

Project:

Self-cleaning, anti-bacterial, deodorizing, photocatalytic cool paint

Product:

SurfaPaint Kirei

Benefits:

- Keeps external wall clean from pollution, organic stains and mould growth
- Eliminates bacterial growth
- Keeps interior walls clean from microbes, deodorizes and improves indoor air quality
- Activated by both solar and artificial indoor light
- Functionality is for the lifetime of the paint
- Cool paint - Reflects more than 94% of infrared radiation (IR)
- Weather resistant and water repelling
- Excellent elasticity, opacity and coverage
- Excellent UV/alkali resistance
- Prevents carbon dioxide diffusion and acts as an anticarbonation barrier

Applications:

SurfaPaint Kirei can be applied directly on exterior or interior wall surfaces (masonry, concrete, plaster, drywalls), and wherever emulsion paints are applied.

Colour: white



SurfaPaint Kirei

Self-Cleaning, Anti-Bacterial Deodorizing Cool Paint

Inspired by the Japanese word Kirei that simultaneously means clean and beautiful, SurfaPaint Kirei is a functional and intelligent paint. SurfaPaint Kirei has the ability to clean itself, remaining as new. Dirt is decomposed to carbon dioxide and inorganic material just by the energy of light. At the same time, bacteria, fungi and mould are eliminated. The paint has the ability to remove odours and enhance indoor air quality. SurfaPaint Kirei reflects more than 94% in the NIR spectrum, making it an ideal cool paint for all environments. The titanium dioxide nanoparticles contained are activated with both solar and artificial, fluorescent light. This is a continuous process that remains active for the lifetime of the paint. SurfaPaint Kirei prevents also carbon dioxide diffusion to the substrate, acting as an anticarbonation coating.

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NanoPhos SA
Science & Technology Park of Lavrio,
Lavrio 19500, Greece
Tel.: (+30) 22920 69312 Fax: (+30) 22920 69303
W: www.NanoPhos.com E: info@NanoPhos.com

NanoPhos
Pioneering
Nanotechnology

ECRC EUROPEAN
COOLROOFS
COUNCIL

RATED PRODUCT

<http://coolroofcouncil.eu>

Product ID: FA00000006

Packaging:

10L Paint Pails

www.NanoPhos.com

SurfaPaint Kirei Description

SurfaPaint Kirei is a photocatalytic cool paint with self-cleaning properties. By harnessing the power of surrounding light, titanium dioxide nanoparticles decompose organic substances. When applied on exterior surfaces SurfaPaint Kirei decomposes organic stains, pollution and prevents mould growth and reflects more than 94% of the incident InfraRed (IR) radiation, saving energy and reducing building heating/cooling costs. Reflectance values are further enhanced by the photocatalytic, self-cleaning effect and remain unchanged for a longer period of time when compared to a conventional paint as it is a weather resistant paint with exceptional coverage, opacity and resistance to UV radiation. Therefore, the original, fresh look of a newly-painted surface remains long after application. When SurfaPaint Kirei is applied on interior surfaces, artificial light activates it and sterilizes airborne or surface-bound microorganisms, deodorizes and improves indoor air quality. At the same time, titania nanoparticles increase the whiteness and thermal reflectivity. All in all, SurfaPaint Kirei offers an advanced, nanotechnology based functionality on exterior or interior walls and masonry. The paint is white and can be tinted as pal colour (preferably with inorganic dyes).

International Standards Testing

Density (ISO 2811-1): 1.32±0.05 g/cm³

pH (ISO 19396-1): 8.8±0.5

Thermal Conductivity (EN ISO 12667:2004): 0.44 W/(mK).

Emittance (ASTM E408-71): 0.91

Scrub resistance (EN ISO 11998:2006): Class 1

Reflectance (ASTM E 903-96): total 91.84% (250-2200 nm), infrared 94.22% (700-2200 nm)

Fungal resistance (BS3900-G6:1989): excellent resistance against fungi Class 1

Carbon dioxide diffusion coefficient: 8×10^{-8} cm².s⁻¹ @ 150µm DFT.

Diffusion resistant coefficient: 220cm @ 150µm DFT.

Equivalent Air layer thickness (R): 294m @ 150µm DFT.

Applicability: SurfaPaint Kirei can be applied directly on interior or exterior wall surfaces (masonry, concrete, plaster, drywalls), and wherever water based, acrylic paints are applied. New substrates from cement or masonry should have cured for more than 3-4 weeks before primer application. For better results apply **SurfaMix P** as a primer. Adverse conditions during or immediately after application may affect the coating's properties. **Preparation:** Ensure all surfaces are clean and dry prior to application. Remove any dust and dirt. **Application note:** Stir well before application. Do not dilute for bridging gaps and hairline cracks of up to 0,5 mm. For cracks bigger than 1mm, fill the gap with a suitable putty. If thinning is required add up to 10% water by volume. Application temperature should be between 8 - 35°C. Apply 2-3 even coats using a good quality brush, roller or by spraying with a tip of a diameter 1,4mm or more. Do not over-brush. Ensure corners and edges are adequately covered. Additional coats should be applied 4-6 hours after the previous application. **Spreading Rate:** 10-12 m²/L. **Drying Time:** Typically 1 hour depending upon coat thickness. Low temperatures and high humidity will lengthen drying times. **Cleaning of tools:** All tools and equipment should be cleaned immediately after use with water. **Storage:** Store in a cool, dry, well-ventilated area away from heat and direct sunlight. Carefully reseal partly used containers. Protect from frost. To avoid risk of spillage, always store and transport in a secure and upright position. The shelf life of the product in airtight containers is 24 months post production date. Dispose of empty container responsibly and according to local legislation. **Safety:** Keep out of reach of children. Avoid breathing dust / fume / gas / mist / vapours / spray. Use only outdoors or in a well-ventilated area. If swallowed: Immediately call a poison center or doctor/physician. Do not use empty container for storing food. Avoid contact with skin and eyes. After contact with skin wash immediately with soap and water. Do not use solvent thinners. In case of contact with eyes, rinse immediately with plenty of water and if necessary seek medical advice. **VOC (Volatile Organic Compounds):** Maximum EU VOC content limit value (Directive 2004/42/CE) of the product in a ready to use condition (category A/a "Matt coatings for interior walls and ceilings", Type WB): 30 g/L (2010). **Maximum VOC content of this product is 14 g/L.**



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 macroworld" – 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 NanoPhos has been selected as a National Champion representing Greece in the 2016/17 European Business Awards for Innovation. NanoPhos is actively expanding its distribution network. Currently, the company is present in the UK, Scandinavia, Portugal, Spain, France, Germany, Italy, Greece, Cyprus, Romania, Egypt, Sudan, Saudi Arabia, Bahrain, UAE, Qatar, Oman, Iran, India, New Zealand, China, Japan, Mexico, Guatemala, Malaysia, Indonesia and Singapore.



NanoPhos SA has been approved by Lloyd's Register Quality Assurance to follow the EN ISO 9001:2000 Quality, the EN ISO 14001:2004 Environmental and the OHSAS 18001:2007 Occupational Health and Safety Management Systems for the development, production and sales of nanotechnology marine coatings and chemical products for cleaning and protection of surfaces and nanotechnology products.

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