NS67 GREENSHIELD

SELF-CLEANING TITANIUM DIOXIDE PHOTOCATALYTIC NANOTECHNOLOGICAL SOLUTION

NS67 GREENSHIELD nanotechnological photocatalytic easy to apply for porous surfaces, masonry and concrete

COMPOSITION

Aqueous solution of titanium dioxide nanoparticles

MAIN CHARACTERISTICS

Self-cleaning photocatalytic nanotechnological solution with antibacterial and antifungal action, able to purify the air, it breaks down NOx

1 L | 5 L | 10 L

BENEFITS

Treated surfaces remain unchanged for longer

- Surfaces exposed to light remain clean
- The walls become hydrophilic, facilitating cleaning and the removal of pollutants with a simple jet of water
- Surfaces become "smog eaters", breaking down NOx pollutants
- There are not product alterations

PROPERTIES AND BENEFIT

The formulation of NS67 GreenShield has been specifically designed to make surfaces self-cleaning and with antibacterial action. **The treated surface is able to decompose organic substances, acting also against stains and atmospheric pollutants**. NS67 GREENSHIELD treated surfaces rapidly decompose organic stains, bacteria, mold, gaseous pollutants and smells, and are kept clean and sanitized, without the use of any other substances (disinfectants). Thanks to its nanotechnological formulation, NS67 GREENSHIELD ensuring the effectiveness of its action over time, without change of natural appearance of the support. It can be used both for outdoor and indoor applications. Through the oxidation reaction of active radicals generated by the activation of nano-TiO_2 with UV radiation (natural or artificial light), the treatment actives a photocatalytic degradation of the organic and inorganic components on the surface, transforming them into non-hazardous inorganic compounds (mineral salts).
Treated surfaces, exposed to light, stay clean longer.
Treated surfaces with titanium dioxide also become super hydrophilic, therefore facilitating cleaning and removal of pollutants: with a simple jet of water, thanks to its hydrophilic behaviour, it is possible to remove dust particles and dirt residues.
Moreover, NS67 GreenShield acts as an air purifier: since it breaks down harmful organic substances, it also decomposes volatile organic compounds (VOCs), as well as nitrogen oxides (NOx) from fossil combustion. Therefore, treated surfaces are de-polluted.

OPERATION MECHANISM

The titanium dioxide contained in NS67 GreenShield is activated through UV rays from natural and artificial light and produces chemical energy. **Similar to a semiconductor catalyst, NS67 GREENSHIELD nanoparticles, activated by ultraviolet rays, generate short-lasting oxidizing compounds, such as oxygen and hydroxyl groups**. The action of photocatalytic materials is based on nanocrystalline particles of titanium dioxide (TiO_2) which act as semiconductors, absorbing photons from light: this results in the separation of electrons and positive holes, and finally of short-lasting oxidizing and hydroxyl radicals. As shown in the NS67 GREENSHIELD operation mechanism, the applied nanotechnological product does not run out and does not suffer chemical alterations. By remaining firmly anchored to the substrate, its durability is linked to the useful life of the application surface.
The decomposition of pollutants, activated by the photocatalytic activity of NS67 GREENSHIELD, has been compared to the reduction of NOx due to photosynthesis of trees: experimental measurements have shown that a surface treated with NS67 GREENSHIELD is able to remove 80% of the organic substances deposited in 8 hours. Furthermore, it has been estimated that a concrete surface of 1000 square meters treated with NS67 GREENSHIELD, contributes to the overall reduction of pollutants equal to the action of 60 medium-sized trees.

PHOTOCATALYTIC TEST

NS67 GREENSHIELD, irradiated by UV rays, has an effective self-cleaning photocatalytic action, as can be seen from the evaluation of degradation of the organic components (methylene blue in aqueous solution and an orange solution), through the oxidation reaction of active radicals generated by the activation of nano-TiO_2. **TEST REPORT: EN 16980-1:2021** Photocatalysis - Continuous flow test methods - Part 1: **Determination of the degradation of nitric oxide** (NO) in the air by photocatalytic materials. A test based on EN 16980-1:2021 was performed on a sample treated with NS67 GREENSHIELD. **RESULTS: Conversion under irradiation in the presence of sample.** The graph below shows the evolution of the concentrations of C_{NO} and C_{NO2} during the test.
Figure 1: ***Concentration profiles for NO, NO2 and NOx during the photocatalytic sample test****, test dated 14-2-2023, performed in accordance with the* ***EN 16980-1:2021*** *standard.*

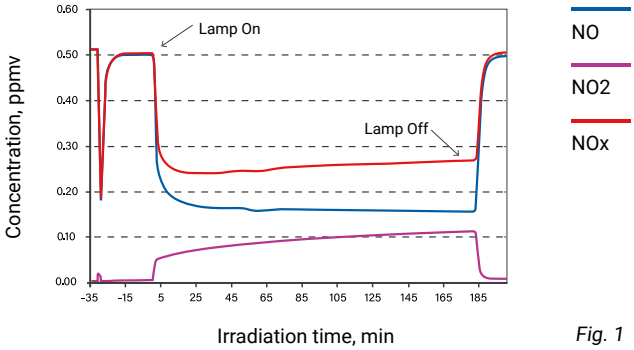

Fig. 1

TEST AND PERFORMANCE	
Irradiation	**UV**
η NO %	70
η NO %	47

The sample under analysis showed an excellent photocatalytic reduction capacity of NO/NOx. The percentage of NO conversion is equal to 70% therefore the activity of the sample is high to such an extent that it could be limited in the measurement conditions of the mass transfer effects.

APPLICATION

Apply NS67 GREENSHIELD with a low-pressure sprayer to create an even film. Do not apply excess product. Remove any leaks with a cloth. The product does not need any kind of dilution. For a high protection of very porous surfaces, in order to reduce product penetration, apply NS67 WR 24 hours before applying NS67 GREENSHIELD.
IMPORTANT NOTES: in case of application on pigmented / colored surfaces, the preventive application of an insulating primer must always be evaluated, to prevent possible degradation of the pigments. Before use, read and understand the Safety Data Sheet and use suitable protection systems.

SURFACE PREPARATION

Before applying, the application surface should be dry and clean. Carefully remove any residues. Restore any cracks or fissures on the substrate with suitable products. In case of mould and lichens, treat the surface with NS67 MUFFA and wash with a high-pressure cleaner.

CONSUMPTION

The estimated yield is 18-20 m^2/L on absorbent surfaces, 30-50 m^2/L on non-absorbent surfaces, strongly dependent on the properties of the surface.

APPLICATION UTENSILS AND STORAGE

After use, all tools and equipment must be cleaned immediately with water. Store in a cool, dry and well-ventilated place away from heat and direct sunlight. Containers which have been partially used should be kept carefully closed.
Protect from frost. Always transport in closed containers that are up-right and secure. Stored in its original airtight containers, the product has 18 months' shelf life.

The correct application of the product is the sole responsibility of the user. Any visits or site inspections by Nanosilv staff are intended to provide technical application recommendations, but in no case to inspect the construction site or perform quality checks on behalf of Nanosilv srl.

PRECAUTIONARY STATEMENTS - CLP Article 45: UFI CODE 5P80-20F2-1006-GF32
Keep out of reach of children. Do not reuse container. Avoid contact with skin and eyes. In case of skin contact, wash off with soap and plenty of water. Never use solvents or thinners. In case of eye contact, rinse thoroughly with plenty of water, seek medical assistance. If swallowed, seek immediate medical assistance and show container or label to the doctor in attendance. Do not let product enter drains. Dispose of containers contaminated by the product in accordance with local or national legal provisions. Before use, read and understand the Safety Data Sheet.

LIMITED WARRANTY INFORMATION - Please read carefully.
The information contained herein is true and correct to the best of Nanosilv's knowledge. Final determination of the suitability of the material, in relation to the specific use of the product, is the sole responsibility of the user. Nothing herein should be interpreted as a warranty. Since conditions and methods of use of our products are beyond our control, observing applicable law or regulation is the sole responsibility of the user. Nanosilv disclaims liability for any incidental or consequential damages. This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

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Production process:
ISO 9001:2015 certified

ITEM SPECIFICATIONS

Photocatalytic, super-hydrophilic and self-cleaning treatment, through the application of a water-based nanotechnological TiO_2 (titanium dioxide) formulation, free of perfluoroalkyl substances (PFAS), certified according to the UNI EN 16980-1:2021 standard, with a % NO conversion of 70%.
For the protection of porous surfaces such as concrete, stucco or plaster, walls, stones and unpolished marble.
Able to purify the air and keep surfaces clean, with an antibacterial and antifungal action.
Apply the product undiluted with a brush, roller or spray (we recommend spraying with HPLV), yield approx. 18/20 m^2/L.

vers. 09/06/2025

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