

ERST

SUSTAINABLE **TECHNOLOGIES**

PRODUCT PRESENTATION
erstotizer



SOLUTIONS TO COMMON EVERYDAY ISSUES

Smear Infections: from hands or surfaces to face (mucosa)
„100 + x-fold“ per day!

Body-odour: bacteria convert sweat into odour-causing substances

Mould: Release toxins
→ allergic reactions, respiratory or immune system responses

Fungal Infection: athlete's foot

Invisible hygiene protection	Sanitary accessories	Protection against infections
Hygiene control	Permanent surface disinfection	Everyday-use objects
Permanent surface protection	Machines	Easy-clean equipment
Odour free	Ventilating systems	Infection reduction
Anti-fouling	Surfaces/flooring	Mold reduction

APPLICATIONS



athlete's foot



- erstotizer provides a **residual self-sanitizing activity** against athlete's foot fungus (Trichophyton mentagrophytes) on treated socks.
- Durable for up to 10 repeated washings
- prevents 99.9% of the growth of athlete's foot fungus on the sock

Surfaces such as:

Plastics, fiberglass, metals, glass, wood, ceramics, stone, natural materials, composites: Including air filters for furnaces, air conditioners, air purification devices, automobiles, and recirculating air handling systems; aquarium filters; automotive and vehicular parts

Material such as:

roofing materials (tiles, shakes, shingles, granules, stone, membranes, felt, underlayment and synthetic overcoats); building materials and components (including siding, wallboard, wood and wood composites, insulation and cabinetry); ceiling tiles; concrete products; dry concrete and grout mixes; conveyor and humidifier belts

Commodities such as:

non-food contact countertops; fiberglass duct-board for air handling systems; floor covering; flooring; general purpose containers; furniture; bathroom and non-food contact kitchen hardware; mats; plumbing supplies and fixtures; sheet and formed glass; mops; vacuum cleaner bags and filters; foam for packaging and cushioning

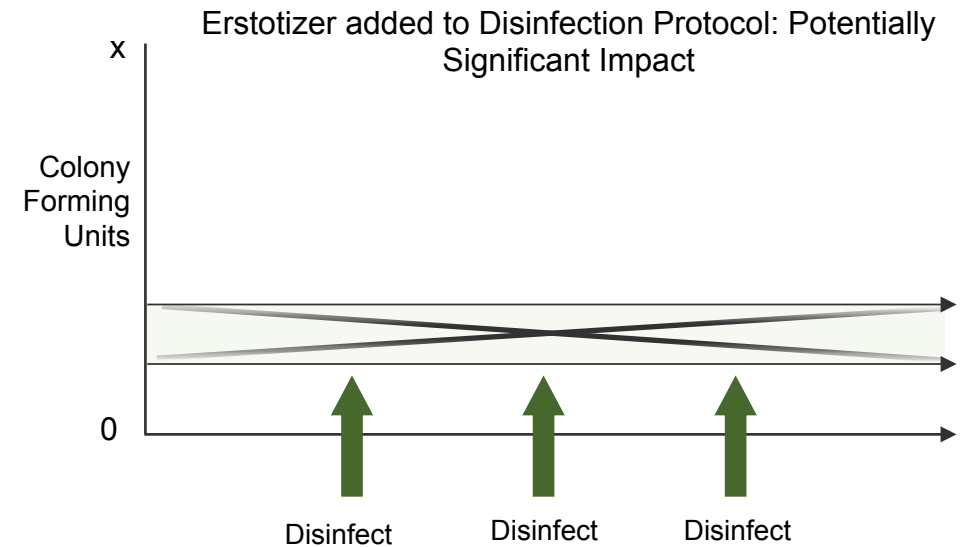
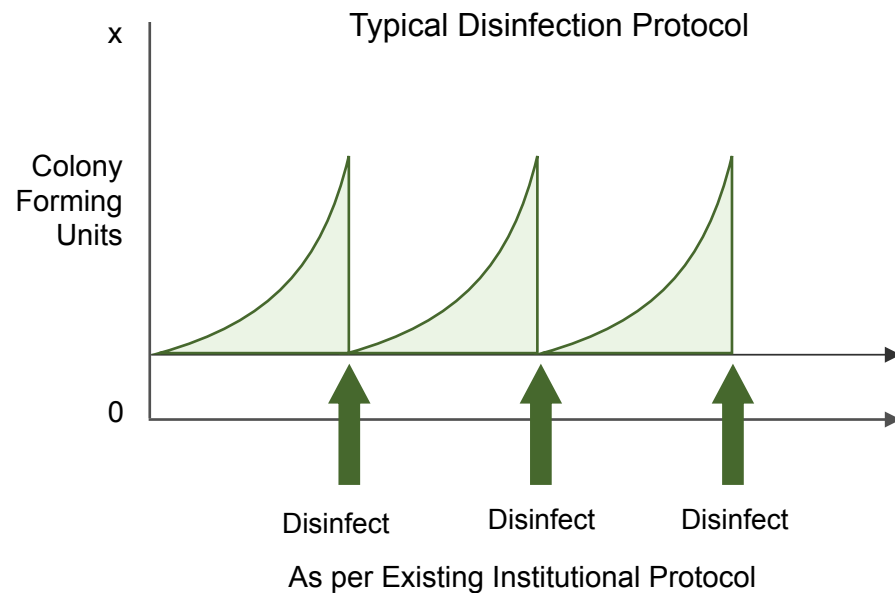
Fibrous materials and basic commodities such as:

Fibers, fabrics (natural and synthetic, woven and non-woven), leather and household materials (natural and synthetic): Including buffer pads (abrasive and polishing); mattress cover pads, filling and ticking; pillow covers; sheets; blankets; bedspreads; fiber-fill for upholstery, apparel, recreational gear, quilts and pillows; curtains; draperies; carpet and carpet underlay; rugs; upholstery; towels; shower curtains; toilet tank and seat covers; wall covering fabrics and wallpaper (including vinyl); umbrellas; fire hose fabric; non-woven disposable diapers; wiping cloths; pre-moistened towelettes and tissue wipes (these do not impart pesticidal properties); apparel including outerwear, sportswear, sleepwear, socks, hosiery, undergarments, gloves and uniforms; footwear (boots, shoes and components); sports equipment and athletic gear; cloth for sails, ropes, tents and other outdoor equipment; sand bags; tarps; awnings; book covers; pictures

Manufactured Products such as:

Paints and Coatings; disposable foam cushions; foam used as a growth medium for crops and plants.

WHY CLEANING IS NOT ENOUGH

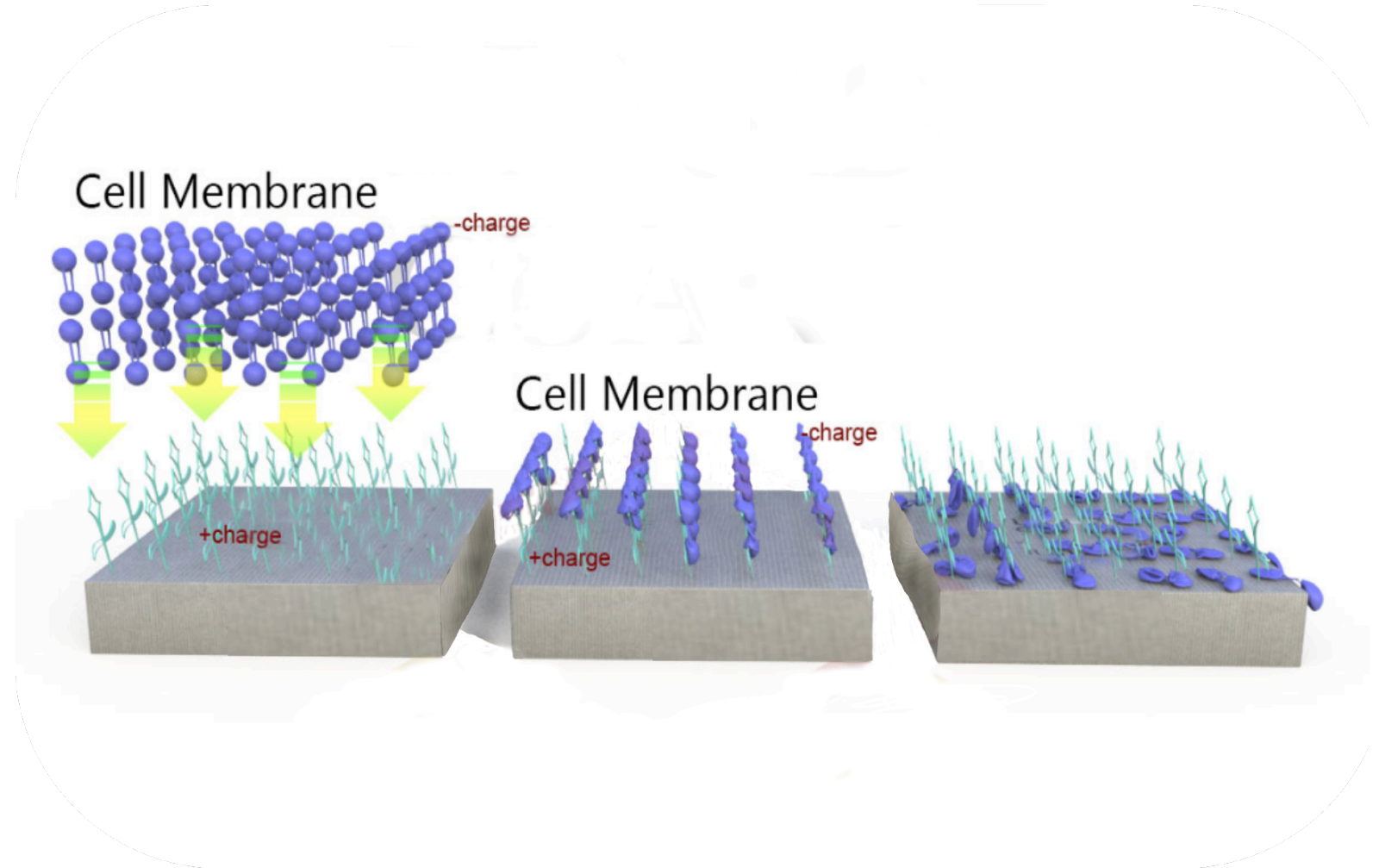


- Correct Disinfectant
- Correct Technique
- Correct Concentration
- Adequate Dwell Time

Laboratory and in field results demonstrated reduction in CFU's of **up to 99.9%**

FUNCTION: A PHYSICAL ELIMINATION OF MICROORGANISMS

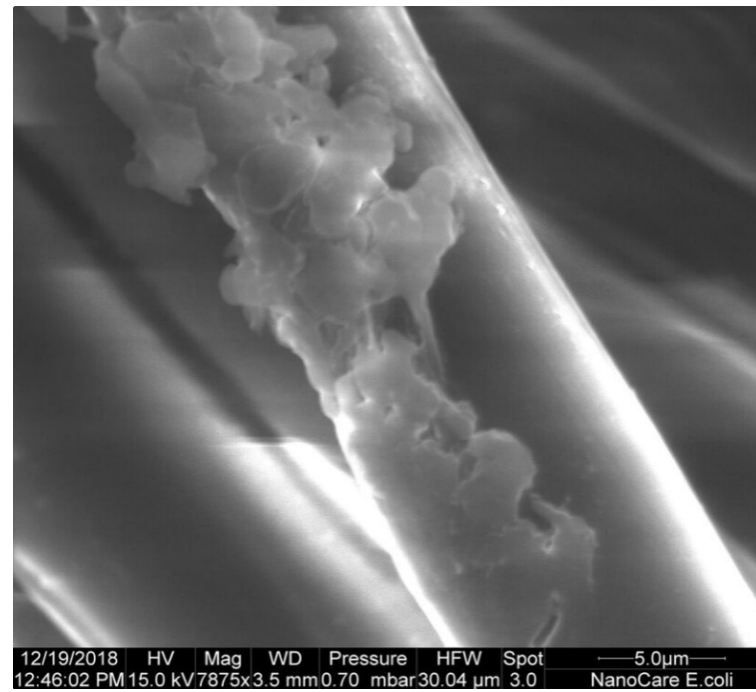
- A layer of sharp blades defends against microbial growth
- The positively charged atoms of nitrogen attract negatively charged cell membranes and puncture all microbes



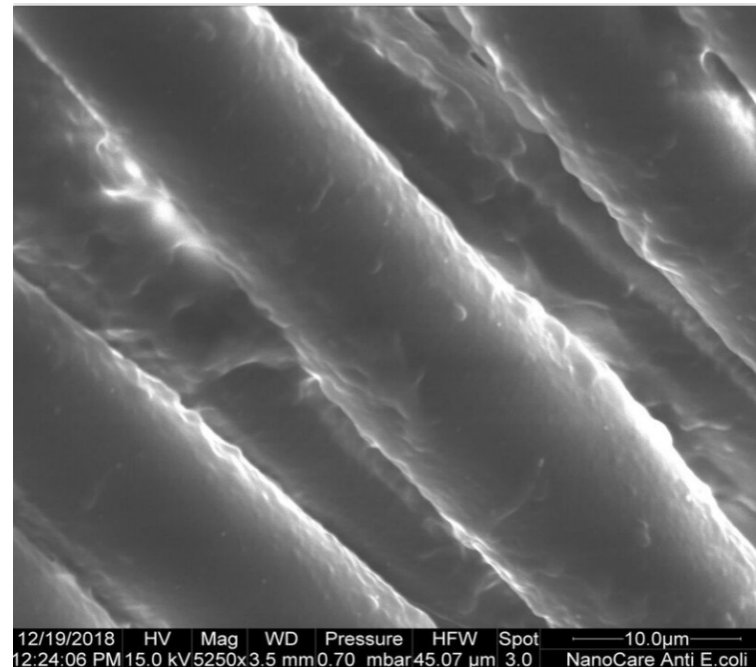
RASTER-ELECTRON- MICROSCOPY (REM)

AT UNIVERSITY ANSBACH

E. coli cluster on
untreated fibre



E. coli cells ruptured
after contact with
treated surface



SOLUTIONS TO COMMON EVERYDAY ISSUES

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Tizer



ANTI-BACTERIAL

Safe anti-bacterial functionality
— presence can be verified
using a marker



PREVENTS ODOURS

Prevents microbial odours



FUNGICIDAL

Permanent fungicidal action



DEFENDING

Deprives house dust mites of
food



PREVENTS MOLD GROWTH

Prevents mold growth on
smooth and textured surfaces



FACILITATES CLEANING

Facilitates cleaning and
removal of lime-scale, soot,
grease, dust etc.



PROMOTES COMFORT

Promotes comfort, well-being,
and safety



FREE FROM HALOGENS

Free from halogens (especially
fluorine, PBT/vPvB- & SVHC-
substances)



DERMATOLOGICALLY TESTED

Rating of "excellent"

Bacteria

- Micrococcus sp.
- Staphylococcus epidermidis
- Enterobacter agglomerans
- Acinetobacter calcoaceticus
- Methicillin-resistant Staphylococcus aureus
- Staphylococcus aureus
- Klebsiella pneumoniae
- Pseudomonas aeruginosa
- Streptococcus faecalis
- Escherichia coli
- Citrobacter diversus

Fungi

- Salmonella typhosa
- Proteus mirabilis
- Salmonella choleraesuis
- Corynebacterium bovis
- Mycobacterium smegmatis
- Mycobacterium tuberculosis
- Brucella canis
- Brucella abortus
- Brucella suis
- Streptococcus mutans
- Bacillus subtilis
- Bacillus cereus

Algae

Yeast

- Clostridium perfringens
- Haemophilus influenzae
- Lactobacillus casei
- Leuconostoc lactis
- Listeria monocytogenes
- Propionibacterium acnes
- Proteus vulgaris
- Pseudomonas cepacia
- Pseudomonas fluorescens
- Xanthomonas campestris

Bacteria

Fungi

Algae

Yeast

- *Aspergillus niger*
- *Aspergillus fumigatus*
- *Aspergillus versicolor*
- *Aspergillus flavus*
- *Aspergillus terreus*
- *Penicillium chrysogenum*
- *Penicillium albicans*
- *Penicillium citrinum*
- *Penicillium elegans*
- *Penicillium funiculosum*
- *Penicillium humicola*

- *Penicillium notatum*
- *Penicillium variable*
- *Mucor* sp.
- *Tricophyton mentagrophytes*
- *Tricophyton interdigitalie*
- *Trichoderma flavus*
- *Chaetomium globosum*
- *Rhizopus nigricans*
- *Cladosporium herbarum*
- *Aureobasidium pullulans*
- *Fusarium nigrum*

- *Fusarium solani*
- *Gliocladium roseum*
- *Oosopa lactis*
- *Stachybotrys chartarum*

Bacteria

Fungi

Algae

Yeast

- *Oscillatoria borneti*
- *Anabaena cylindrica*
- *Selenastrum gracile*
- *Pleurococcus* sp.
- *Schenedesmus quadricauda*
- *Gonium* sp.
- *Volvox* sp.
- *Chlorella vulgaris*

Bacteria

Fungi

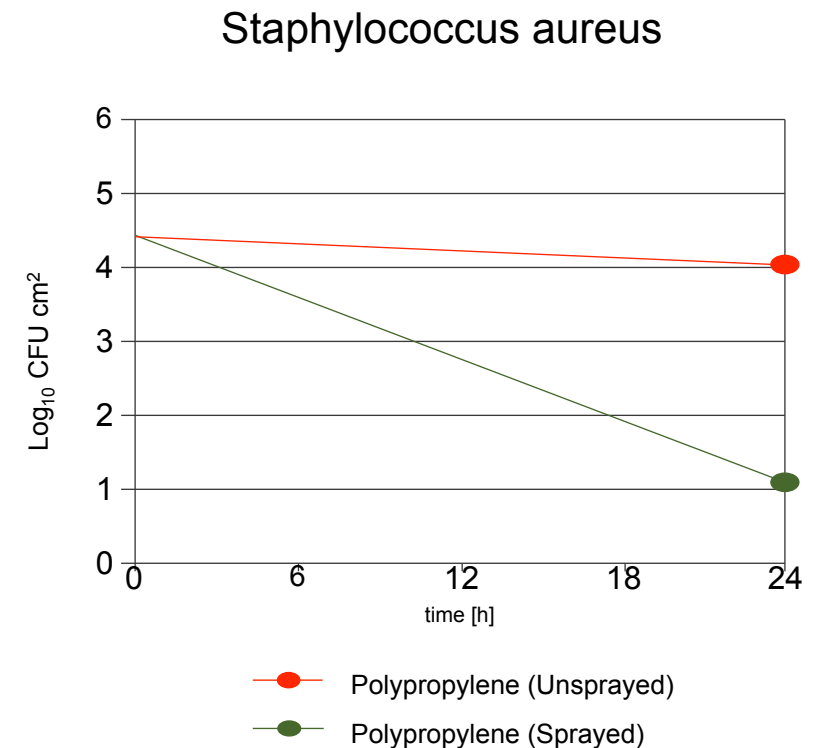
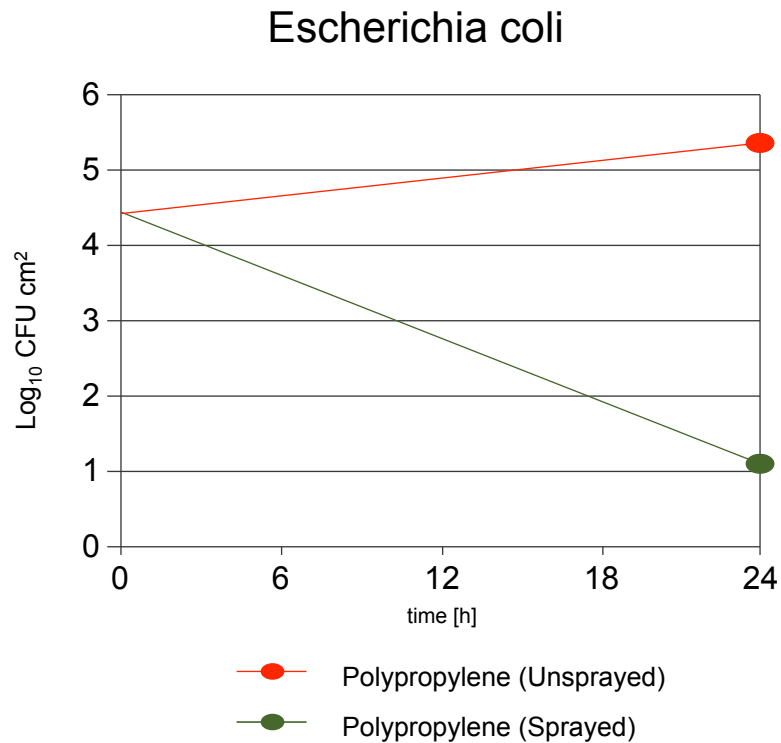
Algae

Yeast

- Saccharomyces cerevisiae
- Candida albicans
- Trichophyton mentagrophytes

Spread on **highly colonised** Polypropylene according to ISO 22196:2011

Results as $\text{Log}_{10} \text{CFU cm}^2$



PERFORMANCE ACCORDING TO JIS Z 2801:2012



Broadly acknowledged standard



Highly colonised



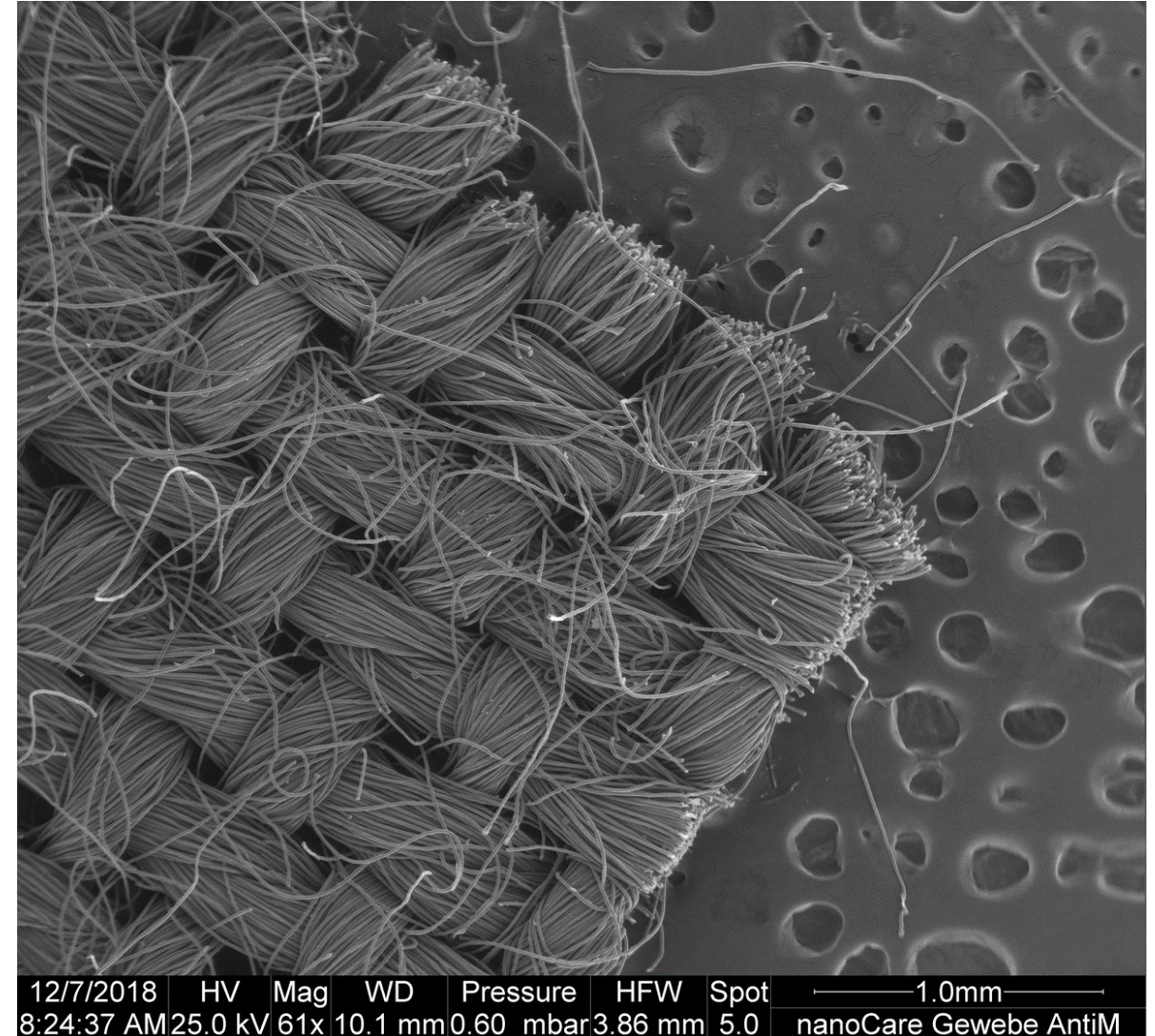
Result: > 99,9% Elimination (> log 3) for

- Staphylococcus aureus (MRSA = methicillin-resistant Staphylococcus aureus)
- Escherichia coli
- Klebsiella pneumoniae
- Listeria monocytogenes
- Salmonella choleraesuis
- Clostridium difficile
- Pseudomonas aeruginosa
- Enterococcus hirae



PERFORMANCE ACCORDING TO ASTM F 1980

Result: After one year of artificial ageing;
> log 3 elimination according to JIS Z
2801:2012 on *Enterococcus hirae*



SAFETY



Tested by Dermatest GmbH on **30 students** with **72 hours exposure**



Result: „**Excellent**“ in contact with skin

ersto
TIZER



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Muenster, 17.12.2018

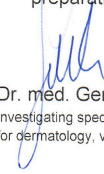
Certificate
for the Product
erstotizer

Dermatological test on humans in 2018

The dermatological test performed by us on your product under the control of dermatological specialists was passed for this product with the rating of

„excellent“

This product did not lead to toxic- irritative intolerance reactions in patch testing carried out in accordance with international guidelines. The preparation can therefore be declared as dermatologically tested.


Dr. med. Gerrit Schlippe
Investigating specialist
for dermatology, venereology



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APPLICATION



Non absorbent surfaces

→ wet wipes

- Wipe 1: Polish until the surface has completely dried
- Wipe 2: Polish until the surface has completely dried



Absorbent surfaces

→ application by spraying

- Spray 3x diluted liquid from Step 2.
Dilution with demineralized water

PERSONAL PROTECTION/HAZARDS



H411 Toxic to aquatic life with long lasting effects.



P273 Avoid release to the environment.



P280 Wear protective gloves.



P404 Store in a closed container.



P501 Dispose of contents/container in accordance with local/regional/national/international regulation.



SPECIFICATIONS

- Chemical basis: Modified silicon dioxide (silan quat, with adhesion promoter)
- Layer thickness: ca. 150-300 nm
- Temperature stability of cured coating: 150°C
- Chemical stability: solvent-resistance
- Weather-proof: 2000 h according to ISO 11507 A (corresponds to ca. 3-4 years)
- Resilience (mechanical):
Glass; ceramic > 40.000 cycles according to ISO 11998 (cleaning with water or paper towel)
Noble metals > 20.000 cycles according to ISO 11998 (cleaning with water);
Plastics > 5.000 cycles according to ISO 11998 (cleaning with water)
- Salt water resistant: yes
- Transparency: 100%
- Storable: 12 months
- Temperature sensitivity of the liquid: 3 to 40°C
- Consumption: 1 x cleaning and polymerizing wipe + 1 x activating wipe for up to 4m²



SANITIZERS SHOULD BE USED WITH CARE.
ALWAYS READ LABEL INSTRUCTIONS OR
PRODUCT INFORMATION BEFORE USE.



WHY ERSTOTIZER?



Non-mutagenic:

No leaching of the active substance = no development of zone of inhibition = no possibility to develop resistance as a result of reduced effectiveness



WHY ERSTOTIZER?



Free of halogens, heavy metals and nano-silver → safe-use according to requirements for consumers and professionals



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