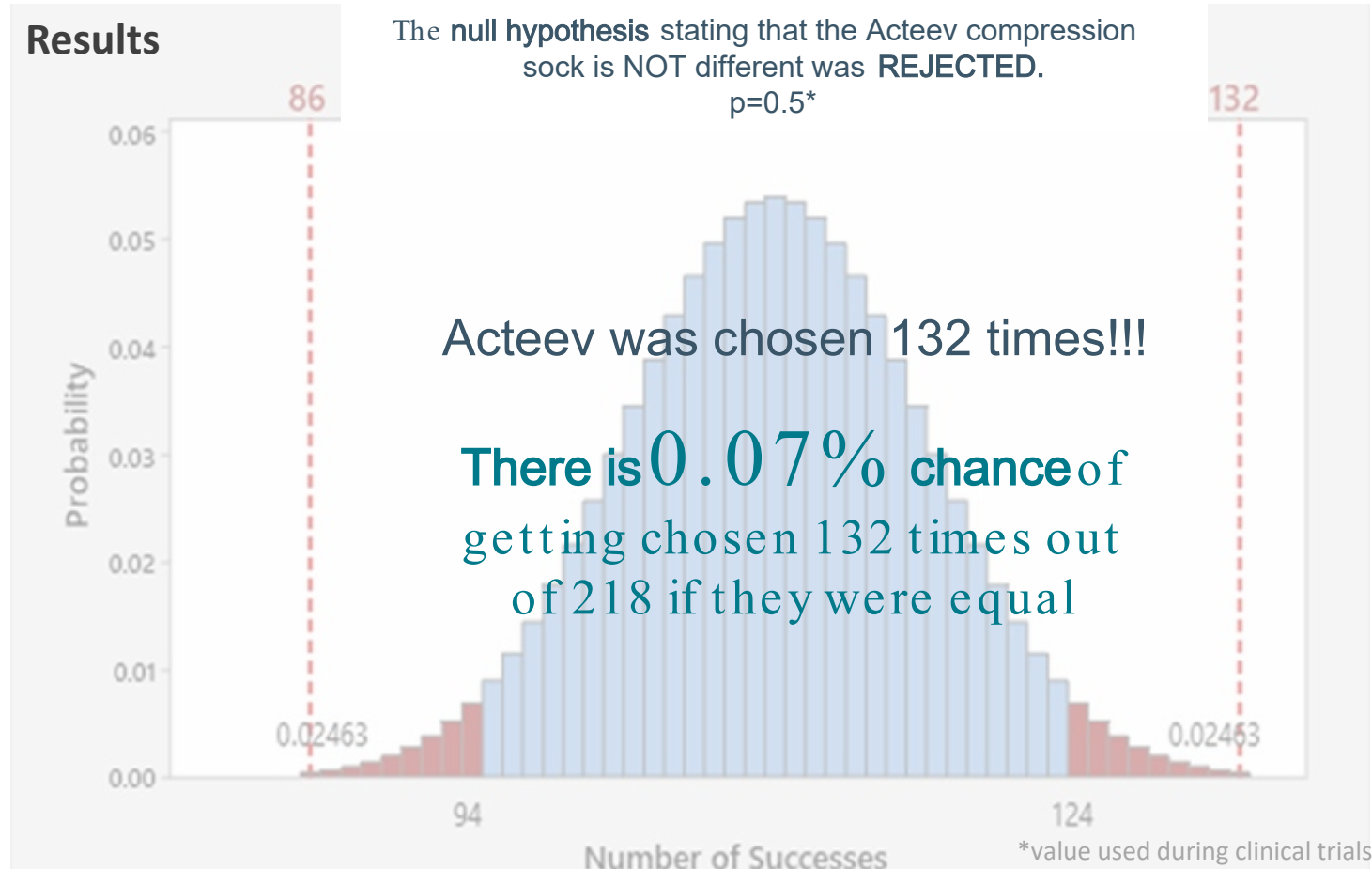
## Comments:

Acteev sock seemed to manage moisture better

*"If I am buying compression socks, the left is my choice."*  
Participant wearing Acteev sock on the left on this day.

When Acteev sock chosen, they would note that their was a definite difference

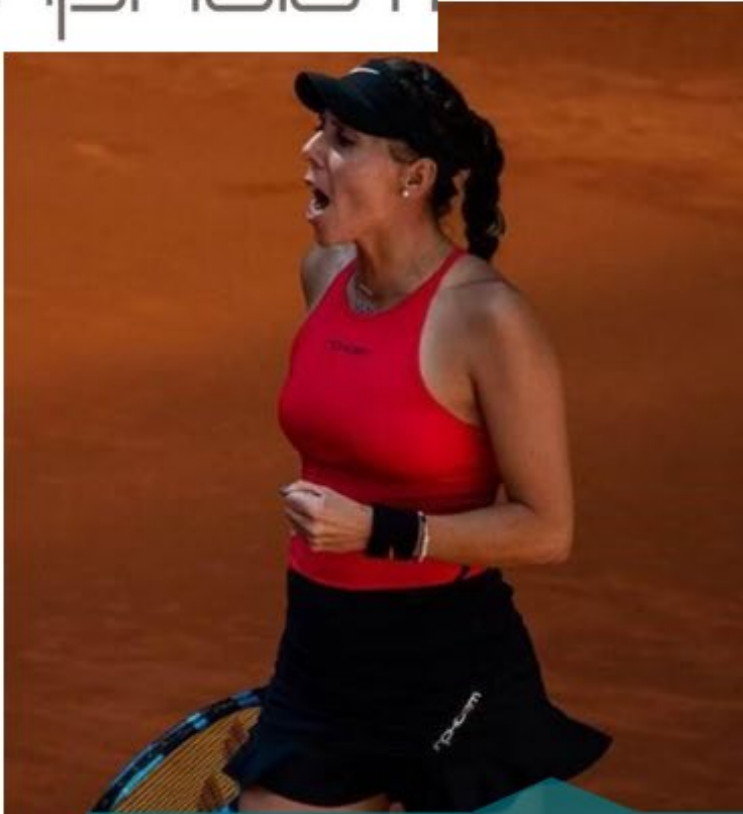
## Results



# Customers love Acteev

Acteev

INFORM



I tried the new black skirt with the Acteev material, and I loved it! It's super soft but still stretchy and light weight. I loved it!

*Giuliana Olmos, Top 10 ranked professional Women's Tennis Association tennis player*

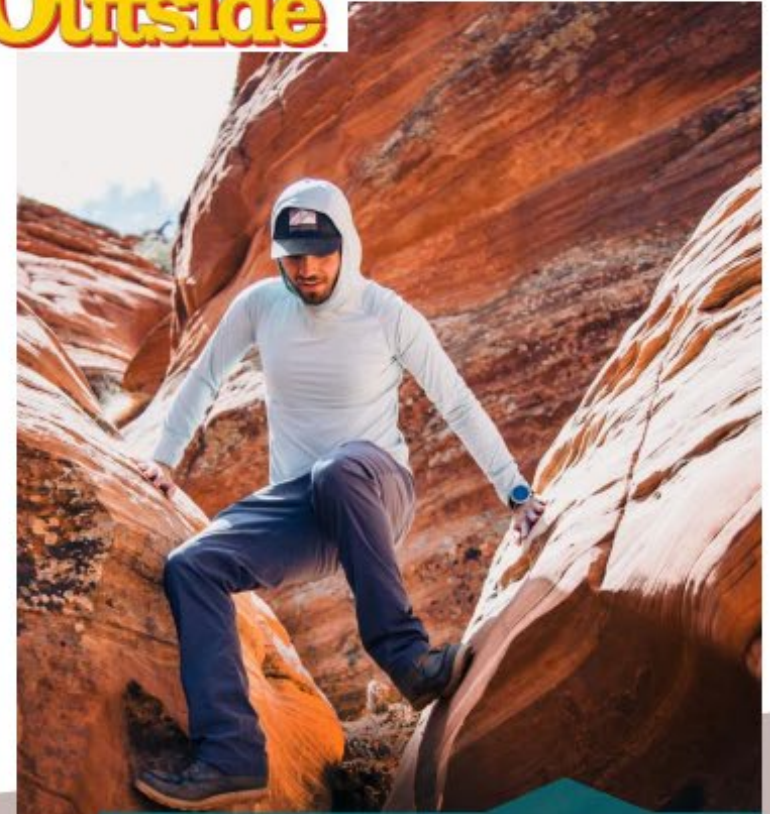
OOMLA



We tested these on teenage athletes, including one boy who wore them for seven days straight without washing them. After a full week of wear, not one sock had an odor!

*Cara Netterson, M.D., Founder of OOMLA*

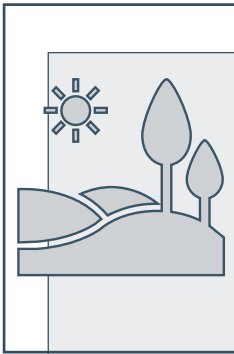
Outside



Perhaps the best hiking shirt I've ever worn...I have hiked in it, run in it, and even sported it for consecutive Rockies climbs without a single wash...The fabric—nylon from Acteev and embedded with antimicrobial zinc—is still as buttery soft and smell-free as the day it arrived.

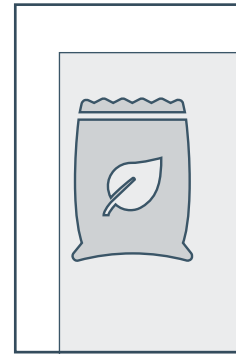
*Outside*

## Responsible stewardship of every molecule



### Carbon neutral

- Our fibers and nonwovens are available as **100% carbon-free**. And our investments allow us to pass along carbon neutrality to your final product.



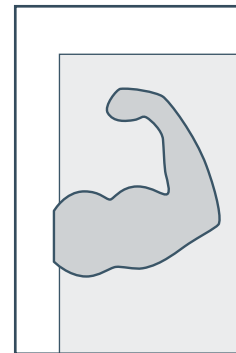
### Plant-based polymer

- **Bio-based** products are ISCC+ certified with up to 30% renewable feedstock, and options with up to 70% renewable feedstock are coming soon.



### A second life for textiles

- Our partner company, Circular Polymers by Ascend, recycles nylon, polypropylene and polyester, allowing conversion to high-performance polymers.



### Built to last

- Our yarns are made of nylon 6,6 – one of the most durable fibers available, with more **abrasion-resistance** and **less shedding** than other fibers.

## **Odor resistance**

Inhibits growth of bacteria and other microbes that cause bad smells

## **Microbe resistance**

Designed to keep substrate fresh and self-clean

## **Long-lasting protection**

Embedded zinc ions don't wash away or flake off

## **Skin benefits**

Zinc active has shown to reduce itching, redness and irritation

## **Design freedom**

Natural yarns can be dyed or printed, solution dyed black also available



\*This product does not protect users or others against disease-causing bacteria. This presentation is for discussion purposes only. Consumer-facing literature and claims need to follow the appropriate regulatory and legal validation and review process.

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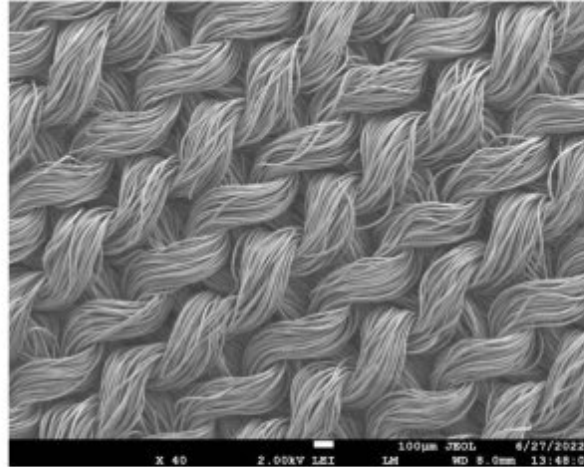
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# Performs in real-world conditions

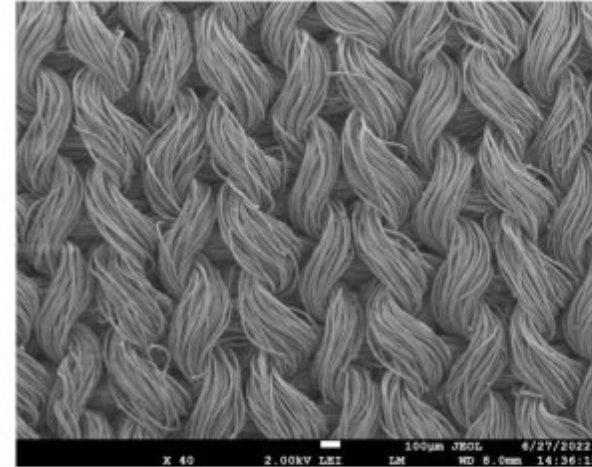
Acteev

Acteev is durable, like nylon 66.

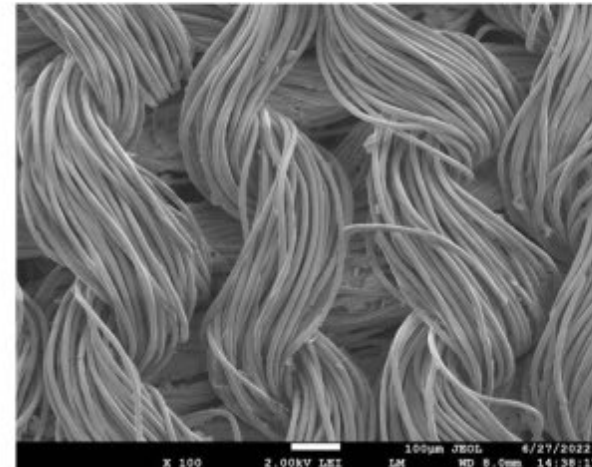
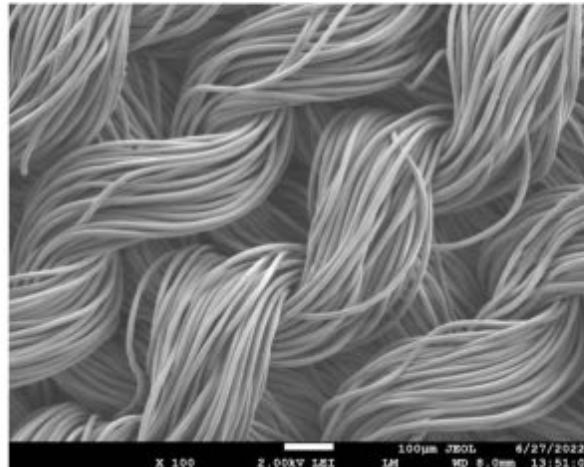
New shirt



After 9 months of wear



Fabric made with Acteev was wore during weekly high physical activity maintaining high durability



# Silver Yarn Cost Comparison

Acteev doesn't only bring value to the users but also to the manufacturers! Let's figure out the best solution to your needs.

Up to 40% cost savings opportunity

Providing localized odor protection using 30% Acteev vs 5% silver metallic yarn

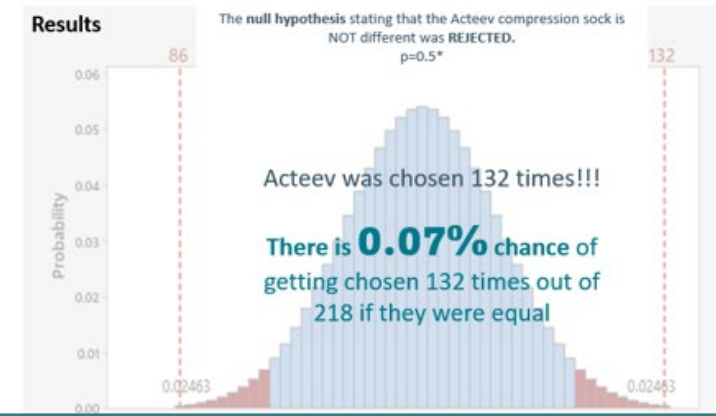


We tested these on teenage athletes, including one boy who wore them for seven days straight without washing them. After a full week of wear, not one sock had an odor!

*Cara Netterson, M.D.,*



Maximizing zinc in contact with the skin using 73% Acteev vs 23% silver metallic yarn



Shown to be statistically significant against control

- Although Acteev requires higher concentration than metallic yarns, it provides:
  - Cost savings
  - No need for knitting machine damage from silver coated yarns