nanoel

nanoel AB

Anti-microbial coating solution

Physical Protection from Microbial

A permanent anti-microbial nano-coating for maximum hygiene!

The package may change on customer's request or country law.

Made in Germany

SOLUTIONS TO COMMON EVERYDAY ISSUES

The daily issues caused by microbial

Smear Infections:
from hands or surfaces to face (mucosa)

Mold on surface :
Release toxins > allergic reactions, respiratory or immune system responses

Body odor :
bacteria convert sweat into odor causing substances

Fungal Infection:
against athlete's foot fungus on treated

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

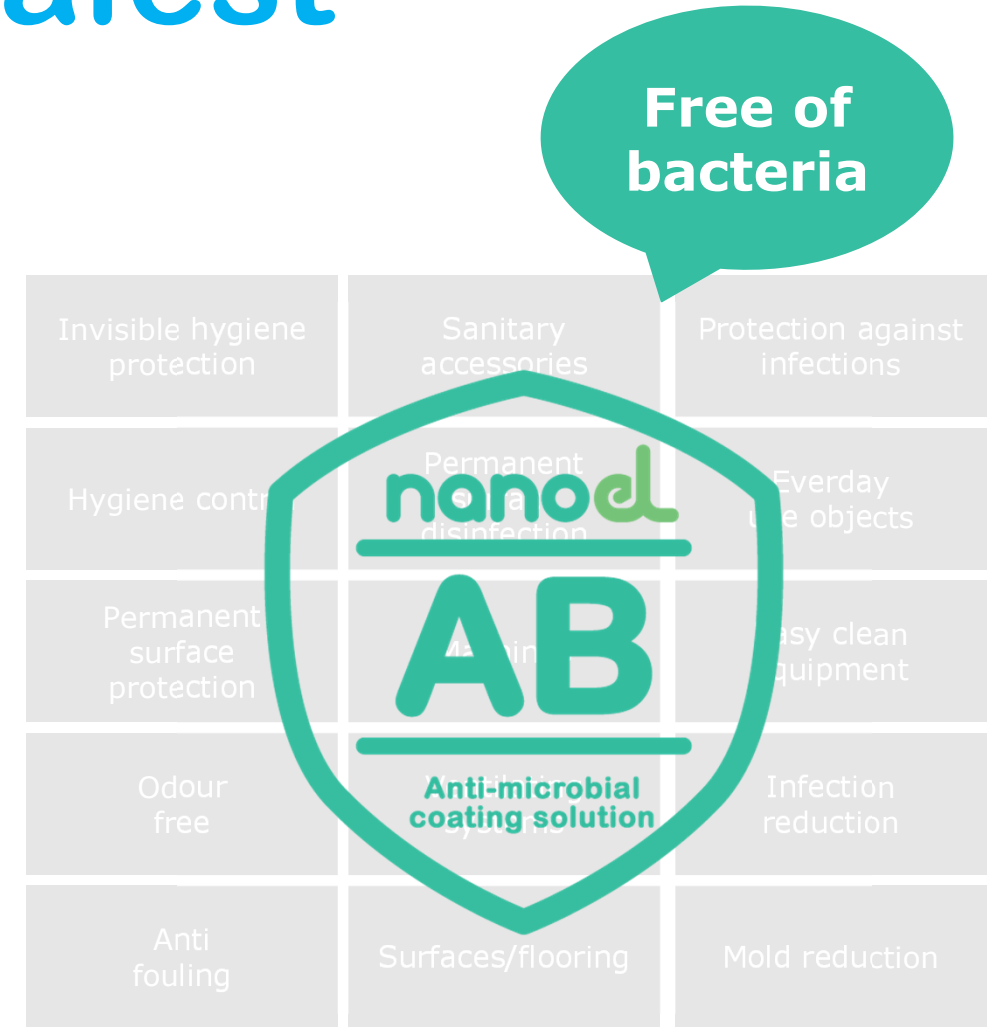
SOLUTIONS TO COMMON EVERYDAY ISSUES

The easiest & safest solution!

Smear Infections:
Coating with nanoel AB on public facilities

Mold on surface :
Coating with nanoel AB on mold infected surface

Body odor, Fungal Infection :
Coating the cloth and socks* with nanoel AB



* The absorbent surfaces like fabric need liquid type of nanoel AB

SOLUTIONS TO COMMON EVERYDAY ISSUES

Application:
Athlete's foot fungus

Coating the socks for preventing foot fungus!

nanoel AB 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**

nanoel AB
Anti-microbial coating solution

SOLUTIONS TO COMMON EVERYDAY ISSUES

AB provides Superb Anti-Microbial effect!

Durable anti-microbial effect!

Conventional products are absorbed by living cells and kill by way of poisoning the organism or disrupting a vital life process . They are designed to move from the surface and dissipate quickly . Most commercial anti bacterias used for treating surfaces do an adequate job of killing microbial and fungi, although most have a limited range of effectiveness.

nanoel AB technology takes a totally unique approach. It provides an effective initial microbial kill when applied, but, unlike the conventional methods , it also provides long term control of growth on treated surfaces , often for the life of that surface.

Non-mutagenic

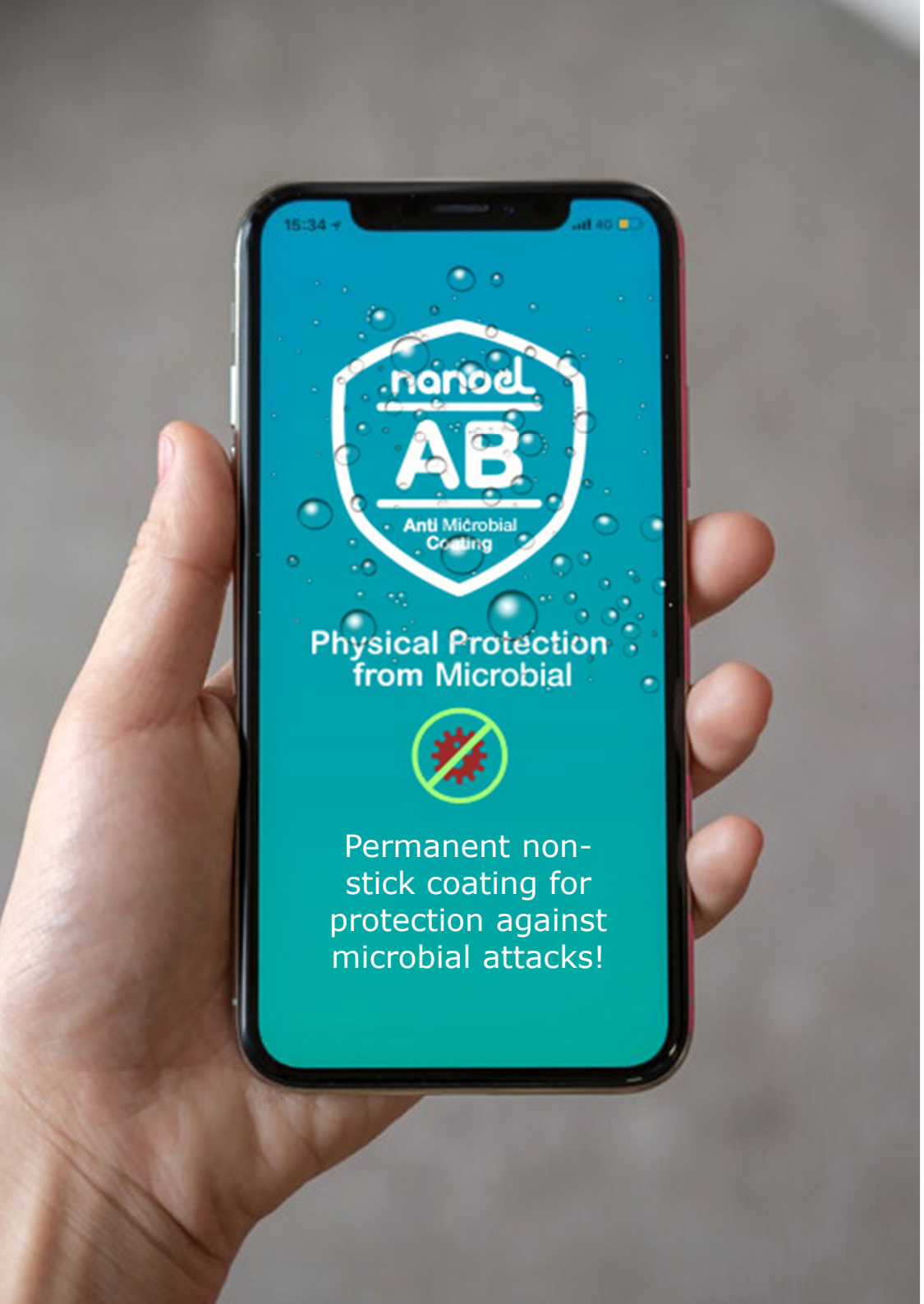
No leaching of the active substance =

No development of zone of inhibition =

No possibility to develop resistance as a result of reduced effectiveness

Eco product

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



nanod

nanod
AB
Anti-microbial
coating solution

Physical Protection from microbial

A permanent anti-microbial nano-coating for maximum hygiene!

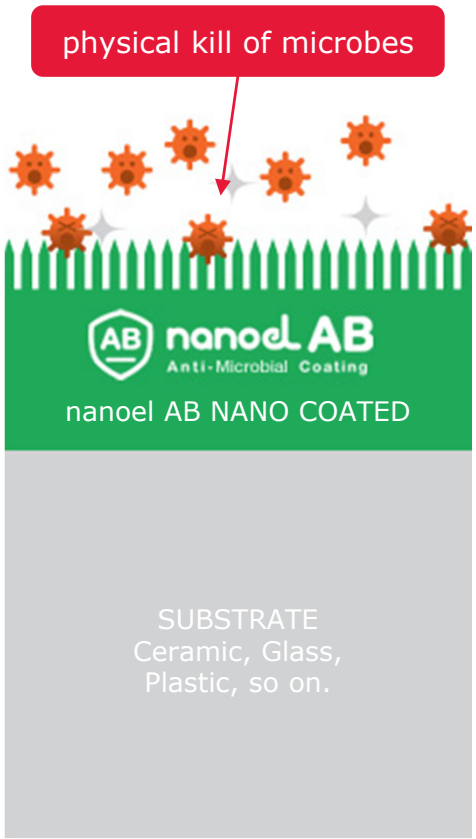
Derma test in Germany,
30 students with 72 hours exposure

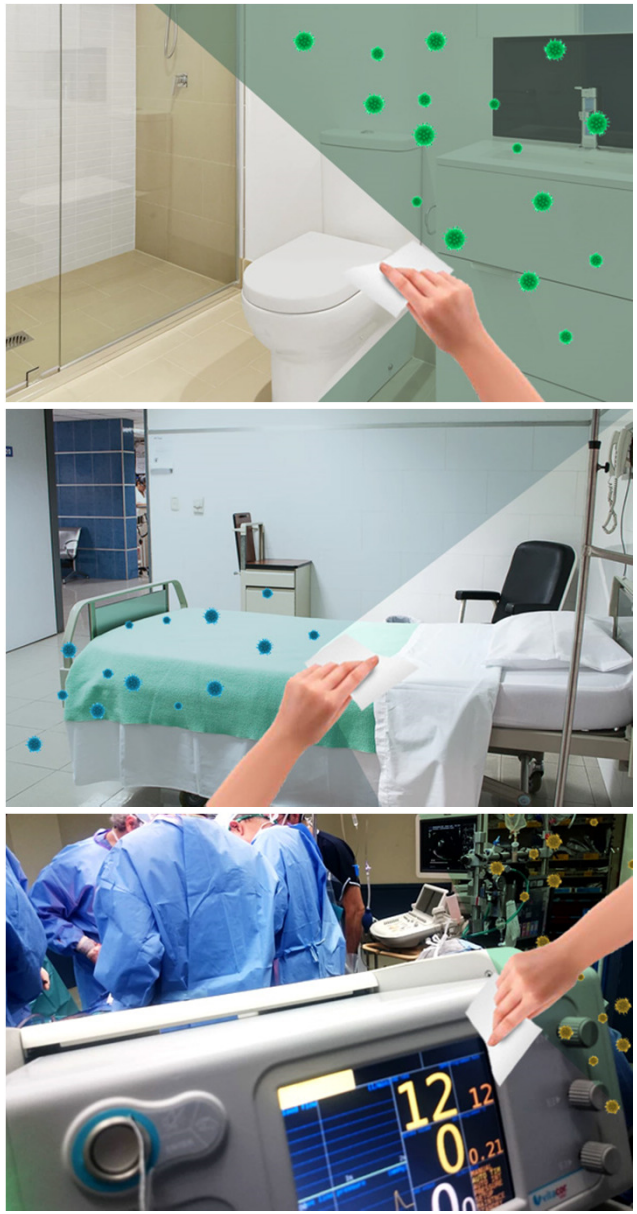
Result: „Excellent“
in contact with skin

Advantage #1

SELF-DISINFECTING COATING

- Creates an invisible physical barrier to destroy microbes.
- Protected surfaces act as a layer of swords to defend against microbial growth.
- The positively charged atom of nitrogen attracts negatively charged cell membranes and punctures all microbes.
- This physical kill terminates the life of the microbe.
- This effect has been shown to be non-mutagenic in opposite to other active substance like triclosan.





Spectrum of activity

The microorganisms listed should be viewed as representative of the types of organisms, rather than as a comprehensive list.

Bacteria

- Micrococcus sp.
- Staphylococcus epidermidis
- Enterobacter agglomerans
- Acinetobacter calcoaceticus
- methicillin-resistant staphylococcus aureus
- Staphylococcus aureus
- Klebsiella pneumoniae
- Pseudomonas aeruginosa
- Strepticoccus faecalis
- Escherichia coli
- Proteus mirabilis Citrobacter diversus
- Salmonella typhosa
- Proteus mirabilis
- Salmonella choleraesuis
- Corynebacterium bovis
- Mycobacterium smegmatis
- Mycobacterium tuberculosis
- Bruncella cania
- Brucella abortus
- Brucella suis
- Streptococcus mutans
- Bacillus subtilis
- Bacillus cereus
- Clostridium perfringens
- Haemopilus influenzae
- Haemophilus suis
- Lactobacillus casei
- Leuconostoc lactis
- Listeria monocytogenes
- Propionbacterium acnes
- Proteus vulgaris
- Pseudomonas cepacia
- Pseudomonas filluorescens
- Xanthomonas campestris

Fungi

- 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 variabile
- Mucor sp.
- Tricophyton mentagrophytes
- Tricophyton interdigitalie
- Trichoderma flavus
- Chaetomium globusum
- Rhizopus nigricans
- Cladosporium herbarum
- Aureobasidium pullulans
- Fusarium nigrum
- Fusarium solani
- Gliocladium roseum
- Oosopa lactis
- Stachybotrys chartarum

Yeast

- Saccharomyces cerevisiae
- Candida albicans

Algae

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

Detailed information concerning the sources can be found on the separate flyer for the nanoel AB wipe agent.

Advantage #2

EASY CLEANING & NON-STICK

By forming an ultra-thin layer of glass, nanoel AB protects, among other things, against micro-scratches. Under mechanical abrasion, the protective layer is abraded before the substrate is damaged.

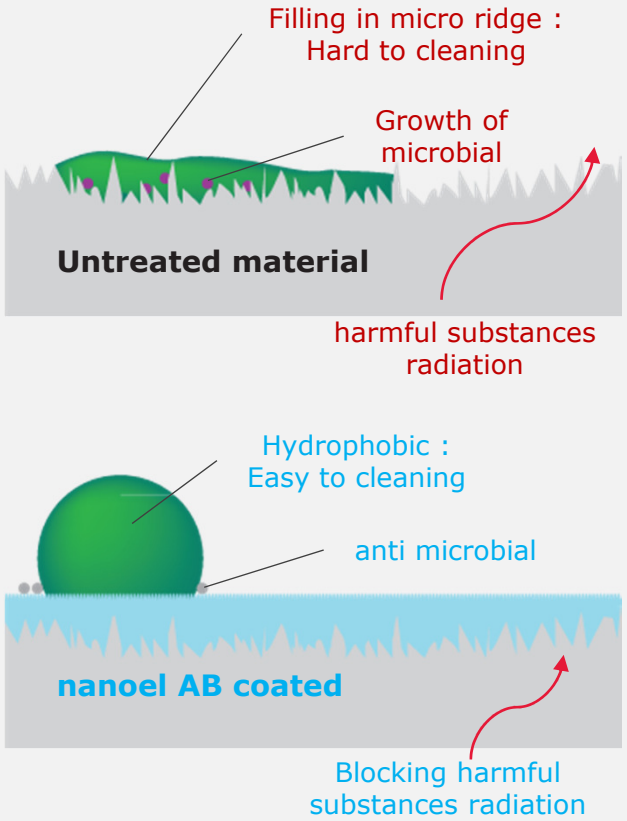
A unique GLIDE function, ensures that any abrasive contact materials glide over the treated surface and leave fewer traces. Protected surfaces take-on a measurably higher degree of hardness (3 levels of pencil hardness).

More advantages

- The nanoel AB covered surface can prevent radiation of hazardous substances like radon.
- The nanoel AB covered surface can prevent the growth of microbes, fungi, dust mites so that it keeps in hygiene.
- The nanoel AB covered surface get 3H hardness so the material can be protected.

How it works

The most surface has micro ridges which can't see. nanoel AB fills them with nano particles which have hydrophobic so that the surface get non-stick effect and easy cleaning.



Advantage #3

CETIFICATED SAFETY

Never worry the safety!

nanoel AB has been certificated in both of derma test and anti microbial effect.

Certified microbiological efficiency
So far accredited laboratories certified for the following:

- Staphylococcus aureus (MRSA = methicillin-resilient Staphylococcus aureus)
- Escherichia coli (intestinal bacteria)
- Klebsiella pneumoniae (odor-creating bacteria)
- Listeria monocytogenes (food-stuff)
- Salmonella choleraesuis (food-stuff)
- Aspergillus niger (slightly sporicidal)
- Pseudomonas aeruginosa
- Enterococcus hirae

See the full list of effective bacteria on page 14.

Advantage #4

LONG LASTING EFFECTIVENESS

Coating once, lasting longer

Once nanoel AB coated, it lasts over 10 years. Get the time saving for cleaning! Never worry about the hygiene with nanoel AB!

Compatible surfaces

- Glass
- Ceramics
- Noble metals (aluminum, stainless steel, brass, gold)
- Plastics, made from e.g. PMMA, ABS, ECTFE, HDPE, LDPE, PA, PC, PMP, PP, PS, PVC, SAN or SI
- Varnishes
- Printed cardboards and wrapping

Incompatible surfaces

- Water-sensitive surfaces, such as e.g. paper
- If you're unsure whether our products are suitable for any surface, please do not use it.

Advantage #5

EASIER NANO COATING APPLYING

Non-absorbent surfaces :

Primer + Coating

Wipe 1: Polish until the surface has completely dried.

Wipe 2: Polish until the surface has completely dried.

Absorbent surfaces :

Coating only

Spray 3x diluted nanoel AB liquid (Dilution with demineralized water.)

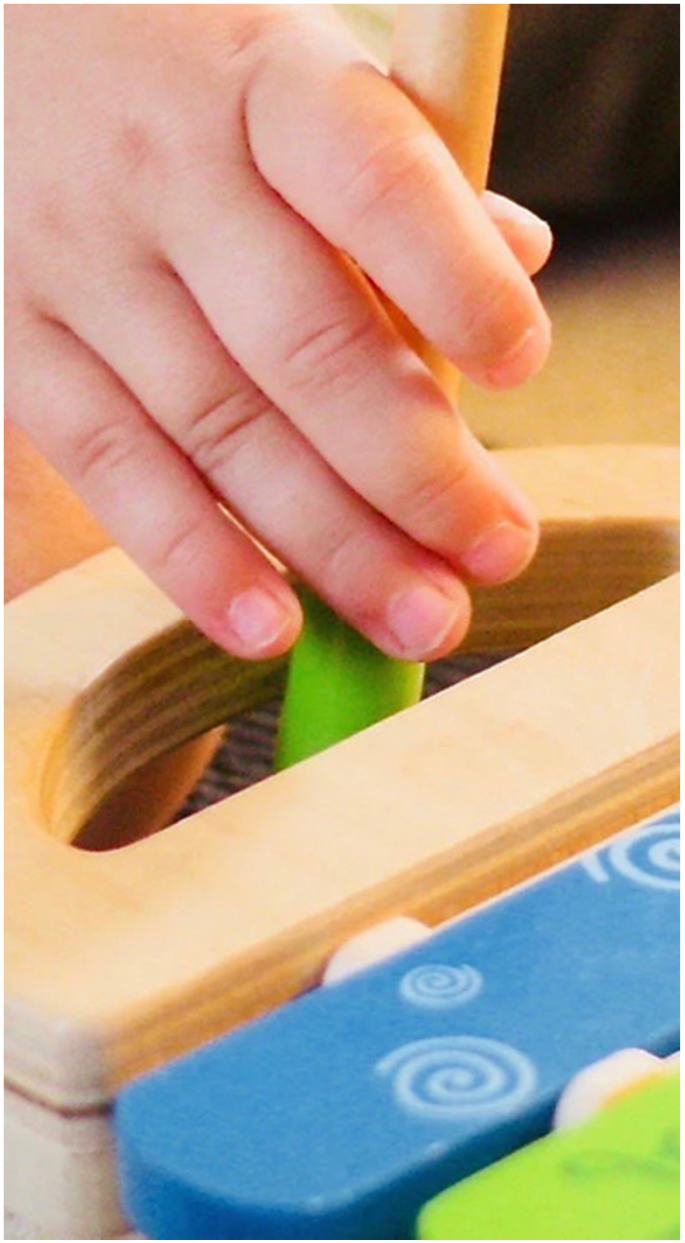
Summary

nanoel AB Protects what matters most

Through wet wipe application , nanoel AB preserves and therefore retains the value of any item. Additionally, the invisible seal of amorphous glass protects your most valuable assets: health and well-being.

Key performance characteristics at a glance:

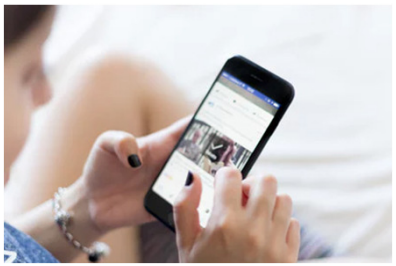
- Safe anti-microbial functionality – presence can be verified using a marker
- Prevents microbial odors
- Permanent fungicidal function
- Deprives house dust mites of food
- Prevents mold growth on smooth and textured surfaces
- Prevents micro scratches & reduces damage by improving the friction coefficient
- Facilitates cleaning and removal of limescale, soot, grease, dust etc.
- Promotes comfort, well-being, and safety
- Free from halogens (especially fluorine, PBT/vPvB- & SVHC-substances)



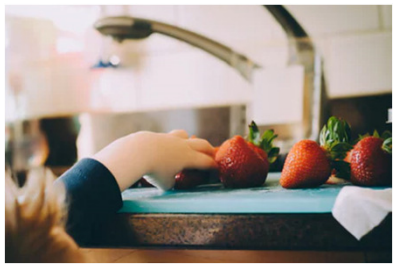
Usage

Applications

nanoel AB anti microbe nano coating



Personal devices

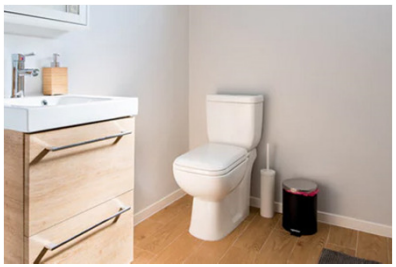


Kitchen

Restaurant

Transportation

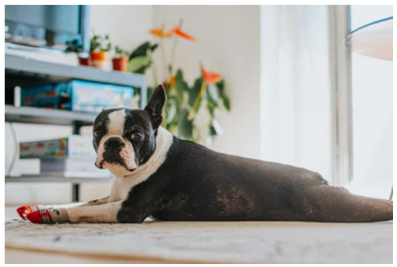
Hospital



Sanitary

Water tap

Toys for kids



Pet stuff (reducing odor)

Nursing home

Elevator

Electronic products

Public facilities

Medical devices

And More!

Available applications

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

Product type of nanoel AB

Industrial use

Liquid type Primer / Coating.

The MOQ and Package is negotiable on customer’s request.

Consumer use

Liquid type / Wet wipe type available for DIY kit.

The MOQ and Package may change on customer’s request.

Ready to use DIY kit Available!

For industrial

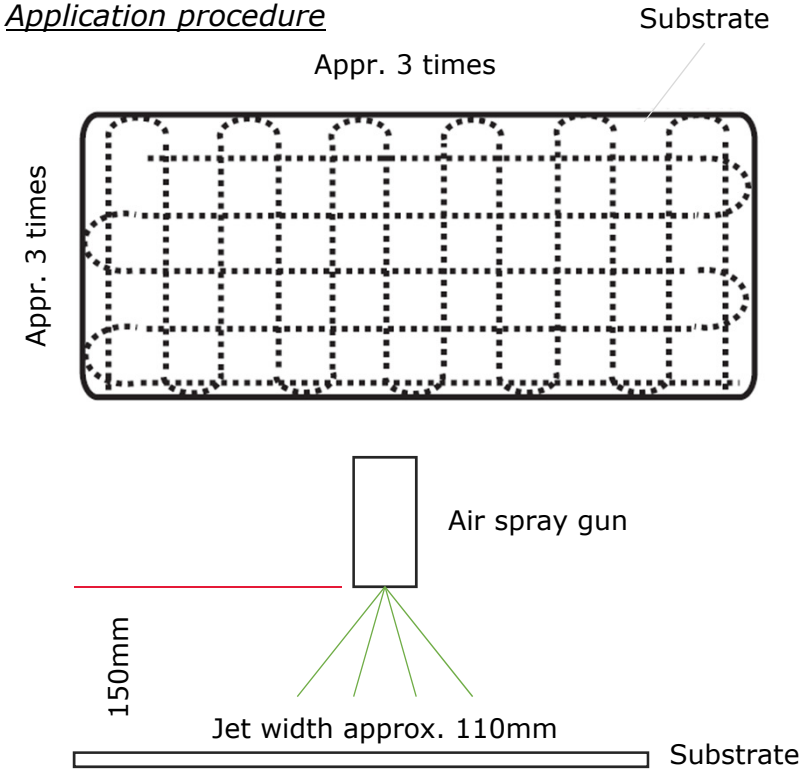
Applying method

Spraying with spray-gun

Spray over 3 times nanoel AB coating liquid.

Example

Application procedure



Summary

nanoel AB provides Anti microbial + Easy Clean

Safe anti-microbial functionality

Prevents microbial odors

Permanent fungicidal function

Deprives house dust mites of food

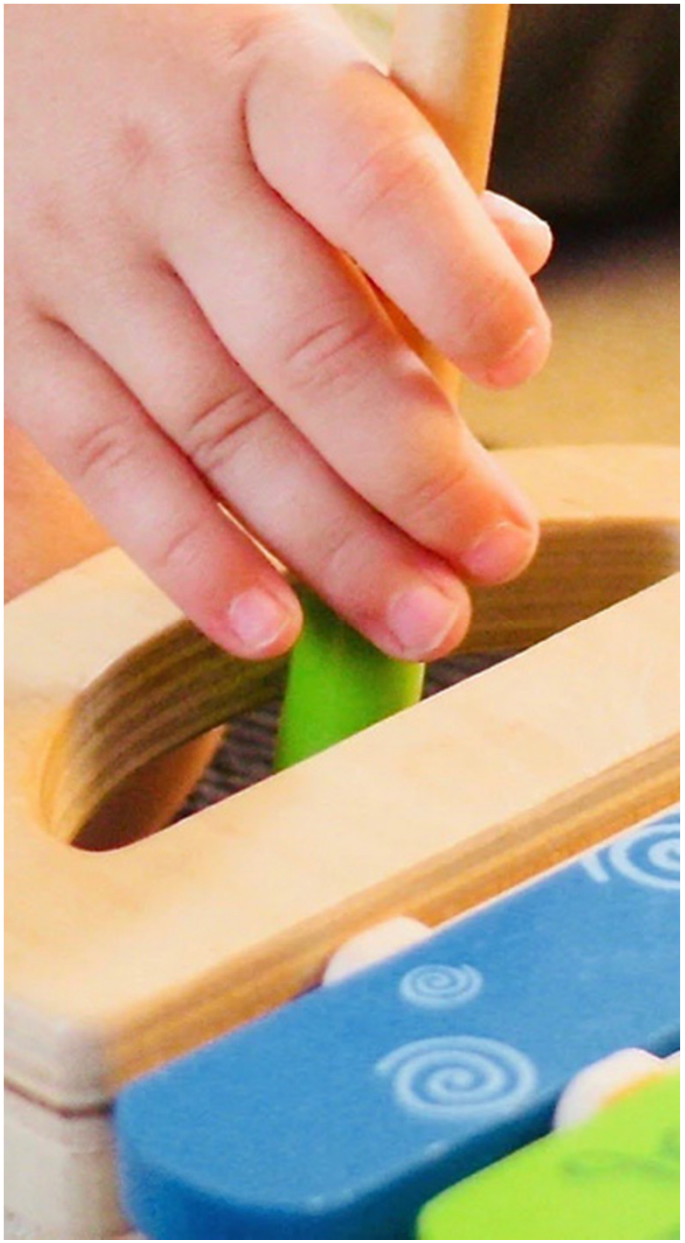
Prevents mold growth on textured surfaces

Prevents micro-scratches & reduces damage

Facilitates cleaning of limescale, soot, grease, dust etc.

Promotes comfort, well-being, and safety

Halogens Free (Fluorine, PBT/vPvB-&SVHC-substances)



Specifications

This information is based on nanoel AB 2 step wipe DIY kit.

Chemical basis	Modified silicon dioxide
Layer thickness	ca. 150-300 nm
Water-repellent	slightly hydrophobic
Temperature stability	150 degree Celsius
Chemical stability	Solvent-resistant
Weatherproof	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) • 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	2 years
Temperature sensitivity	3 to 40°C
Wastage	1 x cleaning and polymerizing wipe + 1 x activating wipe for up to 2m²~4m²
Application	Use the cleaning and polymerizing wipe (nanoel AB clean and primer wipe) (step 1) to degrease and clean the surfaces thoroughly. Only in case of extreme contamination (or limescale) should a pre-cleaner for the specific type of contamination be used. After the 1. liquid has evaporated (ca. 5 min,) a polymer layer forms. This is activated and becomes anti-microbial by wiping it over with the activating wipe (nanoel AB wipe). After 2 minutes the surface should be wiped dry using the microfiber wipe until all visible streaks disappear. A thorough polishing will be necessary, especially on transparent or shiny surfaces. After 6 hours the coating is hardened and ready for use.

nanoel AB clean + primer wipe and nanoel AB nano-coating wipe are registered non-dangerous goods according to ADR and IATA For the safe handling of nanoel AB please see the safety instructions for each component, as well as the information flyer concerning the nanoel AB wipe agent.

Safety

Additional legal obligations and safety instructions concerning the anti-microbial efficient components of nanoel AB wipe:

Kind of formulation	Ready to use sealed in wet wipes
Usage	refer to "application"
Recommended date for further treatments	As soon as the color marking no longer sticks to the coated surface
Possible side effects and instructions for first aid	According to the regulations this formulation is not considered as Dangerous hazardous. There are no known side effects.
Extensive usage	Consider limitation and monitoring of exposure in the workplace. (safety regulations)
Personal safety equipment	Not necessary for normal usage. For extensive usage refer to Section 8.2.2. of the safety instructions.
Disposal instructions	P501: Content and wrapping need to be disposed in accordance with the local regulations (refer to safety instructions)
Storability	12 months
Onset of effect	anti-microbial effect becomes active one hour after application.
Drying time / curing	The advised drying time from application to when contact is recommended for humans or animals to the treated surface: 6 Hours

Detailed first aid measures:

General information	In case of doubt or if symptoms don't improve, seek medical attention. Present safety information or label to the doctor. Never administer substances orally to people in an unconscious state.
After inhalation	Take patient outside – leave contaminated area. Seek medical attention, if symptoms continue.
After skin contact	Immediately wash affected skin with lots of soap and water! Remove contaminated clothes and shoes. Seek medical attention if symptoms continue.
After eye contact	Remove contact lenses, Rinse open eyes and under the eye lids immediately with plenty of water (for several minutes). Seek medical attention if irritation continues.
After Ingestion:	Do not take vomit inducing measures. In case of doubt seek medical attention, or if symptoms worsen present safety information or seal to a doctor. Never administer substances orally to people in an unconscious state.

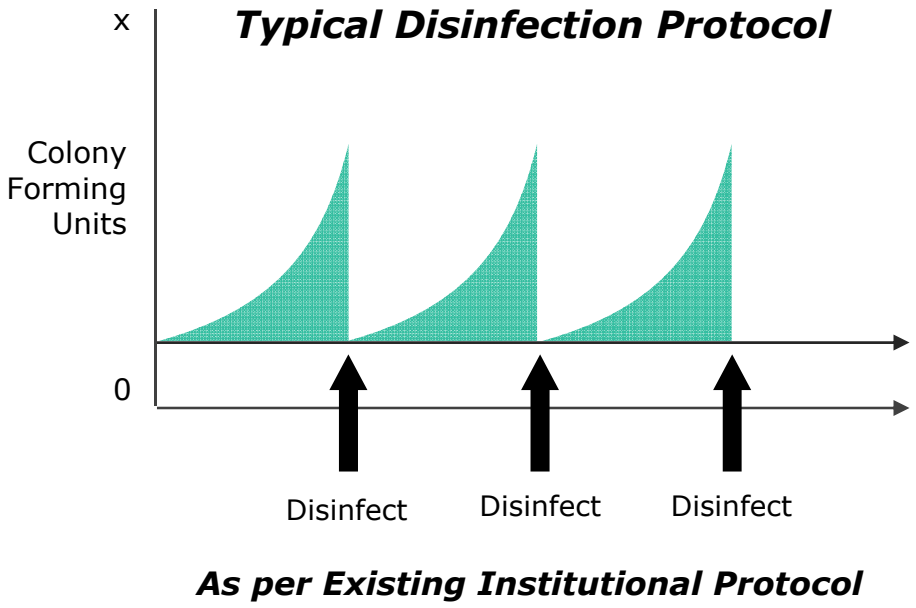
SANITIZERS SHOULD BE USED WITH CARE. ALWAYS READ LABEL INSTRUCTIONS OR PRODUCT INFORMATION BEFORE USE.

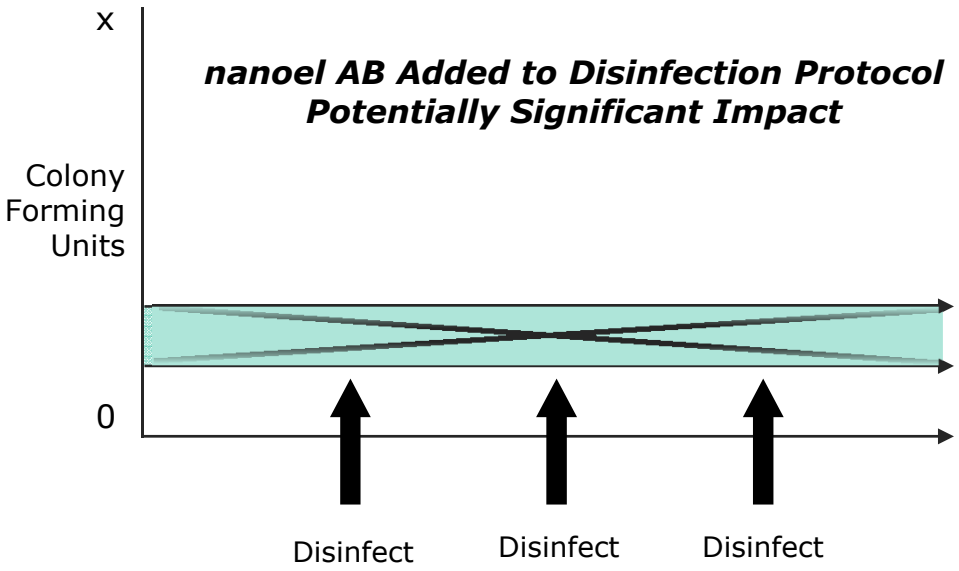
MORE
Technical data

Below data is the technical data for distributor or engineers.

nanoel AB, Above the cleaning

PROTECTION BETWEEN DISINFECTION : Reduce Microbial Growth Between Disinfection



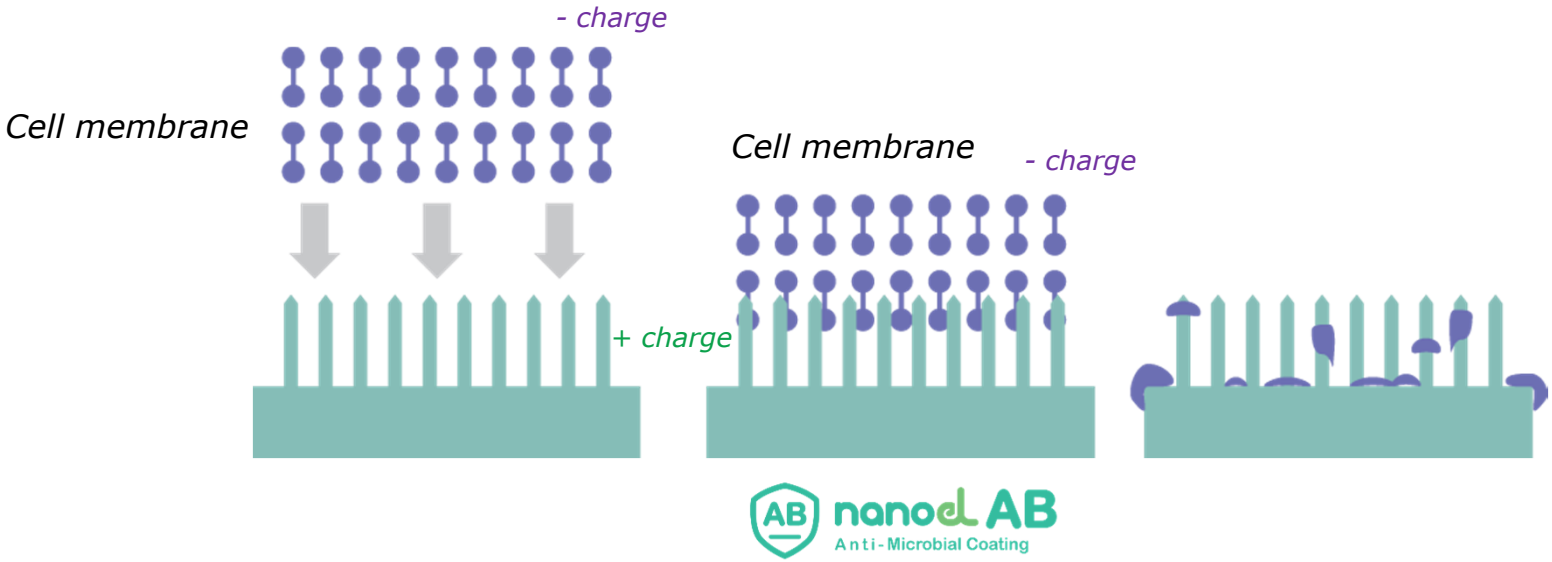


- Correct Disinfectant
- Correct Concentration
- Correct Technique
- Adequate Dwell Time

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

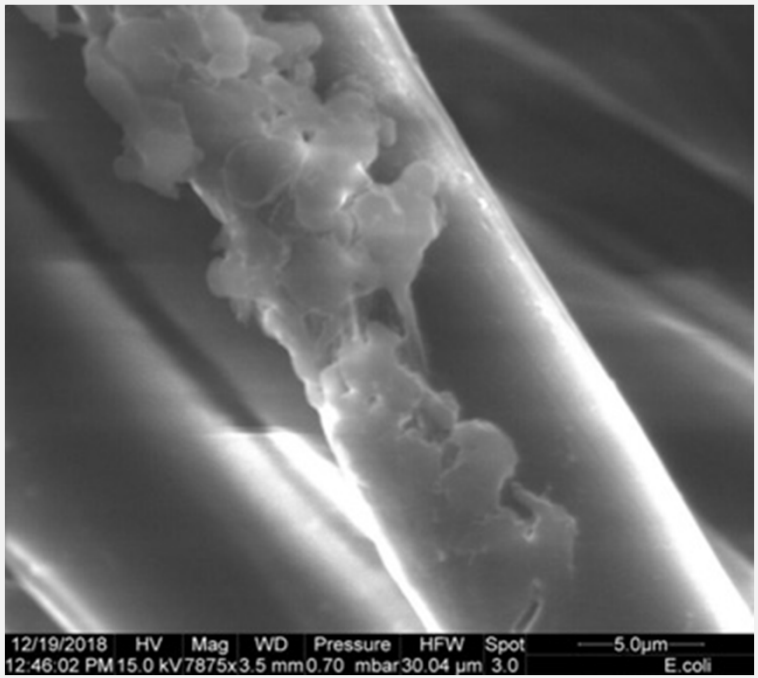
FUNCTION:
A PHYSICAL ELIMINATION OF MICROORGANISMS

- Layer of swords defend against microbial growth.
- The positively charged atom of nitrogen attracts negatively charged cell membranes and punctures all microbes.

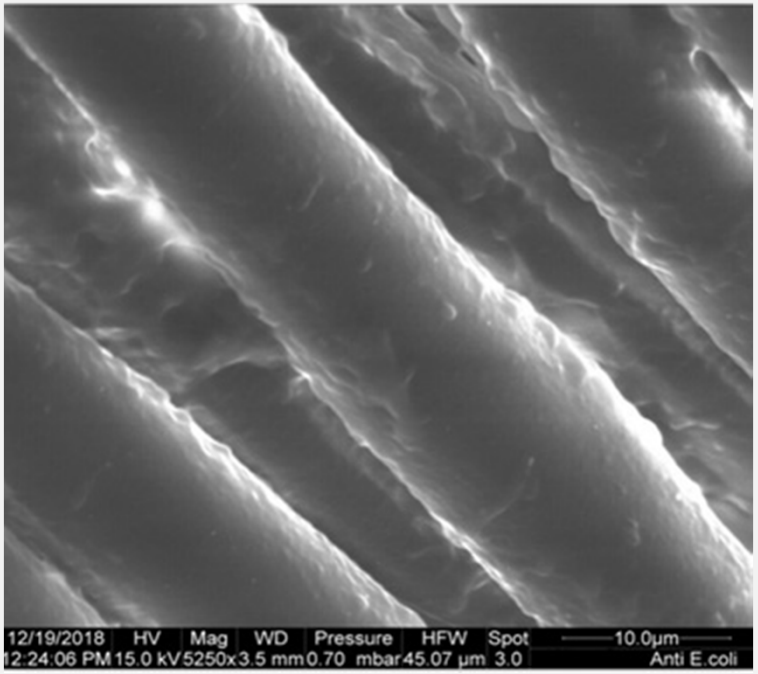


FUNCTION:
RASTER-ELEKTRON-MICROSCOPY (REM)

WITH UNIVERSITY ANSBACH



E. coli cluster on untreated fiber

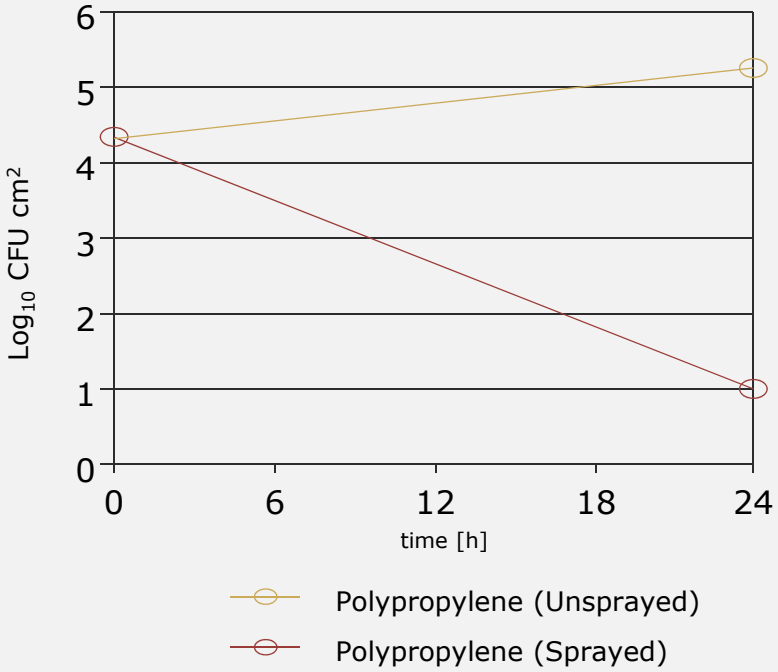


E. coli cells ruptured after contact with treated surface

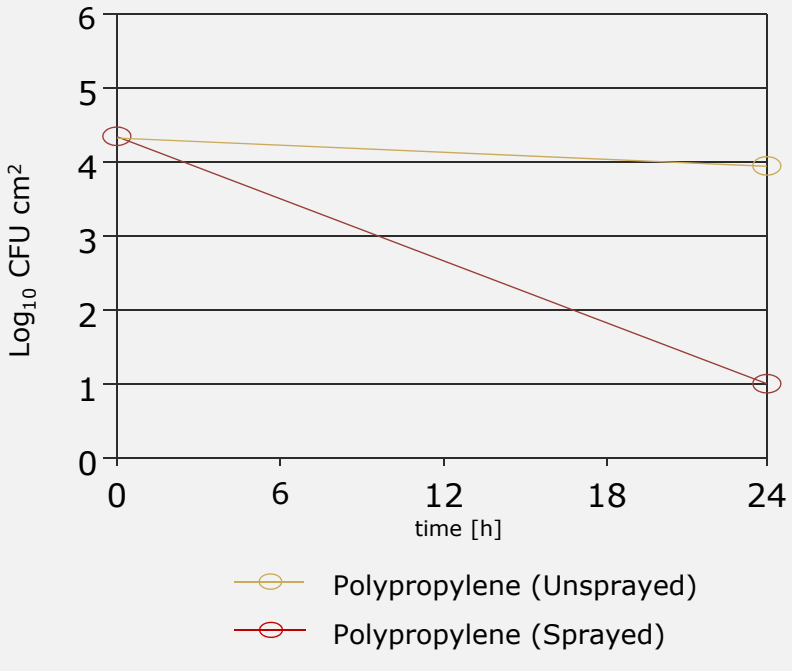
PERFORMANCE :

Kinetic on highly colonised Polypropylene according to ISO 22196:2011

Escherichia coli



Staphylococcus aureus



Results as Log10 CFU cm²

PERFORMANCE :

ACCORDING TO JIS Z 2801:2012

- *Broadly acknowledged standard*
- *Highly colonised*

Result:

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

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

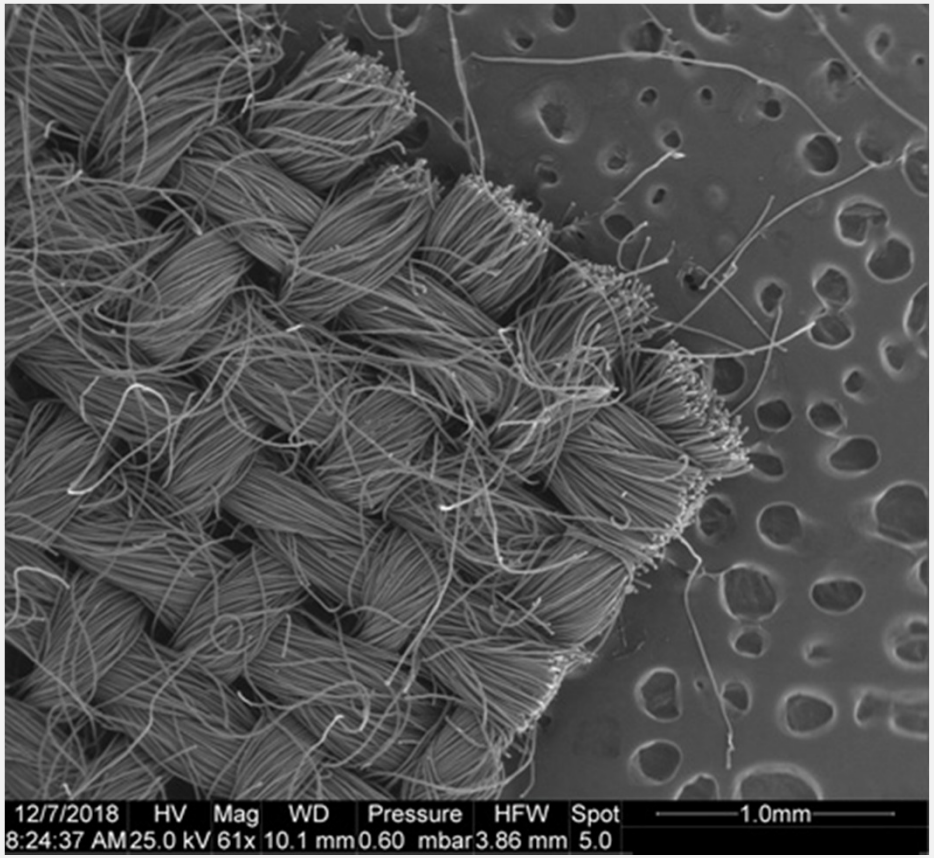
PERFORMANCE :

ACCORDING TO ASTM F 1980

Result:

After one year of artificial aging;

> log 3 elimination
JIS Z 2801:2012 on
Enterococcus hirae



Applications

Some examples of different applications.

- Invisible hygiene- and abrasion protection against micro scratches on glass or plastic displays, LED, LCD or AMOLED. Zero limitation to touch functions or usability; as holds true for cases or covers of smartphones
- Easy-to-clean and hygiene-treatment for bathroom ceramics, toilet lids, sanitary surfaces, and bathroom utensils (i.e. taps, shower heads, and hoses)
- Protection against infections on plastics, stainless steel or varnished surfaces in public toilets, hotels, public transportation and food service industry.
- Hygiene-controls for medical surfaces and equipment not having direct contact with mucous membranes (studies concerning the usage within the organism aren't completed yet)
- Permanent surface disinfection in hospitals and caring and nursing facilities, especially those within intensive and quarantine care, or surfaces with a high infection risk (e.g. doorknobs) including shelf spaces, work-tops, and floors (please check national regulations!)
- Permanent hygiene for phones, keyboards, and other input devices which are regularly touched and used
- Stainless steel handrails and elevators (incl. operating devices)
- Wear and tear and hygiene treatment for automatic vending equipment , slot machines, water dispensers, parking meters, and other publicly used machines.
- Easy-to-clean anti-limescale performance for glass, PMMA or textile shower screens.
- Odor free hygiene performance for waste bins
- Hygiene performance in ventilating systems
- Infection reduction in the kitchen: work surfaces and cutting boards, cutlery, and kitchen utensils, kitchen cabinets, fridges, sinks (please check national regulations!)
- Non-stick performance for storage and water tanks (please check national regulations!)
- Permanent hygiene protection for flooring and other surfaces
- Mold reduction for agricultural covers

nanod AB

Anti-microbial coating solution

nanod

Physical Protection from microbial

A permanent anti-microbial nano-coating for maximum hygiene!

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