

## **Active Surfaces: cutting-edge photocatalytic surfaces production process for the reduction of pollutants and enhancement of air purity**

Active Surfaces represent a breakthrough in ceramic technology, integrating photocatalytic properties to create eco-active materials with multiple benefits. Developed through collaboration between the University of Milan's Chemistry Department and Active Surfaces of Iris Ceramica Group, this technology is designed to address modern environmental and health challenges by utilizing the natural process of photocatalysis.

Active Surfaces are ceramic tiles treated with a special titanium dioxide (TiO<sub>2</sub>) coating that when exposed to light, triggers a photocatalytic reaction which leads to the decomposition of organic and inorganic pollutants on the tile surface. The reaction also imparts the material with antibacterial, antiviral, and self-cleaning properties, making it ideal for environments that require high standards of hygiene.

The core of Active Surfaces' technology is photocatalysis, a process where light energy (from natural or artificial sources) activates the TiO<sub>2</sub> on the ceramic surface. Once activated, the TiO<sub>2</sub> acts as a catalyst in the breakdown of pollutants into harmless substances like carbon dioxide and water. This process also generates reactive oxygen species (ROS) that can neutralize bacteria, viruses, and mold.

Active Surfaces are suitable for a wide range of applications, including: healthcare facilities: Hospitals, clinics, and other healthcare environments benefit from the antimicrobial properties, helping to reduce the spread of infections, public spaces and food industry: ensuring hygiene in food processing plants and kitchens where cleanliness is paramount.

Active Surfaces contribute to sustainability by reducing the need for chemical cleaners and air purifiers, thus lowering chemical waste and energy consumption. Additionally, the anti-pollution properties help in mitigating urban air pollution, aligning with broader environmental goals.

In conclusion, Active Surfaces represent a significant advancement in material science, combining photocatalysis with enhanced durability and safety features. By harnessing both UV and visible light, these surfaces offer a sustainable solution to environmental and health challenges, making them an essential component in the design of modern, eco-friendly spaces. Their application across diverse environments highlights their versatility and efficacy, making them a key innovation in the pursuit of cleaner, healthier living and working spaces.