



The Future of **PV Protection**

Unrivalled Protection &
Specification

2019

Development Brochure

The Problem

The accumulation of dust, or other debris

The accumulation of dust, or other debris on the surface of PV modules leads to a significant loss in light reaching the active semiconductor, reducing power output by up to 50%. Research studies have shown that of the 17 types of dust pollutant, 6 types are likely to have significant impact on the power generation of a solar cell, including sand, dust & ash.

Solar Sharc® Is

An Ultra Long Lasting & Highly Repellent Coating

Solar Sharc® is a durable highly repellent coating which is being developed for deposition onto PV modules and will eliminate the accumulation of surface contamination. Currently, the few commercially available highly repellent coatings lack mechanical & chemical durability, a fundamental barrier to widespread industrial adoption. Solar Sharc® aims to overcome this by building on ground-breaking developments and providing a cost-effective self-cleaning coating for the PV sector that is a superior alternative to current coatings.



Self Cleaning & Anti Soiling



Resistant To High Temperatures



Anti Reflective



Hydrophobic



One Coat - Up To 20 Years Protection



Optimises PV Efficiency



UNCOATED

**SOLAR SHARC®
COATED**

Solar Sharc®

Materials By Design

Repellency and durability are usually incompatible within a single material. Highly repellent surfaces are usually fragile, making them prone to erosion and have poor weathering resistance. The novel breakthrough of Solar Sharc® is to co-locate water repellent functional groups alongside active functional groups on nano-structured particles which bond to the resin matrix, cementing the silica nano-particles into the resin giving a tough, durable and transparent coating. The nano-particles are smaller than the wavelength of visible light, so do not scatter light, providing a high degree of transparency. Solar Sharc® is based on novel materials that can be manufactured at scale using standard manufacturing techniques. These features can be summarised as:

- **Multi-functionalised silica nano-particles in a siloxane matrix provide a unique combination of repellency and durability needed for long effective lifetime of low/zero maintenance solar PV.**
- **Nano-particle structure provides high transparency, improving generating efficiency by 4% and improving aesthetic quality for architectural**
- **Silica chemistry is non-hazardous and permits scaleable manufacture.**

Contact Us



+44 (0)1223 772222



contact@solarsharc.com



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