Technical Data Sheet
HYDROCOAT 24

PRODUCT CODE:
ZCP0024

PRODUCT DESCRIPTION:

The next-generation nano coating from SolarTriz, designed to enhance and protect photovoltaic surfaces, HydroCoat 24 is a single-component, ambient-cured, anti-soiling, anti-fouling coating that leverages advanced hollow nano-silica technology to create a fine microstructure of 50-100nm on surfaces.

This ultra-thin coating features an initial water contact angle of less than 10°, maintaining optimal hydrophilic properties with a long-term angle of less than 25°. HydroCoat 24 effectively prevents static electricity build-ups, minimizing dust adhesion. Any accumulated dust is effortlessly washed away with water, keeping photovoltaic glass surfaces clean and transparent.

Crafted from pure inorganic materials, HydroCoat 24 offers superior weather resistance and durability, reducing efficiency degradation in crystalline silicon photovoltaic modules and boosting the average power generation by 3-5%.

TECHNOLOGY OVERVIEW:

HYDROCOAT 24 features 5-nm titanium dioxide, renowned for its efficacy in decomposing bird droppings and oil stains. Utilizing advanced nano-silicon dioxide fractal combination technology, HYDROCOAT 24 creates fine concave-convex structures measuring less than 50nm on surfaces. This results in a cured ultra-thin coating with a super-hydrophilic water contact angle of less than 10°. Due to its pure inorganic components, HYDROCOAT 24 delivers exceptional weather and wear resistance. Its anti-static properties effectively inhibit the generation of static electricity on substrate surfaces, thereby impeding dust adherence. HYDROCOAT 24 showcases remarkable self-cleaning capabilities. Even when faced with dust accumulation, exposure to water prompts the coating to autonomously cleanse itself, preserving the light transmission and cleanliness of photovoltaic glass surfaces. This results in minimized efficiency degradation of photovoltaic modules and yields an average power generation gain of 3-5%.

KEY FEATURES:

- **Fast Room-Temperature Curing**

  Cures fast at room temperature, surface curing achieved within 1-5 minutes, complete curing in 24 hours, and hardness exceeds 4H

- **Exceptional Wear Resistance & Durability**

  Compared to traditional hydrophilic coatings with a wear resistance of 1000 cycles, this product has a wear resistance of over 15,000 cycles, with pure inorganic components and excellent weather resistance, providing protection for over 5 years.

- **Advanced Anti-Static Performance**

It offers strong anti-static and wear-resistant properties, with surface resistance values ranging from 10^6 to 10^9 Ω, significantly reducing dust adhesion.

· Superior Light Transmission & Anti-Reflective Effect

Featuring high transparency and low reflectivity, this coating significantly enhances anti-reflective performance—reducing the glass reflectivity of photovoltaic modules to 0.6–1.0, and boosting power generation by over 3%.

· Outstanding Self-Cleaning Efficiency

Water contact angle of less than 10°, self-cleaning of surface dust or stains with rainwater or dew, reducing cleaning cycle.

SUITABLE FOR:

Retrofit Solar Panel Surfaces

CURING METHOD:

Air-dried at room temperature. Fully cured after 24 hours.

TECHNICAL PARAMETERS:

Category	Item	Technical Index	Test Method
Physical Properties	Film color and appearance	Smooth, flat, transparent	Visual inspection
	Viscosity, S (No. 4 cup)	11–13 (23°C ± 2°C)	GB/T 1723-93
	Theoretical coverage	60–80 m²/L (dry film 0.12 μm)	GB 6753.6-86
	Water contact angle	<10°	GB/T 9754-1988
	Drying time	Surface dry: 5–10 min	GB/T 1728-1989
	Curing temperature	Room temperature, 24 hours full cure	Q/XSMK 03-2016
Coating Performance	Hardness	4-5H	GB/T 6739-2006
	Self-Cleaning Properties	Dust-proof, self-cleaning	Q/XSMK 03-2016
	Surface Resistance	10^6–10^9 Ω	Q/XSMK 03-2016

Category	Item	Technical Index	Test Method
	Reflectance (600–650nm)	Monocrystalline: ≤2.0–2.8%	Q/XSMK 03-2016
		Polycrystalline: ≤3.2–3.8%	
	Adhesion (grade ≤)	0	GB 9286–1998
	Flexibility (mm)	1	GB/T 1731–93
	Dry abrasion resistance (1kg weight + towel)	>10,000 cycles, no impact on light transmission	Q/XSMK 03-2016
	Wet abrasion resistance (1kg weight + towel + alcohol)	>15,000 cycles, no effect on light transmission	Q/XSMK 03-2016
	Dry film thickness, nm	100-200 ±10	Q/XSMK 03-2016

APPLICATIONS:

Designed for anti-soiling, and self-cleaning protection of solar farms and PV installations.

APPLICATION PROCESS:

Substrate Preparation

Before applying HYDROCOAT 24, assess the surface condition of the photovoltaic glass. Rinse the surface with water.

Cleaning Dust and Dirt Removal

If hydrophilic effect is present on the surface, it indicates no oily contaminants or residual AR coating existed on the substrate. Dust removal and cleaning can be done with only water.

If there is slight shrinkage, use ECOPRIME 91, diluted in a 1:10 ratio with water for cleaning.

If shrinkage is severe, it indicates the presence of residual AR coating, to enhance coating adhesion, it is recommended to directly spray ECOPRIME 91 on the surface, wait for 30 seconds to 1 minute, use specialized cleaning equipment for photovoltaic glass, and rinse with water.

Dirt and dust accumulation should always be removed from the coated surfaces as quickly and efficiently as possible during cleaning process. The substrate to be coated must be clean, oil-free and completely dry. Areas which are difficult to reach, such as cavities or drainage channels, etc. must be dried additionally with absorbent cloths or blown dry with compressed air.

Application

HYDROCOAT 24 is suitable to be applied with different methods offering several options to adapt to specific situations, either manually or by robot. The product should be applied by trained

personnel only. Test on a small area or apply a test coat before application. The average coverage is approximately 60-80m^2/L and this should not be significantly exceeded.

- Manually: 4 workers can cover an area of 2000 m2 per day
- Robotic: 2 operators can cover an area of 5000 m2 per day

The applicators cannot be reused once the coating has been applied. Traces of water in the applicator should also be avoided. Applicators dampened with water should not be used. If dirt appears on the applicators during coating, they should be replaced with clean applicators to avoid dirt entering the HYDROCOAT 24 coating. HYDROCOAT 24 is dry-to-touch after about 5-10mins. During application, only small quantities should be decanted from the original container into the application container. Residues of unused HYDROCOAT 24 should not be returned from the application container to the original container. Solutions that are no longer use-able must be disposed of properly.

Quality Control
Use KREVOR 800 Surface Resistance Meter to check its readings, make sure the solar panel is showing between 10^6–10^9 Ω. Record the light reflectance ratio by using KONICA MINOLTA CM-26D Spectrophotometer as final inspection. If the results do not meet the required standards, reapply the panel.

APPLICATION CONDITIONS:

Apply the coating in dry conditions and never in rain.

PACKAGING INFORMATION:

Packaging	Volume	Qty
Bottle	1L	12pcs/case
Jerry Can	20L	1pcs

STORAGE & SHELF LIFE:

Product should be stored avoid to direct sunlight. Store in a well-ventilated area, preferably 18-25°C. KEEP cold. Content / container must be disposed of in accordance with national regulations.

Shelf life is 6 months for the recommended storage conditions.

ENVIRONMENTAL:

See SDS for more information.

HEALTH & SAFETY INFORMATION:

Wear protective gloves / protective clothing / eye protection / face protection.

DISCLAIMER:

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of information for their particular purposes. In no event shall SolarTriz be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, whatsoever arising, even if SolarTriz has been advised of the possibility of such damages.