



CleanCoat™

Self-disinfecting coating using the Surface Purity™ process



Anti-Microbial Treatment 12 months

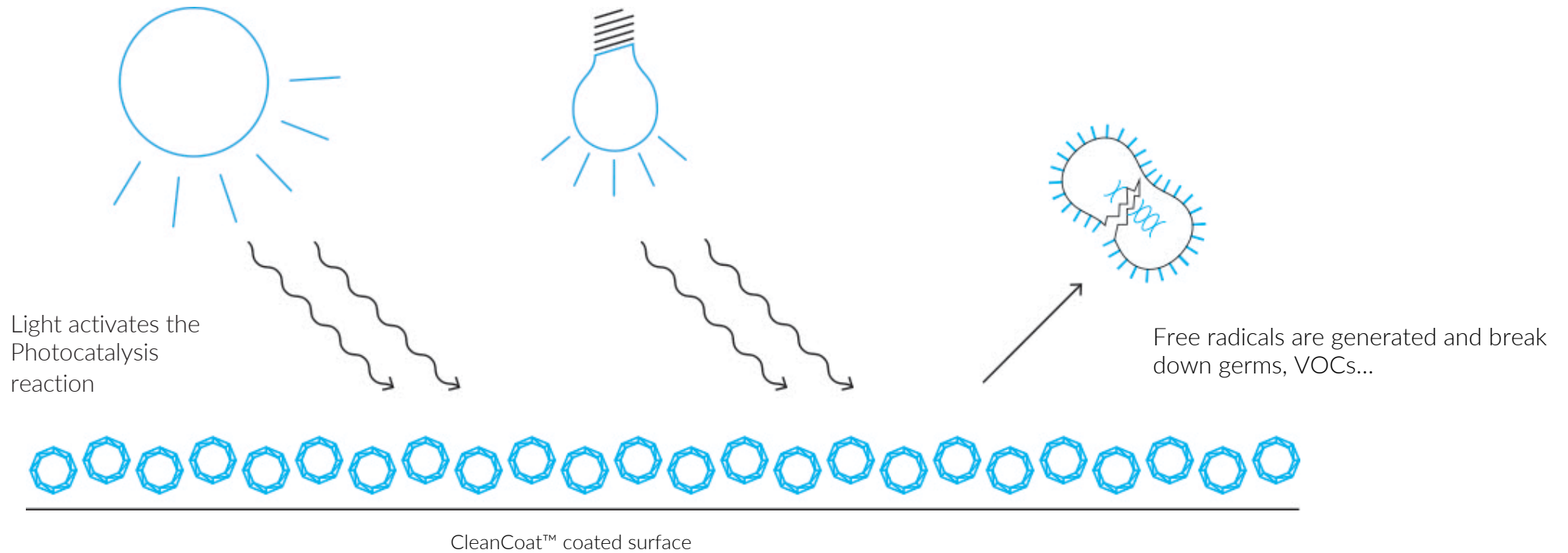
CleanCoat™

- Surfaces become self-disinfecting after use
- Purifies the air and noticeably improves the indoor climate
- ***Breaks down germs such as bacteria, viruses, molds, yeasts, algae, organic compounds such as VOCs and unpleasant odors***
- Approved for use on all surfaces (including surfaces in direct contact with food)
- Transparent and odorless coating
- Is activated by light (>50 lumens).



Photocatalysis Process

CleanCoat™





Decomposition of germs

CleanCoat™

CleanCoat™ has successfully passed 12 European Standard (EN) tests performed on over 18 different organisms including Influenza A, Influenza B, Salmonella and Methicillin Resistant Staphylococcus aureus (MRSA).



*** Lillebælt Hospital, Denmark. Data: five weeks after application*



Purification of the ambient air

CleanCoat™

Reduces air pollution including volatile organic compounds (VOCs) such as formaldehyde, benzene, acetone and NOx.

They vaporize easily at room temperature and are given off by new furniture, carpets and many electronic devices. VOCs are known to have harmful effects on the human body, and some are even carcinogenic.

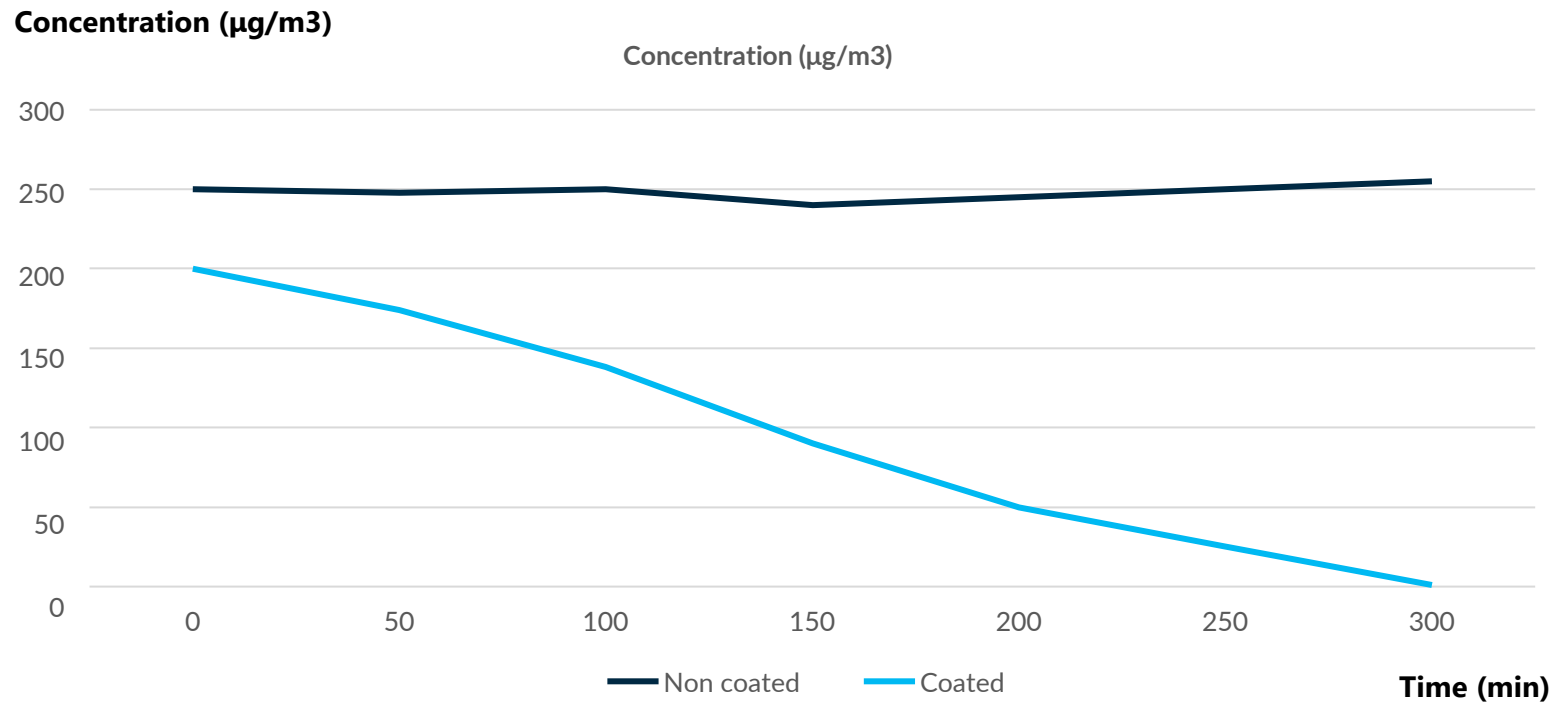
Because VOCs are carbon-based, CleanCoat™ safely breaks them down. This makes CleanCoat™ an effective air purifier.

** Tile production in Malaysia. Type of VOC: Residues of chemical vapors. Data: four months after application.*



Purification of the ambient air

CleanCoat™



Test of the National Center for Work Environment Research, Hans Christian Budtz



Control of spores in ambient air

CleanCoat™

CleanCoat™ has already successfully demonstrated its decomposing action against airborne molds and yeasts by passing the following European standard tests:

- EN 13624, Stachybotrys (Black mold)
- EN 14562, Stachybotrys (Black mold)
- EN 13624, Candida albicans (Candida yeast)
- EN 14562, Candida albicans (Candida yeast)

** Hospital, Malaysia. Data: three months after application*

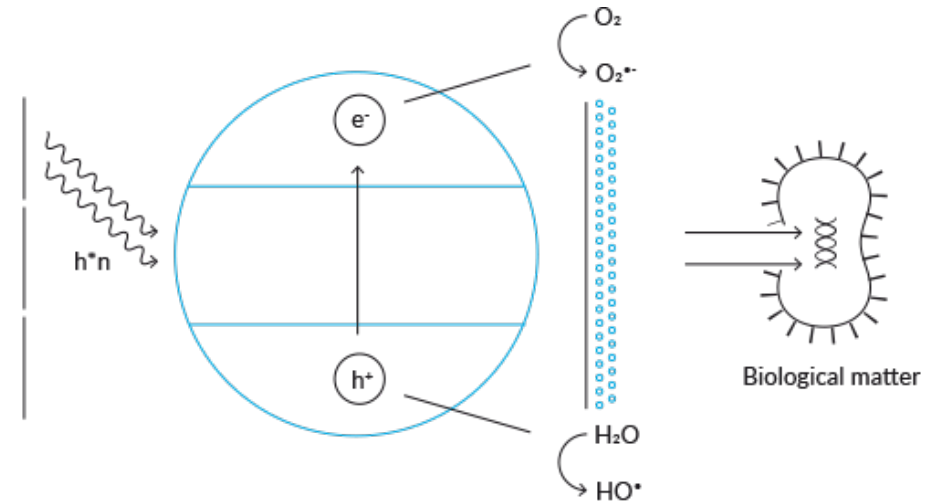


Reaction / mechanism

CleanCoat™

The natural decomposition of organic matter can be dramatically accelerated through the use of photocatalysts such as titanium dioxide (TiO₂). Once deposited on a material, these charge carriers begin to interact with the oxygen and water present, **generating highly reactive peroxide and hydroxyl radicals.**

When exposed to light (with an energy above the TiO₂ bandgap > 50 lumens), high-energy electron-hole pairs are generated. These radicals can either directly attack surrounding unwanted seed material or recombine in various ways to form hydrogen peroxide.



CleanCoat™ coated surface

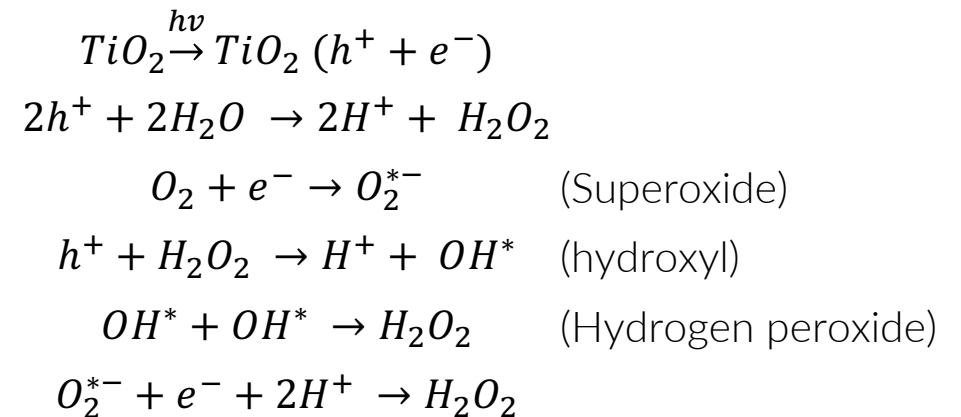


Reaction / mechanism

CleanCoat™

Hydroxyl, peroxide and hydrogen peroxide radicals are the reactive oxygen species (ROS) responsible for the germicidal action of CleanCoat™ through the non-selective oxidation of organic matter.

The catalyst (TiO₂) is never completely used up in this reaction, thus ensuring a continuous process over the lifetime of the coating. The TiO₂ particles in CleanCoat™ are specifically designed to perform in all currently known environments.





Reaction / mechanism

CleanCoat™

Free radicals cause oxidative stress and attack all major types of biomolecules, including polyunsaturated fatty acids, also called lipids, in cell membranes. The free radicals contained in CleanCoat™ act by oxidizing and attacking the cell membranes of germs –

In other words, germs decompose.

Oxidative degradation of lipids, also known as lipid peroxidation, is inherently very destructive because it occurs as a self-sustaining chain reaction. After destroying the cell wall, free radicals then proceed to oxidize the cell nucleus.

Due to the constant high oxidation rate of free radicals, the oxidation of cells produces water, carbon dioxide and minerals. The water and carbon dioxide evaporate, leaving the cell minerals on the surface. These are then absorbed and eliminated during cleansing with e-Water™.



Norms-Tests validated in Europe

CleanCoat™

EN-Reference	Organisms
EN 13704	<i>Bacillus subtilis</i>
EN 13624	<i>Aspergillus brasiliensis</i> , <i>Candida albicans</i>
EN 13697	<i>Aspergillus brasiliensis</i> , <i>Candida albicans</i>
EN 14562	<i>Aspergillus brasiliensis</i> , <i>Candida albicans</i>
EN 14348	<i>Mycobacterium avium</i> , <i>M. terrae</i>
EN 14563	<i>Mycobacterium avium</i> , <i>M. terrae</i>
prEN 16777	Adenovirus, Murine norovirus
EN 14476	Poliovirus, Adenovirus, Murine norovirus
DSEN 14476	EV-71, Influenza A, Influenza B
EN 13727	<i>Pseudomonas aeruginosa</i> , <i>Staphylococcus aureus</i> , <i>E. hirae</i> , Salmonella, MRSA
EN 13697	<i>Pseudomonas aeruginosa</i> , <i>Staphylococcus aureus</i> , <i>Enterococcus hirae</i> , <i>Escherichia coli</i>
EN 14561	<i>Pseudomonas aeruginosa</i> , <i>Staphylococcus aureus</i> , <i>Enterococcus hirae</i>

Standards

CleanCoat™

CleanCoat™ has successfully passed several European standard tests.

The tests have been carried out and confirmed in collaboration with recognized laboratories such as:

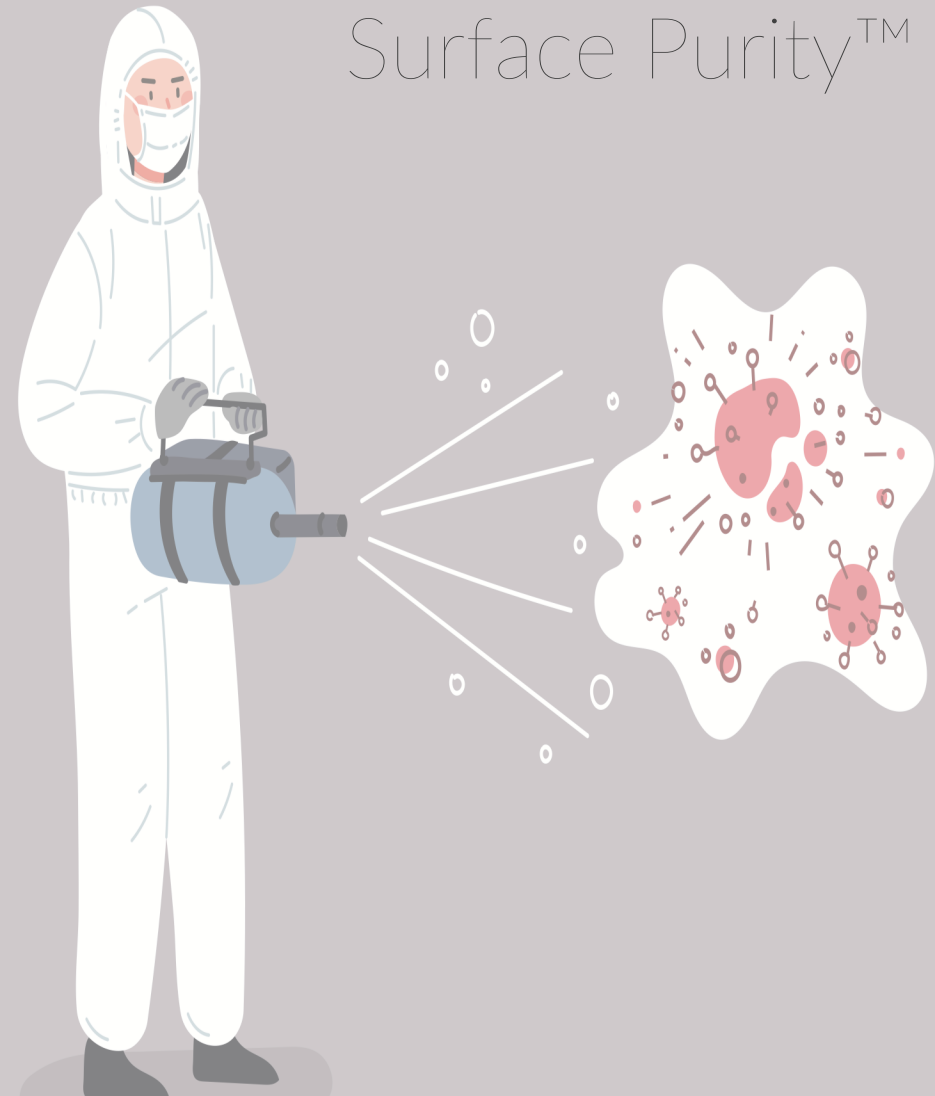
- Dr. Brill und Steinman, Germany
- ISI Food Protection, Denmark
- Chang Gung University, Taiwan
- Statens Serum Institute, Denmark





Our Service

Surface Purity™



Do you also want to feel safer from all kinds of germs in your environment? Then take advantage of our Surface Purity™ coating service.

We coat your surfaces quickly and efficiently, by appointment, directly on your premises - whether door handles, handrails, office workstations, operating elements in lifts or buses and entire trains.

Thanks to its active ingredient, the coating permanently contributes to a reduction of the germ population and prevents its critical spread.

The coating is abrasion resistant, lasts about a year depending on use and needs to be refreshed afterwards.

Contact us and benefit from a more hygienic environment!



Indoor Hygiene

CleanCoat™



Protect yourself against indoor contamination

Surface Purity™ is a standardized process allowing effective prevention against contamination in interior spaces.