FN COATINGS

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PHOTOCATALYTIC COATING

Industrial and organic contaminants from many substances around us are a threat to human health and they lower the quality of our environment. According to the WTO more than 15% of chronic diseases are caused by bad air quality. A high percentage of allergies, cross contamination, contagious infections, bad odors or darkening of facades are a few examples of the impacts of contaminated air. We are forced to protect ourselves against all these contaminants, and one exciting possibility is the use of photocatalytic coatings.

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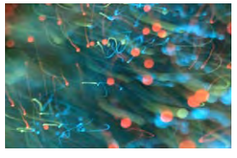
WHAT DOES IT DO?



- Cleans harmful substances from the air
- Liquidates smog
- Reduce bad odors
- Keeps surfaces clean
- Self-cleaning effect
- Stops deposits on walls in interiors
- Reduces occurrence of spiders and webs
- Kills viruses, bacteria and spores
- Stops growth of mold and algae

Keeping kitchens and food preparation areas clean and germ free is an exciting new use of photocatalytic coating technology.

Cleaning properties

Imagine turning your building walls into one giant superefficient air cleaner that clears the air inside and outside, doesn't make noise, doesn't need a direct power input to run, doesn't need maintenance, doesn't break down, will work for many years with the same unchanged efficiency, and doesn't produce any side effects and much more. Unthinkable or impossible you say? Not quite, read on...

European scientists from the Czech Republic have discovered a new way to improve the air quality in our living space, with a unique invention, FN2® photocatalytic coating. **Once applied to a surface, it only needs daylight to clean dangerous pollutants from the air.**

Deterioration in air quality and pollution increases many allergies and chronic diseases. We are exposed daily to many unhealthy residues from plastics and other toxic materials, industrial wastes, car exhaust and many other harmful pollutants. Excessive use of antibiotics and possibly even genetic experiments may result in formation of new viruses with stronger strengths and resistance to our immune system and medications.

On the top of all this there is new "asbestos" of 21st century - molds, fungal and spores, which are present in most of the buildings we occupy. The list can go on…

Numerous studies conducted in Europe, USA, Canada and other countries, showed that about 30% of air-conditioned buildings and its occupants suffer from "Sick Building Syndrome" or "Building Related Illnesses". The World Health Organization says that **over 15% of chronic illnesses are directly linked to poor air quality.**

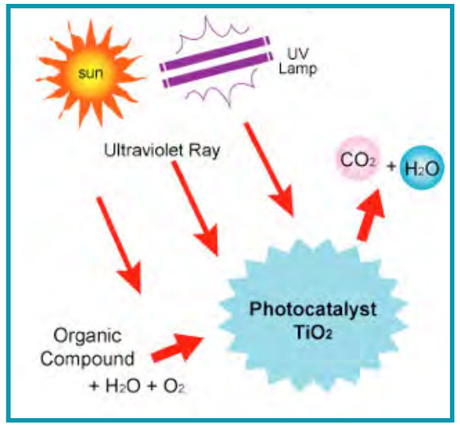
We can use various air filters, humidity controllers, ionizers, polarisers, and some other forms of air filtration to minimize the risk. Mostly such filters however can only do so much, are power depended, need to be changed regularly and involve ongoing cost and maintenance.

PATENTED TECHNOLOGY

FN2® works as superefficient, low cost and reliable air cleaner **which can be simply installed with brush or spray gun. Incorporation of TiO_2 photoactive materials into commercial products such as coatings isn't trivial and represents crucial problem for many companies who unsuccessfully tried for years to blend new photoactive materials with existed coatings based on silicon, silicate or acrylic base**

HOW DOES IT WORK?

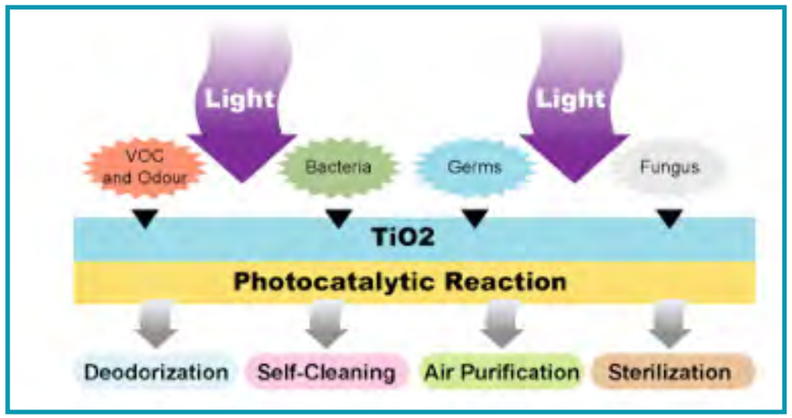
MECHANISM – CONVERSION OF LIGHT ENERGY INTO AN OXIDATION POTENTIAL ON THE SURFACE OF TITANIUM DIOXIDE

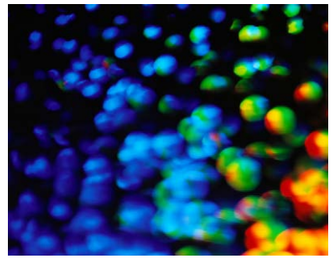


Photocatalyst suspension FN2® clears the air simply by reacting with pollutants in the daylight or its equivalent. A tiny layer of FN2® applied on the wall surface **clears from the air carcinogens, viruses, bacteria, mites, smoke, smells, allergens, and other pollutions**. FN2® not only clears the air, but with **self cleaning ability** it also protects the base coating or surface, and **inhibits mold and fungal growth**. All the above helps to create healthy and clean environment we live in every day.

FN2® contains nanoparticles of Titanium Dioxide which does most of the work. This is harmless substance commonly used as white pigment in food, coatings, medication or toothpaste for over hundred years. From physics prospective TiO_2 is N – type semiconductor. FN2® Photocatalyst substance “miracle” lies in the energy difference between valence and conducting band of 3 – 3.2 eV.

The electrons (e-) on the valence band can be excited by the light of the wavelength of 365 nm



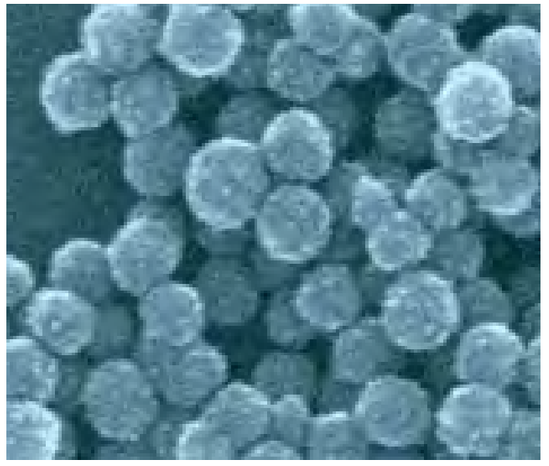


or shorter, and transitioned to the conduction band. Broad corresponding hole (h +) on the valence band then generates active oxygen and hydroxyl radicals with high oxidation.

Practical effect can be explained on common situation - room filled with cigarette smoke where air and cigarette smoke molecules co-exist side by side without conflict. As soon as the smoke particles get in contact with alighted active FN2® photocatalytic layer it oxidizes, and produces few molecules of H_2O and CO_2 leaving the room with clean air. All other organic based pollutions are removed in same way. This effect removes smells and prevents musty odours.

Unlike many chemical based products, photocatalysis isn’t selective and “burns” all organic microorganisms. It doesn’t pose health risk or side effects like irritating smells and dangerous residues.

TiO_2 gets fully excited already in the spectrum of safe soft UV-A light of 365nm. This makes it suitable for use in photocatalysis even in the absence of sufficient daylight where artificial light is needed for excitement of photocatalyst layers. Health wise, the wavelength of 365nm is completely safe and common in decorative lights.



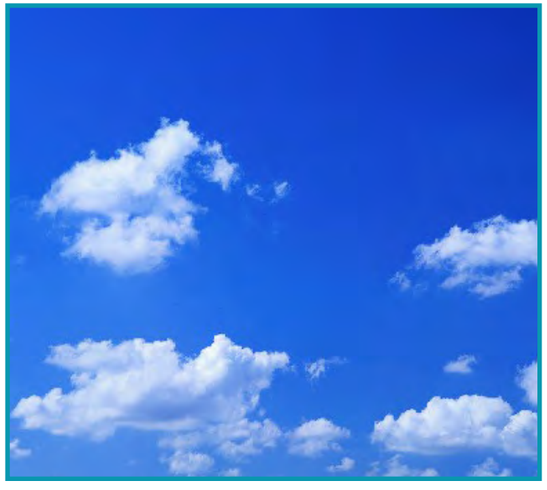
CHARACTERISTICS AND BENEFITS OF PHOTOACTIVE SURFACES

Anti-Bacterial Effect

FN2® does not only kill bacteria cells, but also decompose the cell itself. The titanium dioxide photocatalyst has been found to be more effective than any other antibacterial agent, because the photocatalytic reaction works even when there are cells covering the surface and while the bacteria are actively propagating. The end toxin produced at the death of cell is also expected to be decomposed by photocatalytic action. Titanium dioxide does not deteriorate and it shows a long-term anti-bacterial effect. Generally speaking, disinfections by titanium oxide is three times stronger than chlorine, and 1.5 times stronger than ozone.

Deodorizing Effect

FN2® deodorizes, the hydroxyl radicals accelerate the breakdown of any Volatile Organic Compounds or VOCs by destroying the molecular bonds. This will help combine the organic gases to form a single molecule that is not harmful to humans thus enhance the air cleaning efficiency. Some of the examples of odor molecules are: Tobacco odor, formaldehyde, nitrogen dioxide, urine and fecal odor, gasoline, and many other hydro carbon molecules in the atmosphere. FN2® can prevent smoke and soil, pollen, bacteria, virus and harmful gas as well as seize the free bacteria in the air by filtering percentage of 99.9% with the help of the highly oxidizing effect of photocatalyst (Ti02).



QUALIFIES AS AN AIR CLEANING SYSTEM

Air Purifying Effect

FN2® purifies the air, the photocatalytic reactivity of titanium oxides can be applied for the reduction or elimination of polluted compounds in air such as NOx, cigarette smoke, as well as volatile compounds arising from various construction materials.

Also, high photocatalytic reactivity can be applied to protect lamp-houses and walls in tunneling, as well as to prevent white tents from becoming sooty and dark. Atmospheric constituents such as chlorofluorocarbons (CFCs) and CFC substitutes, greenhouse gases, and nitrogenous and sulfurous compounds undergo photochemical reactions either directly or indirectly in the presence of sunlight. In a polluted area, these pollutants can eventually be removed.

Self-Cleaning

FN2® is self-cleaning, most of the exterior walls of buildings become soiled from automotive exhaust fumes, which contain oily components. When the original building materials are coated with a photocatalyst, a protective film of titanium provides the self-cleaning building by becoming antistatic, super oxidative, and hydrophilic. The hydrocarbon from automotive exhaust is oxidized and the dirt on the walls washes away with rainfall, keeping the building exterior clean at all times.

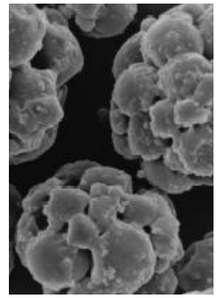
PERFECTLY SAFE

- The active component in the FN2® photocatalytic paint coat is TiO_2.
- Titanium dioxide (TiO_2) is completely insoluble and well known for its compatibility with human organism.
- **TiO_2 does not harm human health** and its toxicology is extraordinarily well explored. EPA (Environmental Protection Agency) recommends photocatalytic coatings as a prevention of Swine Flu.
- FN2® suspensions are pH neutral.
- The active layer is perfectly harmless to the health of any higher organisms.
- **Creates healthy environments free of viruses**, bacteria, allergens, toxic substances, smog and pollutions.
- Preserves surfaces and improves air quality in frequented places such as road crossings.
- **Ecologically friendly**

- NO SILICATES
- NO ORGANICS
- NO SILICONES
- NO SOL-GEL

ADDITIONAL BENEFITS

- Pure photocatalytic effect – no chemistry.
- Non-exhaustible protection compared to the chemical effects which are short life can be exhausted.
- Possible to combine with disinfection aids.
- Prevention of mold.
- Strong antibacterial and anti-virus effect.
- Destroys and isolates yeast, fungus and spores.
- Removes odors from the air.
- Prevention against influenza and viral diseases.
- Reduces allergies.
- Decomposes and removes cigarette smoke and prevents musty deposits.
- Reduces odors in toilets and public rooms.
- Significantly improves our environment.
- Absolute sterilization effect of photoactive surfaces in combination with bactericidal UV lamps.
- Strong physical anti-graffiti effect.
- High efficiency of decomposing NOx and other exhaust gasses.
- Stops growth of green algae.
- Inexpensive operation – the functionality is triggered by light.

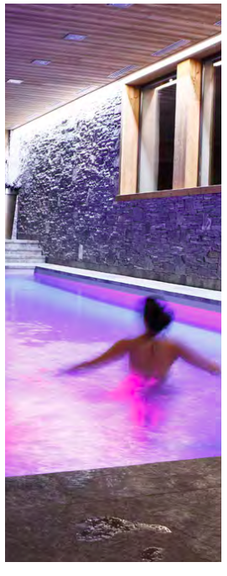


- Easy restoration of photocatalytic layer.
- Affordable.
- High adhesion to surface.
- Frost resistant.
- Good resistance to salty water and rain.
- High porosity- excellent vapor transfer through the layer.

PRACTICAL EXAMPLES

RECOMMENDED APPLICATION: AIR CLEANING, SURFACE PROTECTION, DECONTAMINATION

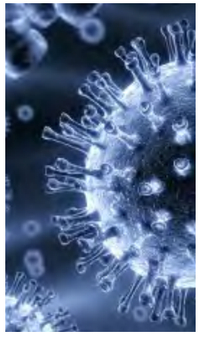
- Household interiors
- Clinics, hospitals and doctor's offices
- Industrial and manufacturing facilities
- Schools
- Transportation / trains, planes
- Food service and restaurants
- Building facades
- Tunnels.
- Public and historical buildings
- Spas, pools, baths,sauna
- Statues
- Hotels
- Military applications
- Decontamination
- Anti-graffiti
- Suitable for relieving allergies and asthma

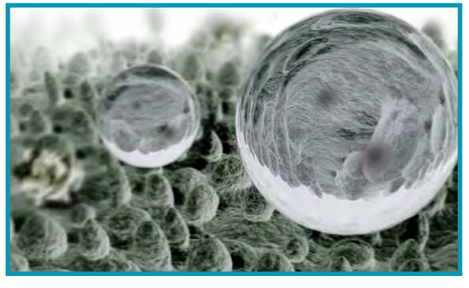


SIGNIFICANT BACTERIA KILLING EFFECT

FN2®Coating is a very gentle and non-aggressive way to create healthier and cleaner environment where it is needed. Not only it doesn't leave behind more poisons like most cleaning products with aggressive chemical agents do, but it also kills and quickly decomposes bacteria, viruses and spores, and any toxins created by their decomposition. When standard disinfectant or cleaning products are used, viruses and bacteria are left on surface to decompose slowly. This process however produces more toxins, which are released back to the air. This doesn't happen in photocatalysis.

FN2® Coating can still be used together with other cleaning or disinfectant products. Its' active layer will quickly remove chemical agents and reduce exposure to its negative effects. It also ecologically removes dead microorganisms.





ACTIVE FN2® AREAS AFTER UV EXPOSURE