Photocatalytically active coating for metals for self-cleaning, air purification and germ prevention

TECHNICAL BENEFITS

- Suitable for all uncoated metal surfaces
- Self-cleaning properties
- Hydrophilic surface avoids baking in of acids and soot
- Bonds with substrate
- Low material use per m² 25 – 50 ml/m²
- Full transparent coating
- No change of look-and-feel of host-material
- Fast drying
- Free of solvents
- Contains no biocides
- Long durability of >10 years

OPERATIONAL BENEFITS

- Degenerates viruses, bacteria and pollen from the air and from interior surfaces
- Prevents organic growth like mold, algae or moss
- Filters VOC's, pollen, NOx from the air
- 90m² treated surface = filter capacity of 8 mature oak trees
- Minimizes need for cleaning
- Application by ESS or HVLP
- Easy to touch-up during replacement or repair of surface
- Maintains pristine appearance of treated surfaces
- Non-hazardous, easy to transport

FINANCIAL BENEFITS

- Low cost per m²
- Minimizes cost for cleaning agents and soaps
- Minimizes repair and replacement costs due to pollution
- Reduces cost for ill personnel

NanoProf's TA2203 Metal Surfaces is a very fine, water-based titanium-dioxide dispersion. Its formulation is a photocatalytically active coating and is fully transparent. Upon radiation with light, the coatings will release oxygen radicals from the ambient air and thus decompose organic pollution: The surface becomes self-cleaning. TA2203 is active under UV light and artificial light up to a wavelength of 475 nm.

TA2203 is designed for all uncoated metal surfaces (e.g. steel, stainless steel, aluminum, anodized aluminium and non-ferrous metals). Not suitable for painted, high gloss finished or powder-coated metal surfaces as well as for glass and non-metallic materials.

NanoProf's Holland – Delft – South-Holland - Netherlands info@nanoprofs.com | sales@nanoprofs.com
www.nanoprofs.com | www.nanoprofsholland.nl

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NanoProf's TA2203 is an in- and outdoor application. Metal surfaces which are coated with TA2203 become self-cleaning and air purifying (reduction of VOC and bad odours).

Description

Furthermore, the coating protects the surface against algae, mould, germs and bacteria. The design of NanoProf's TA2203 provides self-cleaning properties to the treated surfaces, to protect them against pollution. The active selfcleaning titanium-dioxide particles transform all organic pollution on the surfaces, like soot, bird-droppings, stains of coffee, wine, oils, fingerprints etc. , into harmless compositions and oxygen. As the coating has strong hydrophilic capacities, pollution can never scale or "bake in."

NanoProf's TA2203 unites the advantages of photo catalysis and hydrophilicity. By doing this, the coating system offers a very robust and wear resistant surface. The lifetime cycle of the coating is around 10 years. The active selfcleaning characteristics of titanium-dioxide will easily remain intact throughout this period.

Application

NanoProf's TA2203 Metal Surfaces unites the advantages of photo catalysis with the unique capacity of nanotechnology. Instead of sticking mechanically on the surface (like waxes or foils do), the use of nanotechnology ensures that the NanoProf's coating bonds into the surface chemically. The active self-cleaning characteristics of titanium-dioxide will not exhaust.

It is recommended to apply TA2203 with electrostatic spraying technique, alternatively with HVLP. Industrial application processes, especially coil coating, are also possible. In case of industrial application, technical consultation at the NanoProf's International Group R&D dept. is strongly recommended and stricktly for specialists.

- Do not eat, drink or smoke during application.
- Surface must be clean and free from kit, glue, grease, mold or moss.
- Rinse with clean and fresh water to remove soap residues.
- Surface must be dry.
- Ambient temperature during manual application must be at least 15° C.
- Do not apply when ambient humidity exceeds 80%.

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- Do not apply in a dusty environment.
- Wear protective gloves during application. Wear safety goggles during application.
- Shake container well for a minute.
- Use ESS (Electro Static Spraying) indoor/outdoor or HVLP outdoor for application.
- Recommended application quantities (no bathing): ○ Plain surfaces 25 ml/m² ○ Textured surfaces 50ml/m²
- Surfaces must not necessarily be pre-coated with a primer. Item is now ready to use.
- Put left-over NanoProf's TA2203 in container and use-up within 4 weeks after first opening of original.
- NanoProf's will deteriorate fast when dirty or greasy items are coated without cleaning.
- Clean tools, spraynozzles with water immediately after every stop.
- Wash hands and face after every stop.

As the technology is about bonding particles into surfaces, matrices of particles need to be built up after application. The treatment reaches full performance AFTER a cure time of approximately 3 to 72 hours, which is dependent upon environmental variables, humidity and heat applied (max 150 ^{o}C. Tests for performance should be done after full cure. However, the surface can be used and exposed 10 to 30 minutes after application.

Limitations

- Do NOT apply on marble.
- Re-apply regularly on paths or walking areas that are in heavy use.
- When installing over poor, greasy or dirty surfaces, the bonding of NanoProf's TA2203 will become erratic, and so will the results be.
- Do NOT freeze product or store in subzero areas.
- Do not allow application during freezing temperatures.
- The selfcleaning effect will not occur in poor visible light, the effective light spectrum is < 475nm for artificial light.

Logistic info

- Store NanoProf's TA2203 at temperatures between +5° C and +30° C.
- Store NanoProf's TA2203 for max. 9 months in unopened containers counting from production date.

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Logistic info

- Storage life for opened containers is 4 weeks, keep containers tightly sealed and store in a dark place.
- **Avoid freezing product.**
- NanoProf's TA2203 is available in 5L, 25L and 200L containers.
- Never use pressure to empty containers.
- Dispose of contents/container in accordance with local/regional/national/international regulations.
- UN number DOT, IMDG, IATA: None
- Shipping name DOT, IMDG, IATA: None
- Transport hazard class DOT, IMDG, IATA: None
- Packaging group DOT, IMDG, IATA: None
- Environmentally hazardous: No
- Marine pollutant: No

Typical properties

- TiO_2 , H_2O, SiO_2
- Appearance: Yellowish transparent
- Active material: 1% by weight
- Effective light spectrum: up to 475 nm
- pH value: approx. 7,0 - 9,0
- Primary particle size: < 8nm
- Specific Density: 1,007 g/ml

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