



NordShield®

Driven by nature

Ever wondered why trees become so old

Our mission is to substitute all usage of non-renewable substances and heavy metals in antimicrobial textile treatments for the best tomorrow



We have figured out how
to apply nature's protective powers and
substitute all usage of non-renewable substances
and heavy metals in textile treatments

The current problem

Growth of various microbes on textiles promotes the spread of pathogens and damages the structure of the textile, thereby costing billions in excess healthcare expenses and textile spoilage.

Microbes have many deleterious effects on textiles

- fabric deterioration, staining, unpleasant odors and health concerns ranging from simple discomfort to physical irritation, allergic sensitization, toxic responses, infection and disease

Traditional biocides used for antimicrobial treatment of textiles contain heavy metals (silver, zinc etc.) and Quaternary Ammonia Compounds (QACs) that cause significant harm to the environment as they are highly toxic to other organisms as well.

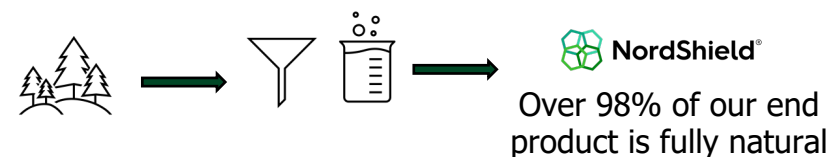


The proposed solution

Sustainable technology from nature, enabling immense and efficient ecological impact through broad variety of industries

NordShield offers a scalable, safe and sustainable alternative to traditional antimicrobial protection by applying nature's own antimicrobial properties to textiles.

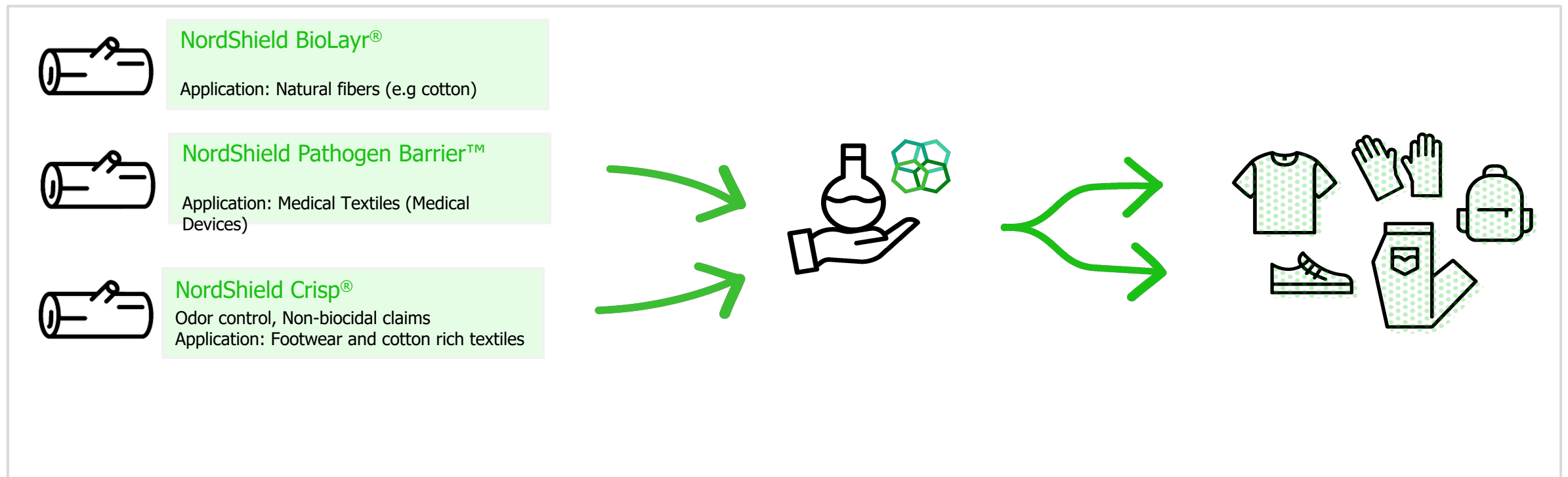
NordShield uses wood-based technology



NordShield's products

Nature-based textile treatment technology

NordShield offers an effective, scalable, safe and sustainable alternative to textile treatment and traditional antimicrobial protection by applying nature's own substances to textiles and other everyday items



NordShield BioLayr®

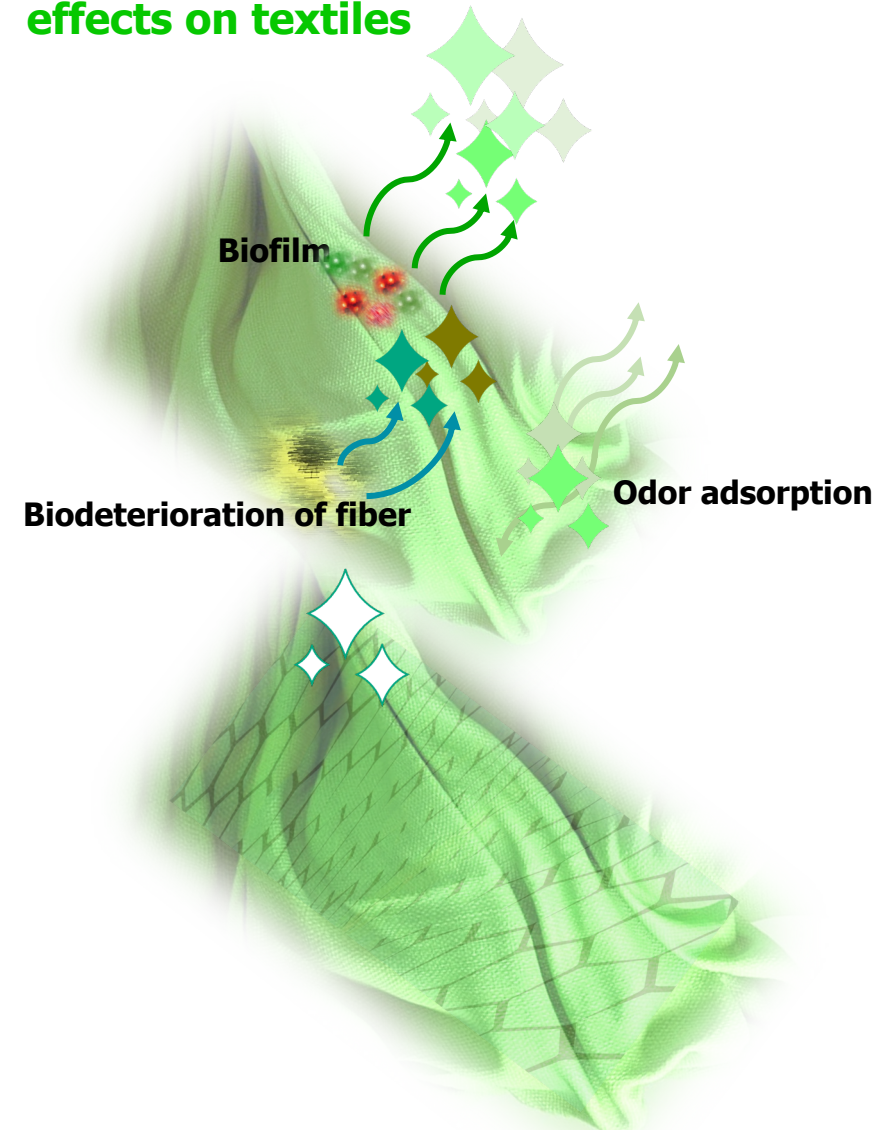
- for natural fibers (e.g. cotton)

Based solely on an ultrathin layer to inhibit physically the buildup of bacteria on the surface of the fibres and thus hinder undesirable biofilm development

- ✓ Prevents the accumulation of microbes on the surface of the fibers thus preventing the development of unwanted odours and pathogens
- ✓ Microbes will be removed more efficiently when laundering at lower temperatures (Energy savings 60 °C - > 40 °C)*
- ✓ Extend product life and sustainability, saves both energy and water and sustainably extends the life of the textiles
- ✓ ZDHC compliant and OEKO-TEX® certified
- ✓ Dermatologically tested with "excellent" rating
- ✓ Wash durable
- ✓ No negative impact on fabric properties such as breathability, color, hand feel or wicking



Microbes have many deleterious effects on textiles



**Effect of laundering temperature and BioLayr-treatment on growth of Gram-positive bacteria Staphylococcus aureus on textile*

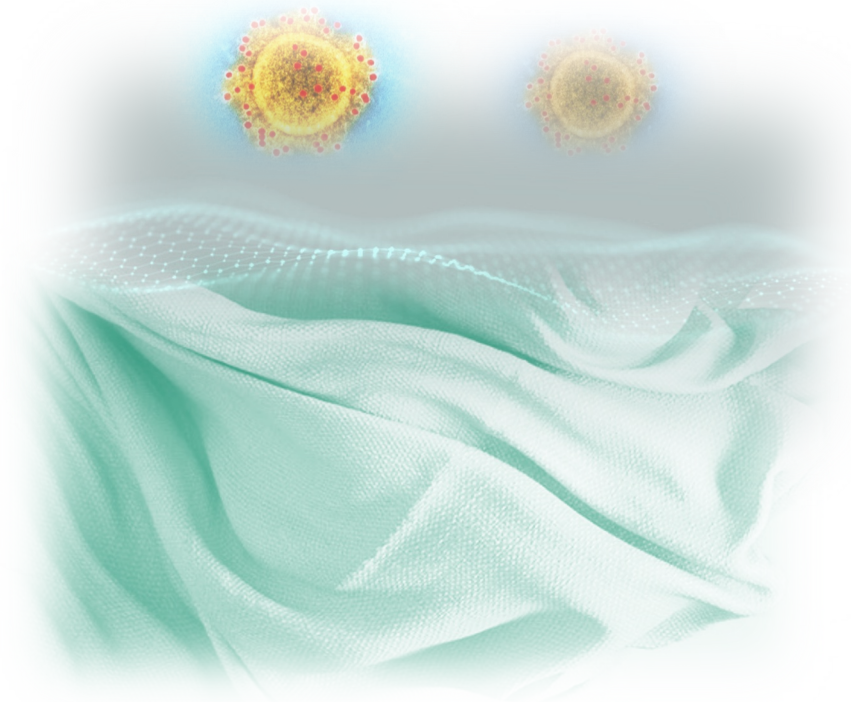
NordShield Pathogen Barrier™

- enhances the quality and efficacy of finished medical devices



Textiles are known vectors for transmission of pathogens in health care environments

- Designed and developed to fulfill the MDR ((EU) 2017/745) requirements needed for customers intending to apply a CE mark to their device with the combination of these novel properties
- Specifically designed for following non washable textiles:
 - Non-implantable medical textiles (contacting only intact skin)
 - Healthcare & hygienic medical textiles



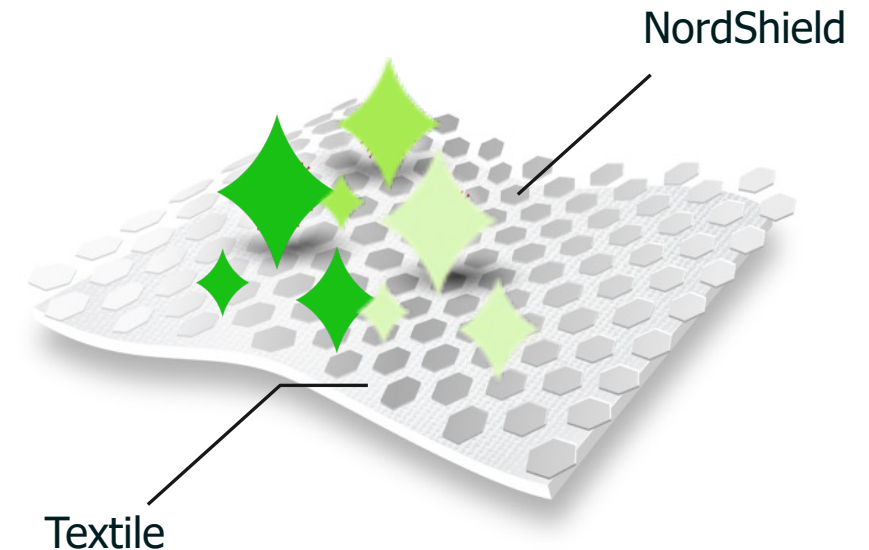
NordShield Crisp®

- non-biocidal odor capture technology



NordShield's technology utilizes the unique innovation of nature-inspired surface that keeps the product odorless, fresh and longer lasting.

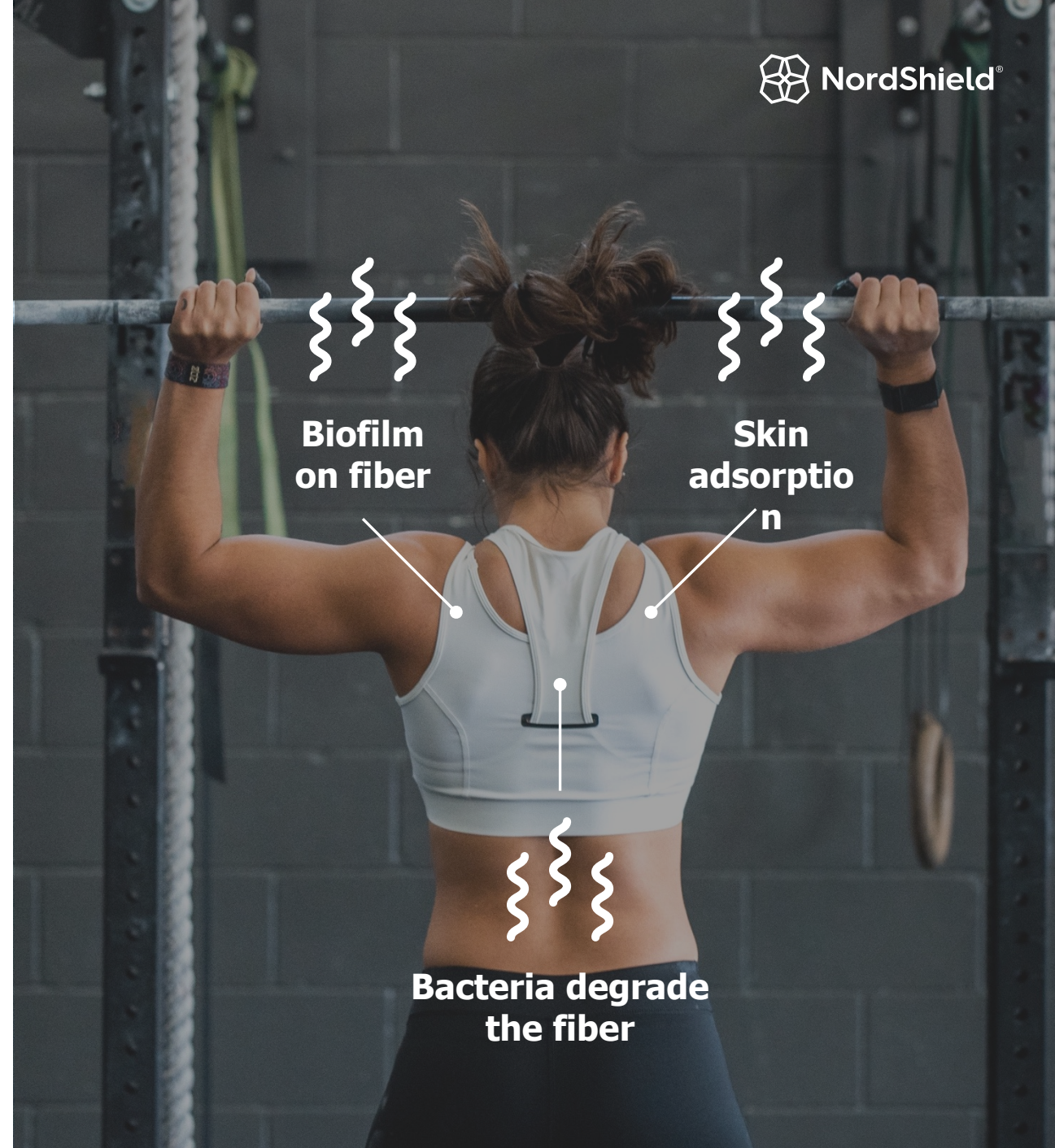
- No biocidal declaration required on product labels¹
- Removes unpleasant odors (ISO 17299-3)
- Minimizes particle release and microfiber pollution
 - Laundering burdens textile material through emission of loosely or only partially bound material associated with loss of fibres (lint).
- Maintains freshness in lower washing temperature
- Dermatologically tested with "excellent" rating²
- OEKO-TEX®³
- Available worldwide



Notes: 1) Non-biocidal product claims falls out from the Biocidal regulations); 2) Tested by sensitization test according to Magnussen (repeated patch test, within seven weeks) for primary skin irritation and detection of sensitization of humans. (Dermatest GmbH, March 2022); 3) Application pending according to ECO PASSPORT by OEKO-TEX®

Odor on textiles comes from two sources: Microbes and chemical adsorption

- Microbial growth
 - **Microbial growth on the fiber:** Bacteria form a biofilm on the fiber. They use sweat and other compounds as nutrients, and turn them to odorous volatiles
 - **Microbial degradation of the fiber:** Bacteria degrade the fiber
- Chemical adsorption:
 - **Odorous substances** produced by the skin flora are adsorbed to the fiber, and released over time



NordShield Crisp® – Keeps products fresh and longer lasting

Creates the smoothest invisible molecular thin layer

No change to functional properties

Maintains freshness in lower washing temperature – wash durable in cotton rich textiles

Dermatologically tested with “excellent” rating¹

Minimizes particle release and microfiber pollution

OEKO-TEX® compliant²

Image courtesy: <https://www.nike.com/a/best-casual-shoes>

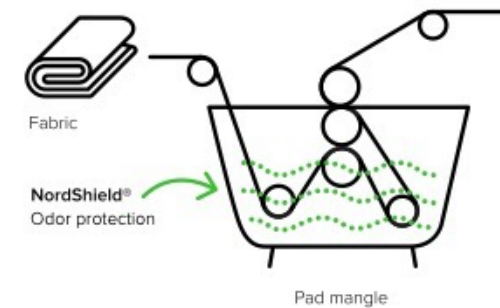
Notes: 1) Tested by sensitization test according to Magnussen (repeated patch test, within seven weeks) for primary skin irritation and detection of sensitization of humans. (Dermatest GmbH, March 2022); 2) Application pending according to ECO PASSPORT by OEKO-TEX®

NordShield® textile treatments – easy to apply

- Simple application in pad mangle
- Also possible to treat individual items
- No Substances of Very High Concern (Substances regulated in articles in EU)
- Dermatologically tested with "excellent" rating
- OEKO-TEX® compliant
- Biodegradable ingredients
- No heavy metals – no QACs, no silver



1 Apply









2 Dry



3 Ready, invisible layer



The Company in short

Established	R&D	Certifications	Employees	Clear focus	Patents
					
2016	10+ years	ISO 9001 ISO 13485 ISO 14001	<ul style="list-style-type: none"> 10 employees in total 7 in R&D and regulatory functions 	<ul style="list-style-type: none"> One product family (Fiber) 	<ul style="list-style-type: none"> Four global patent families Approved fiber application patents; US, JP, KR, FI, CN

AWARDS, CERTIFICATES AND PARTNERSHIPS



A SELECTION OF OUR GLOBAL R&D AND LABORATORY PARTNERS



Thank you!



NordShield®

Driven by nature