

super water repellent coatings

hydrophobic material keeps surfaces free of water film, ice or snow



- ☀ super hydrophobic – prevents water film formation
- ☀ $>150^\circ$ contact angle – leads to unparalleled performance
- ☀ “anti-stick” characteristics – reduces accumulation of snow & ice
- ☀ self cleaning effect – maintains performance for years
- ☀ applications: radar domes, 5G and satellite antennas, bridges, ice coating prevention



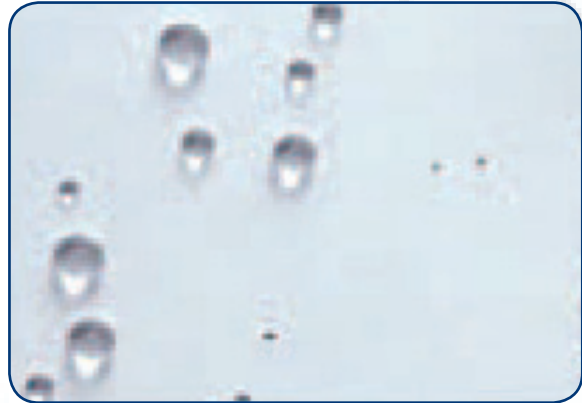
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The super water-repellent material HIREC® is a dramatic new concept in the field of water-repellent materials.



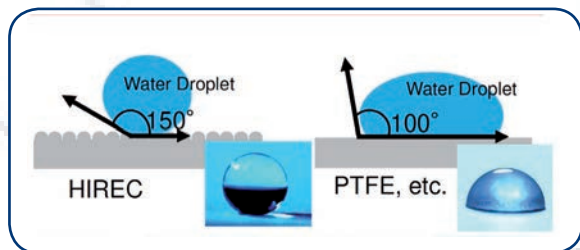
Ordinary Coating: Water Film and Large Droplets

While traditional waterproofing prevents water from permeating, HIREC® keeps water away completely.



HIREC® Coating: No Water Film, Small Droplets

While traditional water-repellent coatings like PTFE create a maximum contact angle between an object and water droplets of approximately 100°, HIREC® provides a contact angle of 150° or more, resulting in unparalleled water repelling performance. On top of that, HIREC® coatings also demonstrate superior effectiveness in preventing adhesion of snow, ice, and other substances.

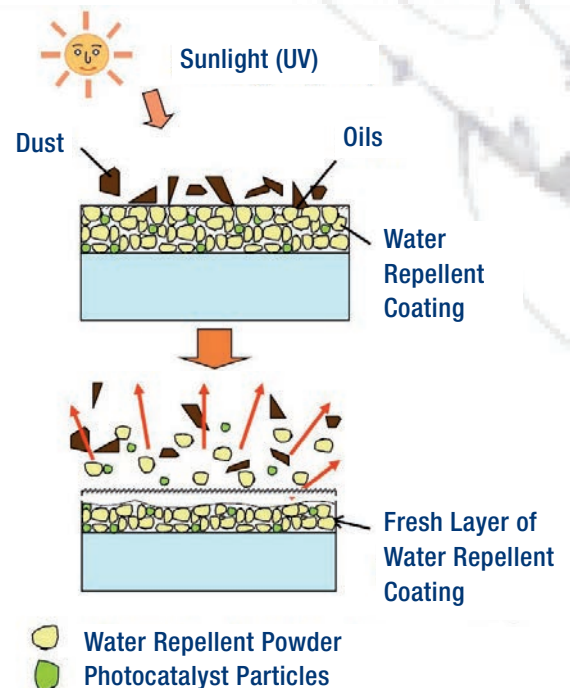


Water hitting HIREC®-coated surfaces is instantaneously repelled and disperses into small droplets with minimum adhesion. Water droplets remaining on horizontal surfaces

are round and maintain a spherical shape as if they are standing up – and they instantly roll off angled or vertical surfaces, leaving a water film free object.

self-cleaning effect provides long-term stability

HIREC® coatings feature a photocatalytic self-cleaning effect, greatly improving the problem of coating deterioration caused by air pollution, etc. Photocatalyst particles with strong oxidation power are part of the HIREC® coating layer – activated by sunlight (UV radiation), these photocatalysts crack oils, dust and other debris from the coating's surface, resulting in a clean, fresh layer of water repellent coating and thus keeping its super water repellent characteristics for approximately three years.



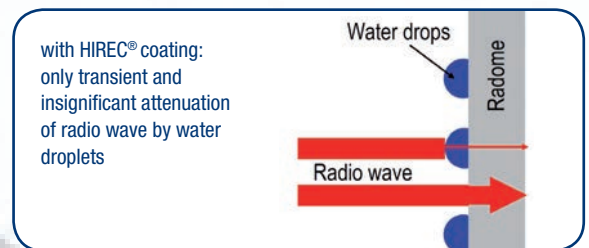
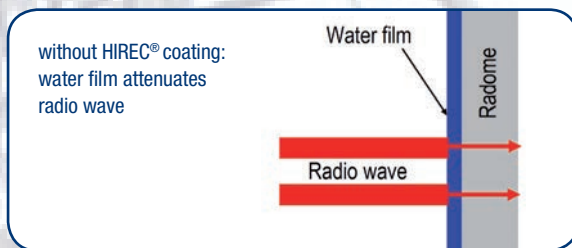
- Optical Technologies
- Power Technologies
- Thermal Management

applications

HIREC® coatings' excellent properties are expected to bring a wide range of benefits to various industries:

■ antennas, radar domes: no attenuation by water film, snow or ice

Due to the high signal attenuation effect of water at frequencies from a few GHz up to the millimeter wave range, transmitters and receivers for the wireless transmission of such high-frequency signals (such as radar, but also 5G mobile communication) are particularly affected by a film of water or a layer of snow/ice. In tests, attenuations of between 20 dB and 40 dB were measured for such conditions. Units coated with HIREC®, on the other hand, exhibited virtually no additional attenuation in heavy rain or snowfall, and the attenuation caused by coating with the material itself is also negligible (0.1 dB and less at 30 GHz to 70 GHz).







■ bridges, power masts, towers: avoid hazards by snow or ice banks falling from structures

During winter, snow or ice accumulated on bridge structures may cause car damage or traffic accidents when they fall onto the bridge roadway. HIREC® paint applied to bridge frames is an effective countermeasure against the formation of such snow or ice banks.



HIREC® products

Within the HIREC® coating product portfolio, HIREC® 100 series for outdoor applications and HIREC® 450 series for indoor or small area applications are available.

				
	HIREC® 100	HIREC® 1100	HIREC® 450	HIREC® 1450NF
Product Description	Not a clear coating - surface will appear opaque. Can be colored if desired. Primer & thinners available.	Handy aerosol-type coating for minor repairs on surfaces coated with HIREC® 100.	Surface appears opaque (optical permeability ~5%). Only thin layer required, original surface can be visible through the coating. Thinners available.	Handy aerosol-type coating for minor repairs on HIREC® 450 coated surfaces. Can be used by itself for coating small areas. Easiest application for creating a super hydrophobic surface!
Application Area	Outdoor		Indoor, Small Areas	
Applications	Parabolic Antennas, Satellite Dishes, Radomes, Steel Towers, Bridges, etc.	Touch up for a surface coated with HIREC® 100	Plastics (Acrylic Resin, ABS Resin etc.), Metals (exc. Cu), Glass & Others	Touch up for the surface coated with HIREC® 450, or by itself
Undercoating	Requires primer coating		No primer coating required	
Application Equipment	Customized roller (available from AMS Technologies)	—	Air spray gun	—
Lifespan	Three seasons (years) outdoors		Until the surface is polluted or dirtied	
Best for Repelling	Water and snow		Water and ice	
Film Thickness	~30 µm		15 µm	
Coating Area	4 m²/kg	0.7 m²/Bottle	6 m²/kg	0.5 m²/Bottle
Spray Can Size	—	220 ml	—	145 ml

additional information about HIREC®

HIREC® is not a clear coating, the finished surface will appear opaque. HIREC® is a soft coating and therefore not tolerant against abrasion. Rubbing, scratching, or otherwise mechanically interfering with the surface can damage the coating. For this reason, we do not recommend HIREC® to be used in applications which requires constant touching, contact, or knowingly abrasive environment such as use in automobiles or other mobile units. Also to note that the repellency of the coating deteriorates from dirt, pollution, or oily substances such as mechanical oil and finger oil. For HIREC® 100 series however, this product's self-cleaning action exfoliates most of the contamination when it is exposed to sunlight and gradually regains its hydrophobicity.



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Optical, Power and Thermal Management Technologies

■ GERMANY

AMS Technologies AG
Fraunhoferstr. 22
82152 Martinsried, Germany
Phone + 49 (0) 89 895 77 0

■ FRANCE

AMS Technologies S.A.R.L.
Silic 649 – Bâtiment Magnolia
16, avenue du Québec
91945 Courtaboeuf Cedex
Phone + 33 (0) 1 64 86 46 00

■ ITALY

AMS Technologies S.r.l.
Via Copernico, 21
20025 Legnano (MI), Italy
Phone + 39 0331 596 693

■ NORDICS

AMS Technologies Nordics
Azpect Photonics AB
Aminogatan 34
431 53 Mölndal, Sweden
Phone + 46 (0) 8 55 44 24 80

■ SPAIN

AMS Technologies S.L.
C/Filadors 35, 3^o, 7^a
08208 Sabadell, Spain
Phone + 34 93 380 84 20

■ UNITED KINGDOM

AMS Technologies Ltd.
Nene House, Drayton Way
Daventry, Northamptonshire
NN11 8EA, United Kingdom
Phone + 44 (0)1455 556360

Download Brochure



Intertek

info@amstechnologies.com
www.amstechnologies.com
www.amstechnologies-webshop.com