

Project:

Self-Cleaning and continuous protection of porous building surfaces such as cement, stones, walls and grout

Industry:

Building & Construction

Product:

SurfaShield C

Key Benefits:

- Self-Cleaning
- Self-Sterilizing
- Superhydrophilic
- Decomposes Odours
- Air purifier
- Continuous Action
- Environmentally friendly cleaning technology



Applications:

- Self-Cleaning of Walls
- Protection from mould growth and organic stains
- Stone and Monument Protection
- Environmental Restoration
- Prevents pollutant adhesion
- Decomposes Pollutants
- Bacterial Growth Inhibition
- Exhaust Gas Break-Down

Packaging:

1L, 4L, 10L, 30L Containers, 1000L IBCs

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SurfaShield® C

Photocatalytic Self-Cleaning Nanotechnology for the Protection of Porous Surfaces

SurfaShield C coated surfaces decompose organic stains and pollutants, prevent microbial and mould growth, purify the air, remove odours. It is an active nanotechnology formulation that can be easily applied on exterior porous surfaces, such as cement, render or plaster, mortar grout, walls, stones or even unpolished marble. By harnessing the surrounding light, treated surfaces become Self Cleaning and Self Sterilizing. The action of SurfaShield C is permanent, as it chemically bonds on the surfaces applied. SurfaShield C modified surfaces are safer, without the use of hazardous disinfectants or chemicals, and are preserved as new.



SurfaShield C
Half-treated
cement surface



Blue ink stain is
placed on the
cement surface



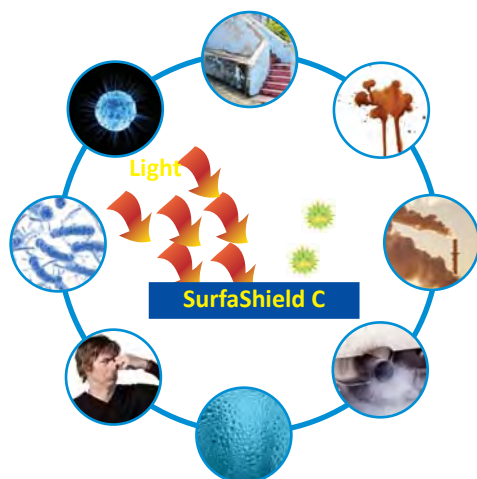
Decomposition of the Blue
ink stain, after exposure to
sunlight for 5 hours

SurfaShield® is a registered trademark of
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NanoPhos
Pioneering
Nanotechnology

SurfaShield C Description

SurfaShield C is a water-based nanotechnology formulation, developed and produced by NanoPhos SA, that provides continuous and effective self-cleaning and self-sterilizing properties for a wide range of porous building surfaces. It can be applied by roller, brush or spraying and has a minimal effect on the original natural appearance.



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How can I prevent mould growth on walls or cement?

Can light inhibit black spotting from microorganisms?

Can stains be decomposed just by absorbing surrounding light?

Is it possible to decontaminate hazardous gaseous pollutants around us?

Can my walls purify air?

How does it work?

SurfaShield C acts by absorbing surrounding light and transforming it in chemical power. As a semiconducting catalyst, SurfaShield C nanoparticles are activated by light to produce short-living oxidizing compounds: oxygen and hydroxyl radicals. Bacteria, Viruses, Mould, Gaseous Pollutants, Odors, Stains; they all decompose and break down into harmless inorganic compounds. Thus, the application surfaces remain actively clean. SurfaShield is not just an active Surface Shield: As light interacts with nanoparticles, surfaces become super-hydrophilic and as a result pollutants are easily washed away. SurfaShield also acts as an air purifier as it decomposes harmful organic substances such as volatile organic compounds (VOC), car exhaust gases and nitrogen oxides (NOx). As a result nanotechnology assures permanently a cleaner and safer environment just by absorbing light.

International Standards Testing

Antibacterial Action: (ISO EN 27447, ETAT SA) Deactivation of bacterial microorganisms *Escherichia coli* (ATCC 51813): 98,92%, *Listeria monocytogenes* (ATCC 19115): 99,89% and *Staphylococcus aureus* (ATCC 6538) 99,68% within four hours of exposure under environmental light of intensity: 55,6 $\mu\text{W}\cdot\text{cm}^{-2}$ (360 -420nm).

Antifungal Action: (ISO EN 27447, ETAT SA) Deactivation of fungi microorganisms *Aspergillus* and *Penicillium* spores: 87.27% within four hours of exposure under environmental light of intensity: 55,6 $\mu\text{W}\cdot\text{cm}^{-2}$ (360 -420nm).

Super-hydrophilicity: Water - glass substrate contact angle was reduced below 5° (degrees) after half hour exposure under environmental light of intensity: 55,6 $\mu\text{W}\cdot\text{cm}^{-2}$ (360 -420nm).

Application Note

Surface Application: Shake or stir the container vigorously before use. The application surface should be dry and clean. Apply SurfaShield C by brush, roller or by spraying. No dilution is required. If any excess remains on the application surface, remove by using a wet cloth. On very absorptive surfaces re-apply a second coating. The application of SurfaShield C 24h prior to SurfaShield C application is recommended, in order to reduce water or stain penetration. Consumption: Estimated consumption rate 8-12 m^2/L , strongly dependent on the properties of the surface applied.

Physical Properties

Milky White, Water based emulsion with pH = 9-9,5. Contains less than 10% isopropanol. Flash Point (closed cup method): 41°C Density: 1,01 $\text{g}\cdot\text{cm}^{-3}$ Viscosity: 2-5 mPa.s VOC content: 103 $\text{g}\cdot\text{L}^{-1}$ SurfaShield C is not an oxidant.

Safety & Storage

Flammable. Keep out of the reach of children. In case of fire use powder or water. SurfaShield C is not considered an oxidant. Always request, read and comprehend the SurfaShield C Safety Data Sheet before application. **Expiration Date:** 18 months after the production date.

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What is Nanotechnology?

Nanotechnology refers to the scientific field, which deals with very small structures, usually sized below 100 nm. One nanometer (nm) is one billionth of a meter (10^{-9} m) - it is so small that if earth were one meter in diameter, then one nanometer would have been the size of an apple! Nanosized materials reveal unique properties when compared to ordinary, bulk materials or even molecules.

NanoPhos at a Glance...

At NanoPhos, we take advantage of the unique properties of nanotechnology and invent clever materials that solve every day problems. By harnessing nanotechnology, we seek to create a more comfortable, safe and trouble-free living environment. We transfer innovations out of our lab into the hands of consumers. Our vision is clear: "Tune the nanoworld to serve the macro-world" – in simple terms we make nanoparticles solve common problems. NanoPhos was recognized in January of 2008 by Bill Gates as one of the most innovative companies and also received the 1st prize for innovation at the prestigious 100% Detail Show in London. SurfaShield technology, received the prestigious GAIA award at the 2010 International Building and Construction Show BIG5 in Dubai for its environmentally friendly and innovative profile. NanoPhos is a rapidly growing company that is actively expanding its distribution network. Currently, the company is present in the UK, Ireland, Norway, Sweden, Finland, Denmark, Portugal, Italy, Greece, Cyprus, Japan, K. of Saudi Arabia, K. of Bahrain, China, New Zealand, Australia and Mexico.

www.NanoPhos.com



NanoPhos SA has been approved by Lloyd's Register Quality Assurance to follow the EN ISO 9001:2008 Quality Management System and EN ISO 14001:2004 Environmental Management System for the production and sales of chemical products for cleaning and protection of surfaces and nanotechnology products.