SurfaShield™ nextG

Anti-reflective (AR) & Self-Cleaning, Nanotechnology Driven Coating for Glass of photovoltaic panels.

Description

Surfa**Shield nextG** is the next Generation of anti-reflective coatings. It is an innovative water/isopropyl alcohol-based suspension that consists of a proprietary mixture of fused Silicone and Titanium Dioxide nanoparticles. After application, Surfa**Shield nextG** results in a transparent coating on glass, presenting distinct characteristics:

- **Anti-reflective (AR) properties**, attributed to glass nano/micro-roughness decrease.
- Better light transmittance on high incident angle photons (**diffuse light**) is attributed to titanium dioxide particles' high refractive index.
- **Anti-soiling properties**, attributed to the n-type semiconducting properties of titanium dioxide nanoparticles.
- **Super-hydrophilic effect**.
- The **self-cleaning effect**, attributed to the photocatalytic impact, especially against organic deposits (e.g., bird faeces).

Due to its alcoholic content and its special wetting agents, Surfa**Shield nextG** can be applied on both conventional AR (silicon dioxide, SiO_2 based) pre-treated solar glass and plain glass surfaces.

Surfa**Shield nextG** is an ideal formulation for both retrofitting operations (application on existing solar installations or glass façades) by spraying and industrial application by the rollerblade deposition technique.

Surfa**Shield nextG** does not require a heat treatment step after application, even though heating promotes surface anchoring and useful service life.

Recommended Use

Application surfaces include but are not restricted to solar glass, existing or new solar panels, solar heaters, protective glass, glass façades, and any other glass surface.

Key Benefits

Surfa**Shield nextG** coating results in optimized performance of photovoltaic solar panels, induced by the combined action of the distinct characteristics described above. Consequently, the solar panels increase their energy production output and present decreased maintenance effort. In addition, significantly reduced maintenance costs are also evident for solar heaters' protective glass and glass façades.

Technical Specifications

Form/Type	water-based suspension, containing isopropanol
Colour	Transparent, presenting a milky white haze
Density (EN ISO 2811-1)	0.85 ± 0.05 g/cm^3
pH	9.29 ± 0.5
VOC (Volatile Organic Compounds)	576 g/L
Viscosity	2mPa-s @ 20°C
Flash Point (Method: closed cup)	22 °C
Application temperature	From +5 °C up to +35 °C

Surfa**Shield™ nextG is not considered an oxidant**

International Standards Testing

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Contact angle measurement:	Treated glass with SurfaShield nextG demonstrates a 5° Water Contact Angle.
Transmittance measurement:	Permeability of the modified glass and sample was recorded using a UV-Vis spectrophotometer: Maximum gain in transmission up to 3% was observed.
Ageing Test (ISO EN 11507):	QUV 1800h Test: No modification/alteration of the coating was observed.

Surface Preparation

All surfaces should be clean, dry, and free from dust, oil, grease, and other foreign matters or contamination.

Application

Application of Surfa**Shield™ nextG** by HVLP air spray gun is highly recommended to ensure fine mist deposition. The application method requires a portable air compressor. Specialized technicians should realize the application to avoid optical defects. The substrate temperature should not exceed 38°C (100 °F) to prevent fast evaporation and ensure proper wetting of the application surface. Shake well and empty the content of the plastic bottle into the spraying liquid container. No dilution is required. The pressure of the air compressor should be in the range of 4.5-6.3 bars. The spray gun head must be placed 5-10cm above the application area. It is recommended to apply two coats crosswise. Adhesion maxima are reached within four hours after application. Self-cleaning and hydrophilic properties are evident one week after application.

Consumption

The estimated total consumption rate is 30 m^2/L, including a 5% loss factor for two coats application. The resulting coating presents a homogeneous dry film thickness of 150nm to 200nm.

Storage

Store only in the original container. Store the containers sealed in a cool and well-ventilated place. Keep away from direct sunlight. Keep far away from sources of heat, naked flames and sparks, and other sources of ignition. Keep containers away from any incompatible materials.

Health and Safety

Read the label before use. Safety Data Sheets are available through NanoPhos' website www.NanoPhos.com or upon request by contacting NanoPhos through email: info@NanoPhos.com or by telephone: (+30) 2292069312.

Available Packaging

- 10L Plastic container
- 20L Plastic container

- **Notes & Precautions:** Adverse weather conditions during or after the product application may affect the properties of the coating. Storage of closed containers, in controlled dry and enclosed space, away from sources of ignition and temperatures from 5°C to 35°C, for up to 18 months. The Technical Data should be read in conjunction with the Safety

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Data Sheets. The current edition of this technical data sheet automatically cancels any previous one concerning the same product. For more information, please contact NanoPhos: info@NanoPhos.com

- The technical data sheets and the recommendations for using NanoPhos products are based on our scientific knowledge, laboratory studies, and long-term experience. Therefore, the information provided must be considered indicative and subject to constant review in relation to the circumstances and each practical application. Furthermore, the product's suitability should be examined in each case for each specific use. The end-user bears complete & exclusive responsibility for any side effects that may arise from the incorrect use of the product.

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