

Photocatalytics for Sustainable and Healthy Buildings

Dear Building Designer/Architect,

As a pioneer in sustainable design, you are undoubtedly aware of the profound impact that our built environment has on both human health and the planet. Today, I am reaching out to introduce a cutting-edge approach that promises to revolutionise the way we conceive and construct buildings: the integration of light and Titanium Dioxide (TiO₂) as a functional resource.



In recent years, the convergence of sustainability and health considerations has become paramount in architectural discourse. As such, leveraging the power of light and TiO₂ presents a compelling opportunity to not only enhance environmental performance but also promote occupant well-being.

The Power of Photocatalysis

Enhancing Resilient Infrastructure solutions

At the heart of this innovative approach lies the principle of photocatalysis. By harnessing the catalytic properties of TiO₂ when exposed to light, we can initiate a range of transformative processes within the built environment. From air purification to surface detoxification, the applications of photocatalysis are both diverse and impactful.

Elevating Indoor Air Quality

Indoor air pollution is a pressing concern, particularly in urban areas where buildings act as containment vessels for a myriad of pollutants. However, by incorporating TiO₂-coated materials into building surfaces, we can actively combat this issue. Through photocatalytic oxidation, airborne contaminants such as volatile organic compounds (VOCs), pathogens, and allergens are efficiently neutralised, resulting in cleaner and healthier indoor air for occupants.

Redefined Cleaning Practices

In addition to its air-purifying capabilities, TiO₂ offers a sustainable solution to conventional cleaning practices. By harnessing the self-cleaning properties of photocatalysis, surfaces treated with TiO₂ require minimal maintenance and can be effortlessly cleaned with just water and ambient light. This not only reduces water consumption and chemical usage but also eliminates the need for toxic cleaning disinfectants, thereby fostering a safer and more eco-conscious built environment.

Mitigating Sick Building Syndrome

Sick Building Syndrome (SBS) is a well-documented phenomenon characterised by a range of symptoms experienced by building occupants, often linked to poor indoor air quality and inadequate ventilation. By implementing TiO₂-based solutions, we can address the root causes of SBS by effectively eliminating airborne pollutants and creating a healthier indoor environment conducive to productivity and well-being.

Energy Efficiency and Beyond

Beyond its health and sustainability benefits, the integration of light and TiO₂ holds significant implications for energy efficiency. By reducing the need for traditional cleaning practices and mitigating the effects of SBS, buildings can operate more efficiently, thereby **lowering energy consumption and carbon emissions**.

Application

The coatings are available as a paint or water-based invisible spray application that can be applied retrospectively in minutes for interior or exterior rendering.

Please see the animation video of the paint concept here: <https://youtu.be/caD62qUvI6c>

Conclusion

In conclusion, the utilisation of light and TiO₂ as a functional resource represents a paradigm shift in architectural design, offering a holistic approach to sustainability and occupant health. We can increase and maintain trust to ensure people feel safe where they live, where they work and in their environment. By harnessing the power of photocatalysis, we can create buildings that not only minimise their environmental footprint but also prioritise the well-being of those who inhabit them.

I invite you to explore the possibilities of this transformative technology and consider its integration into your future projects. Together, we can redefine the standards of sustainable design and pave the way for a healthier, more resilient built environment.

Should you have any questions or wish to discuss this further, please do not hesitate to contact us.



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