activa COATING

SUSTAINABLE • ANTI-MICROBIAL • POLLUTION REDUCING • SELF-CLEANING

CLEAN AIR TECHNOLOGY
clear surface treatment

Protection against bacteria, viruses, and fungi

Interior/Exterior Surface Treatment

An **Activa Clear** coated surface uses photocatalysis (* light energy) to continuously produce active radicals on the surfaces:

- **Hydroxyl Radical:** often referred to as the "detergent" of the atmosphere because it reacts with many pollutants, decomposing them through "cracking," often acting as the first step to their removal. It also has an important role in eliminating some greenhouse gases.
- **Peroxyl Radicals:** as active as the ozone, they are the precursors of hydrogen peroxide, one of the most important disinfectants, capable of destroying bacteria, viruses, and fungi.

Therefore, an **Activa Clear** coated surface:

- Eliminates air pollution
- Keeps surfaces clean
- Prevents the development of bacteria, viruses, and fungi
- Eliminates odors
- Contributes to overall human wellbeing

Activa Clear can be used on indoor and outdoor surfaces exposed to polluted environments, mainly in urban or industrial areas where traffic and chemical pollutants are concentrated. **Activa Clear** reduces pollution, keeps surfaces clean, reduces odors, and prevents the growth of bacteria, viruses, and fungi.

PHOTOCATALYSIS

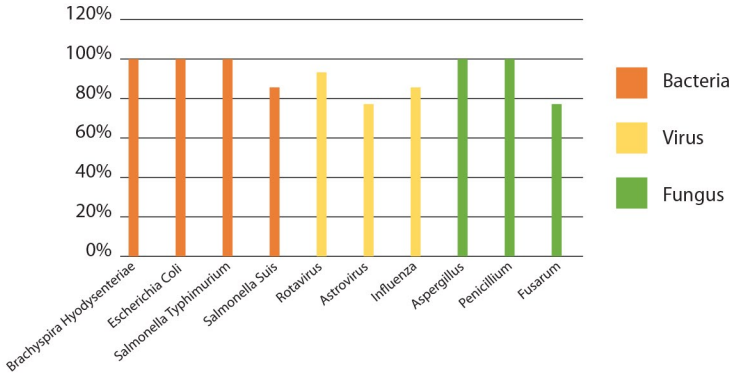
Photocatalysis is a technology that works under the same principles as photovoltaic panels (solar cells). It uses light energy (*), to destroy elements that affect human health and the environment.

- It is maintenance free and its effects are permanent
- It is a clean technology
- It is a surface cleaner and air depolluter
- It destroys dirt and prevents the growth of bacteria, viruses, and fungi
- It is natural (naturally reproduces the activity of the sun and plants)

RESULTS

Up to 100% reduction in ATP(1) measures can be obtained after 40–60 minutes in correctly illuminated surfaces.

The following results were reached after 24 hours:



(1) Adenosine triphosphate (ATP) is a complex organic chemical that provides energy, often referred to as the "molecular unit of currency" of intracellular energy transfer. It is also a precursor to DNA and RNA.

APPLICATION

Activa Clear is applied as a mist, by spray gun, with a 0.3 mm nozzle and low pressure. Creation of drops or product accumulation should be avoided. Surfaces must be clean and dry prior to application. A single application of 100–150gr/m2 is recommended. **Activa Clear** does not form a film and can be applied on coated surfaces, natural stone, marble, ceramics, concrete, and more.

TECHNICAL DATA

Waterborne photocatalytic dispersion for the reduction of pollutants and protection of surfaces in highly contaminated areas.

- Non–flammable. Waterborne
- Appearance: low viscosity milky liquid
- Density 1.1 Kg/l
- Does not create a film
- Yield: 648 sq.ft/gl. once applied by spray gun with a detail tip at approx. 2.5 ounces per 10 sq.ft
- Application temperature: between 54ºF and 95ºF
- Protect from frost

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(*) Photocatalysis requires light energy to be activated. Natural light, fluorescent, or incandescent bulbs are, in that order, suitable to activate the surfaces. Black light or LED lights emitting in the range of visible violet (380 nm) is optimal for a perfect activation. Even minimum power (0,01 Watt/ m2) of that light will eliminate up to 100% of the biological load of the treated surfaces.

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CLEAN AIR TECHNOLOGY clear

Since the outbreak of severe acute respiratory syndrome (SARS) in southern China was recognized in late February 2003, a large number of chemical disinfectants have been used in the epidemic area which has caused public concern about human health and the environment.

The use of light–reinforced semiconductor minerals is an alternative to conventional chemical disinfectants (Hong He a, 2004).

The minerals selected by our company have been studied over the years for their antibacterial properties ((Wei C, 1994); (Watts RJ, 1995); (Kikuchi, 1997); (Cho M, 2005); (Benabbou, 2007); (Page, 2007)) and are attributed to ROS generation, especially hydroxyl (HO) and hydrogen peroxide (H2O2) free radicals (Kikuchi, 1997), as well as several study–focused experiments of the inactivation properties of viruses (Liga & Bryant, 2011).

A study to highlight apart from Hong He's performed with Coronavirus inactivation, is that of Mannekarn et al, in 2007, which showed that certain semiconductor minerals that had been radiated with visible light (VL) inactivate rotavirus, astrovirus, and feline calicivirus (FCV).

Viral concentrations were drastically reduced after exposure for 24 hours. This finding implied that the catalyst products might somehow initially interact with viral proteins in the virus inactivation process. In addition, he shows in his article a partial degradation of the rotaviral dsRNA genome. He also observed that as with bacteria, reactive oxygen species such as superoxide (O2–) anions and hydroxyl radicals (· OH) were generated in a significant amount after stimulation for 8, 16, and 24 hrs. In conclusion, it states that inactivation of viruses, as well as microorganisms in general, could occur through O2 and OH generation, followed by damage to the viral protein and genome (Niwart Maneekarn, 2007).

After a thorough search for minerals with these capabilities, optimum concentrations, and synergies, **Activa Clear** is manufactured, a liquid treatment for all types of installations, based on non–degradable harmless semiconductor minerals, which in combination with a source light (natural or artificial) permanently eliminates any type of bacteria, virus, or fungus.

Activa Clear also contains components to ensure the adhesion of these minerals and provide treatment durability of about three years.

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