

## Project:

Industrial product for self-Cleaning and continuous protection of porous building surfaces such as cement, stones, walls and grout

## Product:

SurfaShield Cx

## 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 pollutants adhesion
- Decomposes Pollutants
- Bacterial Growth Inhibition
- Exhaust Gas Break-Down

## Packaging:

10L, 30L Containers,IBC

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## SurfaShield® Cx

### Photocatalytic Self-Cleaning Nanotechnology for the Protection of Porous Surfaces

SurfaShield Cx decomposes organic stains and pollutants, prevents microbial growth, purifies the air, removes 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. SurfaShield Cx coated surfaces efficiently decompose organic stains, bacteria, mould, gaseous pollutants, even odours. Therefore, surfaces are safer, without the use of hazardous disinfectants or chemicals, and are preserved as new.



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**NanoPhos**  
Pioneering  
Nanotechnology



## SurfaShield Cx Description

SurfaShield Cx is a liquid formulation, developed and produced by NanoPhos SA, that provides effective self cleaning and self sterilizing properties on a wide range of porous building surfaces. It is for industrial use and can be applied by spray gun after manufacturing or after installation. By harnessing nanotechnology achievements, effectiveness, continuous and minimal change to the original natural appearance of the application surface are assured. SurfaShield Cx acts by absorbing surrounding light and transforming it in chemical power. As a semiconducting catalyst, SurfaShield Cx nanoparticles are activated by light to produce short-living oxidizing compounds: oxygen and hydroxyl radicals. Bacteria, Viruses, Mold, Gaseous Pollutants, Odours, Stains; they all decompose and break down to harmless inorganic compounds. Thus the application surfaces remain actively clean. The treated surfaces become super-hydrophilic and as a result pollutants are washed away. It also acts as an air purifier as it decomposes harmful organic substances such as volatile organic compounds (VOC), car exhaust fumes and nitrogen oxides (NOx). As a result nanotechnology assures permanently cleaning and a safer environment just by absorbing light.

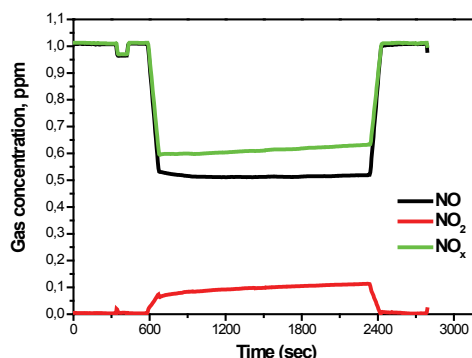


### International Standards Testing

**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).

**Removal of nitric oxide (ISO 22197-1:2007):** Photocatalytic activity was measured as the oxidation of NO under UV light (350 nm, 10 W/m<sup>2</sup>). NO gas is adsorbed on photocatalyst surface and is oxidized producing NO<sub>2</sub> gas and nitric ions (NO<sub>3</sub><sup>-</sup>).



### Application Note

**Surface Application:** Shake or stir the container vigorously before use. The application surface should be dry and clean. Apply SurfaShield Cx by spray gun (airless, HVLP) after manufacturing or after installation. No dilution is required. Two applications are necessary in order to achieve the desired functionality of the coating. Re-apply after half an hour, time strongly dependant on weather conditions. **Consumption:** Estimated consumption rate 8 m<sup>2</sup>/L, strongly dependent on the properties of the surface applied. **Expiration Date:** 18 months after the production date.

### Physical Properties

White, Water based suspension with pH = 9.2±0.5. Contains less than 10%w/w isopropanol. Flash Point (closed cup method): 41°C Density: 0.98±0.05 g·cm<sup>-3</sup> Viscosity: 2 mPa·s VOC content: 136 g/L. SurfaShield Cx is not considered an oxidant.

### Safety & Storage

Highly flammable liquid and vapour. Causes serious eye irritation. Keep away from heat / sparks / open flames / hot surfaces. No smoking. Keep container tightly closed. Wear protective gloves / protective clothing / eye protection / face protection. IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothing. Rinse skin with water / shower. If eye irritation persists: Get medical advice / attention. Avoid breathing dust / fume / gas / mist / vapours / spray. Use only outdoors or in a well-ventilated area.



## What is Nanotechnology?

Nanotechnology refers to the scientific field, which deals with the research and creation of small matter particles, usually sized below 100 nm. One nanometer (nm) is one billionth of a meter (10<sup>-9</sup> 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 and into the hands of consumers. Our vision is clear: "Tune the nanoworld to serve the macroworld" – in simple terms we make nanoparticles to solve common problems. NanoPhos was recognized in January 2008 by Bill Gates as one of the most innovative companies and also received the 1<sup>st</sup> prize for innovation at the prestigious 100% Detail Show in London. NanoPhos is a rapidly growing company that is actively expanding its distribution network. Currently, the company is present in the UK, Norway, Sweden, Denmark, Portugal, Spain, France, Italy, Greece, Cyprus, Egypt, Sudan, Saudi Arabia, Bahrain, UAE, Qatar, Oman, Iran, India, New Zealand, China, Japan, Mexico, Guatemala, Thailand, Malaysia and Singapore.

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NanoPhos SA has been approved by Lloyd's Register Quality Assurance to follow the EN ISO 9001:2000 Quality Management System and the environmental management system EN ISO 14001:2004 for the development, production and sales of chemical products for cleaning and protection of surfaces and nanotechnology products. Furthermore, it is certified for occupational health and safety management systems with OHSAS 18001:2007.

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