

BENEFITS OF WOOL FUNCTIONALIZATION

Some application examples

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SCHOELLER FACTS



Founded in 1849 by the Schoeller family



Spinning mill, dyeing mill, wool treatment



3,000 tons of industrial yarn



Production in Czech Republic and Poland, HQ.: Austria



Large stock service for short delivery times



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Definitions:

Functionalization understood in a broader sense

- as a process for changing the properties of wool
- focus on product development

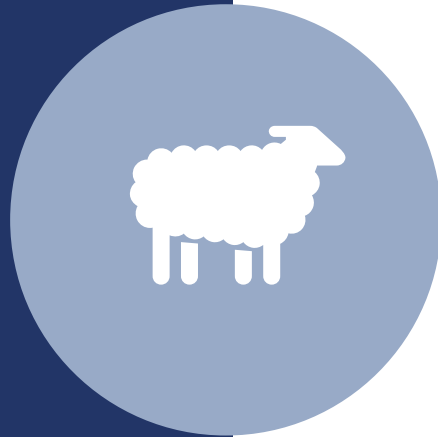
Functionalization and benefits related to

- Generally known technical properties of wool
- New technical properties of wool
- Improvement of sustainability
- Customer benefits -> Availability in the market

The specific advantages must always be seen in the context of the respective fields of application and requirements.



Wool – The functional fiber

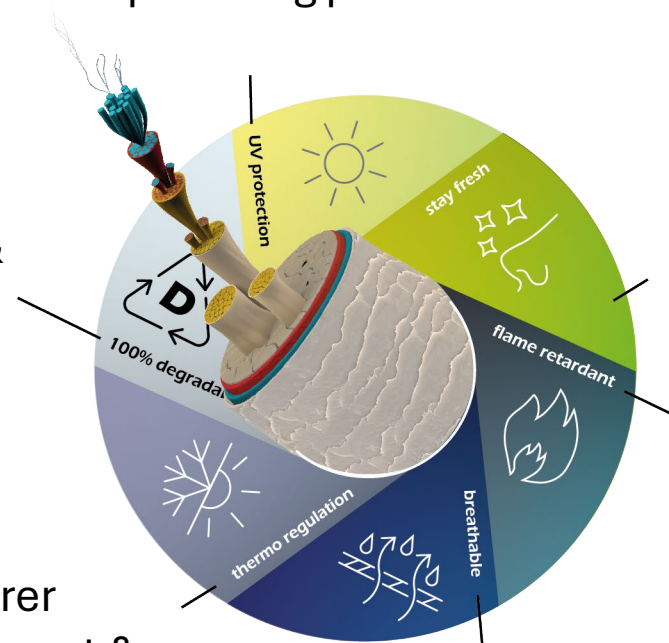


Biodegradable
Merino is 100% biodegradable & renewable

Temperature-regulating
Wool keeps wearer warm even when wet & keeps wearer cool in warm ambient temperatures

UV protection

Merino absorbs UV radiation providing protection from the sun.



Stay fresh

Merino wool absorbs the odour molecules from sweat

Flame retardant

Wool is naturally flame retardant. It never melts so it can't stick to the skin

Breathable

Merino wool is one of the most breathable fibers

.....the decathlete among fibers

Practical application examples:

The functional fiber



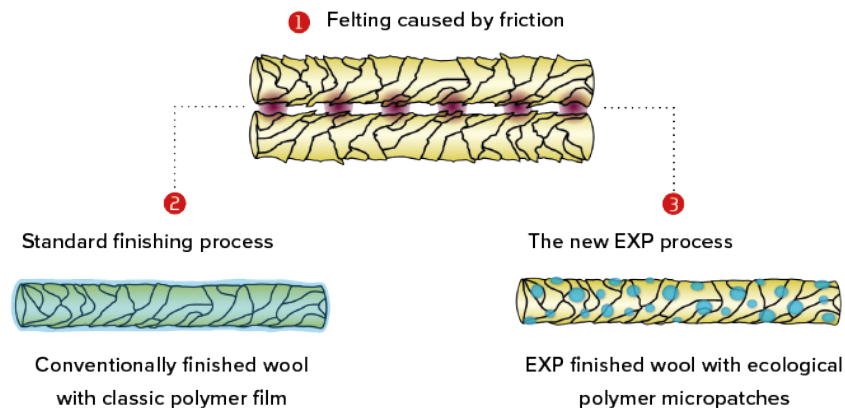
Washability



- Various traditional methods
Superwash
(Sodium-Hypochloride (NaOCl))
Basolan
- Problem of halogen compounds (AOX)
in wastewater and on the skin
- A modern method should be:
chlorine-free
environmentally friendly
no hazardous gases
sustainable (certified)

Washability

- EXP-treatment



- EXP based on a salt (Caroat)
- No Toxic AOX released
- Best performance (5x5A) like TEC
- All common certifications (GOTS, IVN, Bluesign, Ecotex...)



~~AOX~~

No
AOX



5 x 5 A
washable



Less
water



No
chlorine



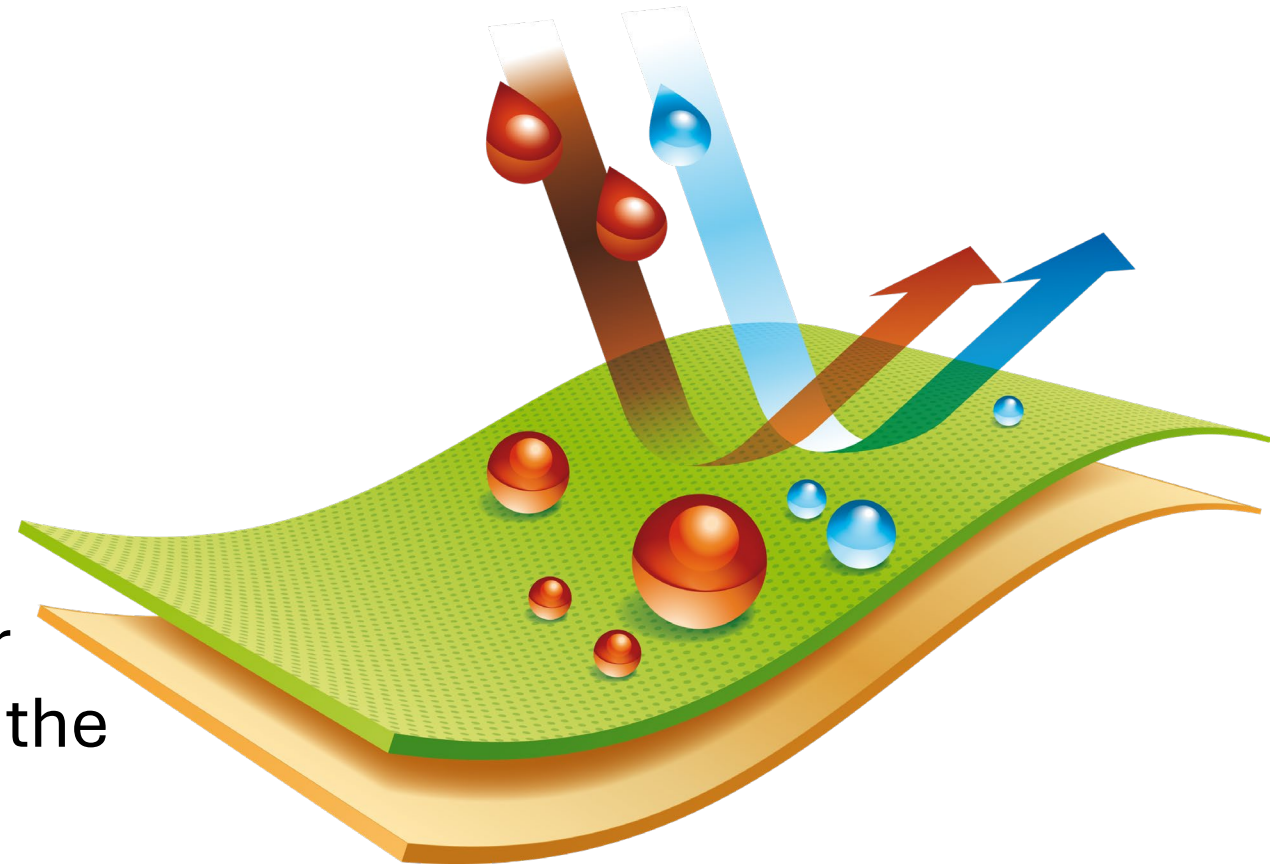
Far fewer
chemicals



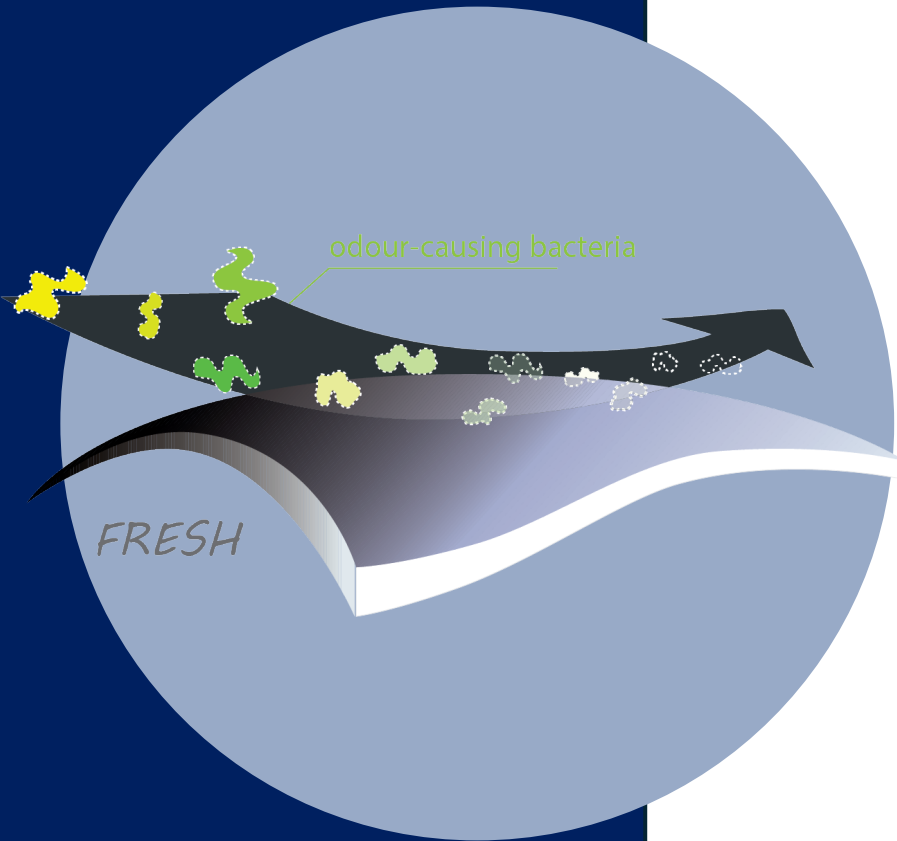
Water, dirt and oil repellent

- Improved care behavior
- perfluorinated compound C8
- only used to a limited extent due to existing regulations
- Good C8 free products for water and oil repellent applications in the market

Easy-care surface of the wool
e.g., ketchup or oil rolls right off



Antimicrobial properties



- Wool is naturally odor-resistant
- Additional treatment
- Enhance the antibacterial properties of wool
- Really necessary?
- Application example:



Silver-Treatment

Ag can damage the wool

Water absorption

Hydrophobic -> reversal to hydrophilic

Outside of the textile:
water repellent



Care or welfare finishes



- Antioxidants (Vitamin E)
- Aloe vera used in hand-knitting yarn to care for the hands



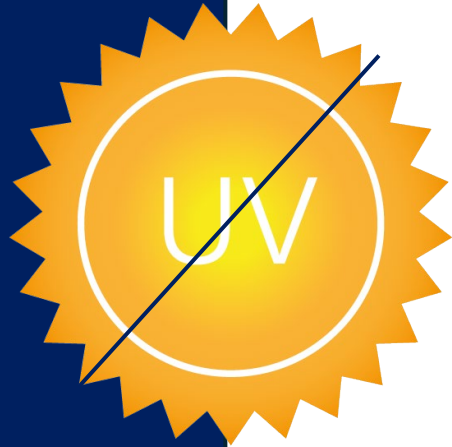
Antimosquito treatments



- Various active ingredients
- Application examples:
Outdoorwear
Combat suits
- Ticks in forests (Hunter)



UV protection



- Shirts-> 30-50+

but: dye, fabric density,
material weight



Flame-retardant properties



Excellent wearing properties of wool
LOI (Limiting Oxygen Index)
-> Burning behavior at
21% oxygen in the air



Wool **25** Police/military
Self-extinguishing
No melting of the fiber
(charring)



WV Zirpro **33** Aircraft seats



WV / CV-FR **29** Military underwear



Blends with (other) fibers

- Utilize and complement the physical properties of wool
- Adapted physiological textile properties
- Use of the natural wool colours



More Reasons for blending



Abrasion resistance

PA -> for socks
Seamless knitting

PES -> Price, many special fibers

PP -> Climayarn -> Moisture management

Tear/tensile strength

Soft handfeel

- IR camouflage
- Price
- Marketing
-



Conclusion

- The functionalization of wool in product development should be viewed multidimensionally
- Always adapt to the user and environment
- Utilize and expand on the advantages of wool
- One goal of wool functionalization should be the customer benefit
- The quality of the natural wool could be important

Thank you for your attention.

Do you have any questions?

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