

the incredible world of surface protection

TOP 9 NANO-COATINGS INDUSTRIES USE TODAY

1. Anti Corrosion
2. Fabric & Textile
3. Electrical & Circuits
4. Antimicrobial
5. Glass & Ceramic
6. Stone & Brick
7. Solar & PV
8. Anti Graffiti
9. Anti-Fog



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You'll love Nano!

WHAT ARE NANO-COATINGS?

Nano-coatings are ultra thin protective layers of material that are applied to a surface at **nanometer scale** (1 nanometer is one billionth of a meter. A sheet of paper is 100.000 nm thick).

For example, coating a metal substrate with a certain nano enabled substance can improve its durability, resist corrosion, reduce friction, repel water and anything you throw at it - just to name a few.

They can be applied using various techniques such as chemical vapour deposition, physical vapour deposition, electroplating and about a dozen more.

WHAT BENEFITS DO NANO-COATINGS HAVE?

- **Improved durability:** Nano-coatings can improve the durability of a surface by making it more resistant to wear and tear, corrosion, and other types of damage.
- **Enhanced performance:** Nano-coatings can improve the performance of a surface by reducing friction, increasing the surface's resistance to heat, or making it more hydrophobic ('Lotus-Effect').
- **Increased efficiency:** Nano-coatings can make a surface more efficient by reducing the amount of energy needed to perform a task, such as reducing the amount of force required to cut through a material or decreasing the amount of energy needed to cool a surface.
- **Aesthetic appeal:** Nano-coatings can also be used to improve the appearance of a surface, such as by giving it a shiny finish or making it more resistant to dirt and stains ('functional textiles').
- etc.

IS NANO-COATING "RIGHT" FOR YOU?

Ultimately, the decision to use nano-coatings will depend on your specific needs and the characteristics of the surface you want to coat. [Talk to Lotus Nano!](#) We answer your queries and often conduct trials to determine the best possible way forward.

Nano-Coatings can be applied to a wide variety of substrates and bond chemically with non-porous surfaces. For example, they **work with metals, alloys, ceramics, plastics, and polymers. Many can even be applied to other Nano-Coatings.**

Because Nano-Coatings are so incredibly tiny, they're completely transparent to the naked eye or even a normal microscope.

NOW THEN,

First, we invite you to enjoy flipping through our little booklet "**Top 9 Nano-Coatings Your Business should be using today**". We've written it in the simplest language possible. We tried to make it interesting enough for anybody who wants to learn a little bit about the endless possibilities Nano Surface Protection provides. [Let us know what you think!](#)

New developments in chemistry and coating technology have made Nano-Coatings much more accessible to anybody. Nano-Coating products have also become affordable and its purity levels near-perfect. They've left their "beta" testing behind and are now mainstream technologies in an ever growing range of industries, including:

Electric, Electronics | Industrial | Aerospace | Automotive | Marine | Medical / Healthcare | Pharma | Renewables | Hospitality | Oil & Gas | Maritime | Cosmetics | Agriculture | Private Homes - and so many more!

Talk to us. Lotus Nano is a vendor-independent start-up full with experienced experts well connected to and respected by the international nanotech world.

We coat sustainability!

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glossary & content

TERMS WE USE IN NANOTECH

GLOSSARY

NANO

/næn.əʊ-/ origin latin for: "dwarf"
one billionth of a stated unit. Here:
E.g.: 0.000,000,001 of a meter

NANOTECHNOLOGY

/,nanə(ʊ)tɛk'nɒlədʒi/
The science and technology to understand and control matter at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications.

HYDROPHOBIC

/hɪdrə(ʊ)'fəʊbɪk/
latin: fear of water. Hydrophobic is a property of a substance that repels water. Lacks affinity for water, and tending to repel or not to absorb water.

HYDROPHILIC

/,hɪdrə(ʊ)'fɪlɪk/
latin: love for water. Hydrophilic refers to having a strong affinity for water. Something that is hydrophilic is soluble in water and dissolves into water very easily. Hydrophilic is the opposite of hydrophobic.

OLEOPHOBIC

\-'fō-bɪk\
latin: fear of oil/fat. Physical property possessed by a material that is characterised by a lack of affinity to oils. Oleophobic materials are resistant to the penetration or adhesion of oils and fats. Such materials are often used in the production of corrosion preventive coating substances.

THIS BROCHURE'S

CONTENT

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- 2 **Fabric & Textile**
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- 6 **Stone & Brick**
- 7 **Solar & PV**
- 8 **Anti Graffiti**
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LOTUS NANO

ANTI-CORROSION

DURABILITY
5 YEARS*

WHAT IS IT?

Usually a clear, ready-to-use nano-materials-diluted coating substance used to protect non-absorbent surfaces against rust, dirt, weather and corrosion.

Forms a long-lasting barrier layer that bonds physically with the substrate and cures at room temperature with atmospheric humidity.

Surfaces can be cleaned repeatedly without losing efficacy. Remains effective for up to **5 years**.

ESSENTIALLY

A good Anti-Rust + Corrosion product is particularly **suitable for smooth, non-absorbent metal surfaces, such as aluminium, zinc, stainless steel, copper and several alloys (e.g. brass and bronze)**. It can also be applied to one or two component paints (polyurethane or epoxy systems), polyester paints and GRP surfaces.

Sample

APPLICATIONS

- All metals and alloys incl. Aluminium, Stainless Steel, Copper, Brass and Tin
- Tank equipment and industrial plants
- Maritime / Shipping
- Shipping Containers
- Mining Equipment
- Firearm barrels
- Traffic signals, signs
- Ventilating systems
- Metal bollards, cabinets and outdoor furniture.
- Oil & Gas piping and equipment
- Thousands of more possibilities!

PROPERTIES

- Exceptional corrosion protection
- Long-lasting clear coating
- Excellent protection against graffiti
- Produces "Easy-to-Clean" surfaces
- Excellent adhesion to most substrates
- High resistance to moisture, UV, acid rain, oxidation, ice, salt water, chemicals
- Economical & ecological
- Cures at room temperature
- Fluorine-free
- Temperature range: **-50°C to over 950°C**

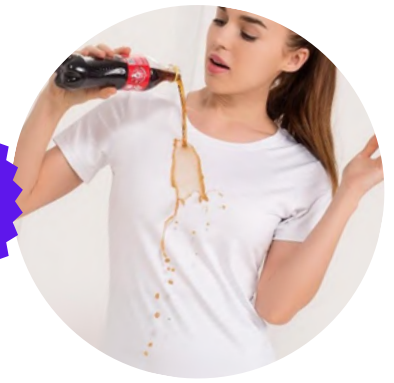


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FABRIC & TEXTILE

DURABILITY
2 YEARS*



WHAT IS IT?

Correctly applied, nano fabric & textile products work such that they surround the surface on a molecular level of every fibre with an anti-adhesion coating. **Nothing sticks to the material anymore.** Liquids cannot be absorbed into the fabric. Your textile or fabric remains 100% stain-free.

Complete fibre protection. Protects almost all types of textiles **against water, dirt and stains, whilst remaining totally invisible.** Can be used on suede and leather as well as wool, cotton, synthetics and silk. Won't affect materials' appearance, its ability to breathe, the colour or feel.

Evolving consumer choices are slowly driving a desperately needed move toward more consciousness and sustainability. Nano-treated fabrics & textiles can make a world of a difference here.

ESSENTIALLY

A good Fabric + Textile product surrounds every fibre of a fabric / textile with a matrix network of nanoparticles that are **extremely hydrophobic and oleophobic**; that is, they repel both liquids and contaminants. Most products **last up to 2 years** depending on how and how often you wash or clean your material.

Sample

APPLICATIONS

- All types of clothing
- Footwear, especially outdoor wear
- Indoor upholstery such as sofas, chairs, tablecloths, bedding, pillows
- Leather and fake leather materials
- Carpets, rugs
- Car, truck, plane seats
- Public transport seating
- Outdoor furniture
- Canvas umbrellas, marquees, awnings and shades
- Convertible car roofs

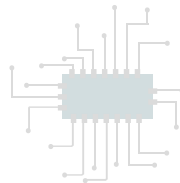
PROPERTIES

- Extremely hydrophobic and oleophobic (repels water and contaminants)
- Maintains the look, feel, character of the material
- Prevents / repels stains
- 100% invisible
- Weather, UV-stable (no discolouration)
- Washing agent resistant
- Non allergenic
- Non leaching (doesn't get into your skin)
- Environmentally friendly
- Prevents bacteria-caused odour development (antimicrobial)
- Additional properties may include stain repellence, wrinkle-freeness, static elimination, and electrical conductivity to fibres



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Electrical & Circuits



WHAT IS IT?

Today's cutting-edge advances in Nanotechnology make it easy to protect your electric / electronic devices and installations.

Even in the harshest of environments or after total inundation, or in extreme humid conditions, these nano-products displace moisture and build up a flexible and durable coat, which provides perfect protection from both short circuiting and oxidation.

ESSENTIALLY

A good Electrical + Circuits nano-product is your **essential protection against water damage and equipment failure** due to moisture and extreme weather conditions.

Generally, its formulation is based on a mixture of highly refined mineral oils and naphthenic hydrocarbons. These effectively push moisture away from all electrical connections and equipment, to maintain the electrical circuit. **Moisture is both driven out from and prevented from entering** the treated area - restoring connectivity and eliminating short-circuiting / electrical breakdowns.

Sample

APPLICATIONS

- **Used for prevention, repairs and emergencies.** Used where current leaks need to be suppressed, electrical contacts restored and/or where electrical short circuits problems to be eliminated
- Suitable for use on all electrical equipment from **3 to 10,000 volts** including mining, automotive, marine, agricultural, robotics, industrial and construction equipment.

PROPERTIES

- **Long protection** of electrical / electronic equipment from exposure to all forms of water; steam, humidity, condensation, fog, snow, rain, flooding, chlorinated and salt water
- **Prevents** costly electrical outages
- **Reduces** maintenance, equipment replacement and labour costs.
- **Quickly dries out** electrical systems to eliminate moisture induced short circuits, even when the surface is already wet or has been inundated.
- **Secures** long term faultless operation
- **No adverse effects** on plastics, rubber, glass, varnishes, ceramics or metals
- **Does not attack** insulating varnishes.
- **Extremely hydrophobic.** Does not emulsify.
- **Insensitive to extreme weather** / temperature (Effective at -20oC - +130oC)
- **Maintains elasticity** (ideal for flexible parts)
- **Contains no** resins, silicone, acrylics, teflon or aromatic compounds



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Anti - Microbial

DURABILITY
UPTO
365 DAYS*



WHAT IS IT?

World of Nanotechnology make it possible to spray-coat any surface at your premises and be protected from 90 to 365 days with an efficacy of over 99% throughout.

Antimicrobial coating is **100% safe even for infants and pets**. It adheres onto any surface it is sprayed onto and builds a new layer of **razor-sharp spikes which kill hundreds of Viruses, Bacteria and Fungi** (ask us for a list).

ESSENTIALLY

Yes - it kills SARS-CoV-2, too. And the same faith awaits Influenza, Polio, Noro, Hepatitis, MRSA, E.Coli, Salmonella, Streptococcus, etc.

Nano Antimicrobial Coating **can reduce your current cleaning / sanitation expenses by up to 50%**.

That's a lot less harsh and toxic chemistry, water, waste-water, garbage and cleaning time. There are many products on the market with different nano-chemicals serving different purposes. **Ask Lotus Nano for advise.**

It made its ways in many industry sectors, e.g: **schools, healthcare, hospitality, public transport private residences, shops, offices, packaging, etc.** **

Sample

APPLICATIONS

Generally, coating is recommended for critical surface areas which people frequently get in contact with. Certain industry sectors may have specific Nano Antimicrobial Coating requirements to ensure the safety of people. Think: Pharma, Healthcare, Education, Manufacturing, Recreation, Hospitality, Retail, etc.

PROPERTIES

- **Destroys 100+ types of bacteria, germs & fungi**
- Provides instant & continuous 24/7 protection after a single application
- Excellent adhesion to hard substrates
- High UV and chemical resistance
- Suitable for use indoors and outdoors
- Safe use on all hard surfaces including metal, plastic, glass, polished timber, and stone
- **Indirect food contact surfaces** (e.g. fridge, freezer, cold-room, packaging, and much more)
- Economical & ecological
- Non-toxic, Non-leaching and VOC Free
- Coating is 100% invisible
- **Rids unpleasant odours**
- Cuts cleaning and disinfection time & resources
- No need to continually disinfect surfaces
- Efficacy can be tested anytime
- Purifies Airconditioners



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Glass & Ceramic

DURABILITY
5 YEARS*



WHAT IS IT?

A clear, nano-enabled coating, created specifically for all indoor and outdoor glass, ceramic and porcelain surfaces.

The coating forms an invisible and long-lasting molecular level adhesive bond with the surface which repels effectively water and prevents the build-up of dirt, soap scum, limescale, salt, chlorine and other contaminants.

Particular benefits for the Building, Construction and Facilities Management industry as well as homes.

ESSENTIALLY

Glass & Ceramic nano-coatings make cleaning easy and can **reduce your cleaning time by up to 90%**. It significantly reduces the need for household cleaning products. A quick wipe with a damp cloth or a mild detergent is all that is usually required.

Because water won't sit on treated surfaces, fungus and mould can't develop, resulting in the **surfaces remaining hygienic and visibly pleasing.**

We only recommend products which are ISO 11507 certified and are of industrial grade, **suitable for both residential and commercial use.**

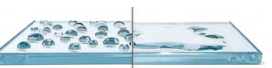
Sample

APPLICATIONS

- Shower screens, glass, basins, toilets and ceramic tiles
- Change rooms – shower tiles and cubicles, mirrors, floor and wall tiles
- Windows, office facades, glass doors and frosted glass
- Ceramic tile and glass surfaces
- Pool fences
- Glass balustrades
- Skylights, atriums, glass awnings
- Shopfront windows

PROPERTIES

- Strong hydrophobicity (water pearls off)
- Strong non-stick properties (no dirt build-up)
- Excellent easy-clean effect (self-cleaning)
- **Cuts cleaning time** and keeps glass cleaner between cleans (**reduced cleaning cycles**)
- **Superior protection** against staining and etching from dirt, salt & chlorine
- **Invisible** to the human eye (thickness: 50 - 60 nm)
- Long lasting and abrasion resistant
- UV-stable, and chemical resistant
- Suitable for new & existing glass
- **Ecologically sustainable** (minimises the need for harsh chemical cleaners)
- Suitable for floor tiles, wall tiles (including grout)
- Economical



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Stone & Brick



DURABILITY
7 YEARS*

WHAT IS IT?

A high-performance, nanotech penetrating sealer for the protection of porous mineral surfaces of natural stone (marble, granite, limestone, sand stone travertine etc), brick, concrete and cementitious materials.

100% natural, non-toxic and eco-friendly. Non-film forming, completely invisible. Does not alter the appearance of the coated surface.

Usually water based it creates **long life protection** of up to 7 years depending on environmental factors.

ESSENTIALLY

Stone & Brick nano-coatings are effective on both **indoor and outdoor surfaces**. Liquids pearl off the protected surface **shielding against stains from pollution, accidental spills, dirt, dust and water**. With liquids unable to permeate into the surface most contaminants are simply picked up by water /damp cloth (rain or manual spraying) and roll off the surface.

Exhibits **antimicrobial benefits** inhibiting largely the growth of algae, moss, scale, fungi, etc.

We only recommend products which are ISO 11507 certified and are of industrial grade, **suitable for both residential and commercial use**.

Sample

APPLICATIONS

- Brick and Stone Walls
- Outdoor Patios & Entertaining Areas
- Marble / Granite Features, Bench-tops, Flooring
- Landscaping, Driveways, Paving Stones, Roof tiles
- Under / Overpass Walkways, Train/Bus/Metro Stations
- Swimming Pool Surrounds
- Monuments and Sculptures
- Outdoor Stone Furniture
- Building and House Facades

PROPERTIES

- **Strong hydrophobicity** (water pearls off)
- Breathability of protected surface remains
- Suitable for use with **all brick and concrete surfaces** including dense stone surfaces such as polished granites, marbles, etc.
- **Internal and external use**
- **Easily remove chewing tobacco stains, etc**
- **Strong non-stick properties** (no dirt build-up)
- Excellent self/easy-clean effect
- **Invisible** (coating thickness: 50 - 100 nm).
- UV-stable, very resistant to abrasion
- **Environmentally friendly, non-toxic, VOC free.**
- **Will not harm people, plants or pets.**
- No fading or peeling off
- Prevents stains and water damage.

MINIMISE & HELP THE ENVIRONMENT:

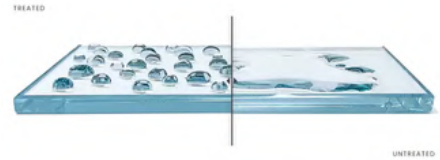
Cut up to 50% on harsh & expensive Cleaning agents + cleaning time.



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LOTUS NANO'S HYDROPHOBIC RANGE

Solar + PV



WHAT IS IT?

Once a Solar/PV Panel is professionally nano-coated with a layer of 50-60 nm its surface quite instantly **exhibits strong and long-lasting self / easy cleaning properties.**

The coating's self-cleaning effect stops dust, pollen, pollution and bird faeces from sticking to solar panels, keeping them cleaner for longer, maintaining higher efficiency over time, ensuring the **maximum possible amount of electricity is produced.**

ESSENTIALLY

There shouldn't really be any nano un-coated panels on the market anymore. Though there are different products with different nano-formulations on the market there is one thing the industry has learned.

Less contaminants on solar panels means less maintenance and higher overall energy production. Dirty solar panels can reduce their efficiency by 30%. Nobody can want that.

Data from 186 solar farms has shown that over an average 145-day summer, **a 7.4% loss in power generation** was experienced. This is larger than losses due to cell degradation. A study in the UK estimates **losses are 10-15% annually** if modules are left unattended.

We assist with sourcing products which offer highly transparent, low cost, durable and robust self-cleaning surfaces. A clear winner and contributor to a more sustainable low carbon energy world.

Sample

APPLICATIONS

- **Suitable for all residential, commercial industrial solar panel / photo-voltaic (PV) installations.** Generally, the product range, chemistry and coating choices are plenty and the right choice can be hard. Ask us for specific advise.

PROPERTIES

- Reduces cleaning frequency. Saves energy, time and cost and is more environmentally sustainable
- Panels continue to work for longer at peak performance.
- Longer optimum panel performance means less fossil fuels burned, less CO2 emissions
- **Ensures maximum light transmittance**
- **Strong hydrophobicity** (lotus effect)
- **Strongly oleophobic** (nothing sticks)
- Up to **50% less water for module cleaning**
- Coating invisible to the human eye
- Prevents settlement of dust, dirt and fouling
- Suitable for older and new panels
- Effective in extreme (hot, cold, humid, salty, sandy, rainy, etc) environments
- **Protects against surface degradation**



Anti Graffiti



WHAT IS IT?

Globally, the cost of graffiti and vandalism restoration is estimated to be in the billions of dollars per year. Graffiti can be big deal when it affects the people who have to live with it.

A Nano Anti Graffiti product is generally an advanced, long lasting barrier coat, especially formulated to protect surfaces from the permanent defacing by unsightly graffiti.

There are sacrificial and non-sacrificial nano coats. The former comes off along with the graffiti and requires re-coating and the latter stays put. Both have advantages and disadvantages.

Their invisible finish will not yellow with age. Both are highly resistant to most types of aerosol spray paint and permanent markers, as well as dirt, chewing gum, oil, soot and pollution.

ESSENTIALLY

Nano Anti Graffiti is usually a clear coating and completely invisible so will not alter the look of the surface it protects. Both Anti Graffiti coating are excellent next generation surface protection strategies.

Both Anti-Graffiti products are suitable for smooth, non-absorbent surfaces, such as metal, plastics, powder coated or painted surfaces, and metal surfaces including corrugated iron, galvanized steel, aluminium, and stainless steel.

Ask Lotus Nano for independent expert advise.

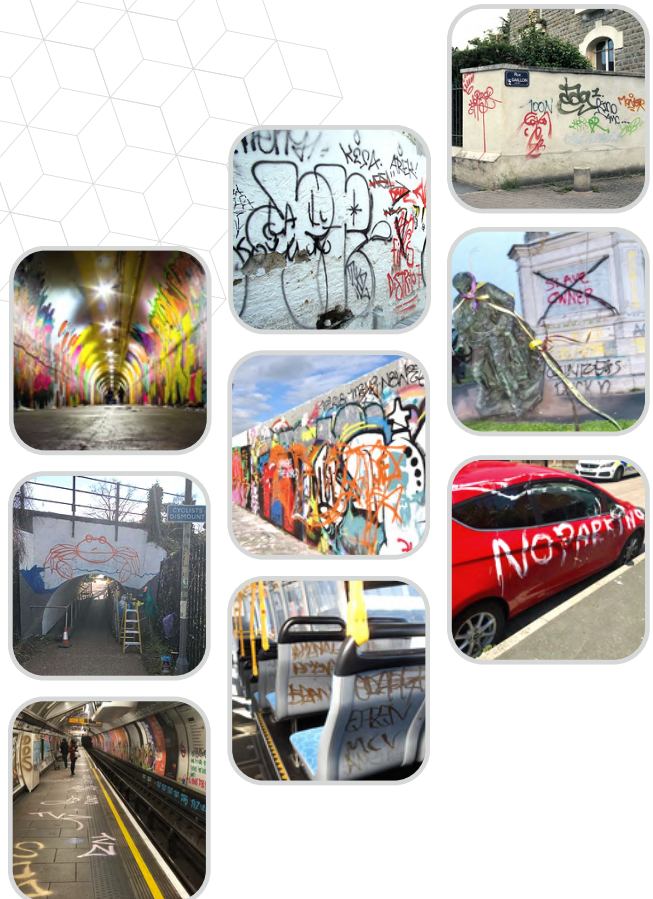
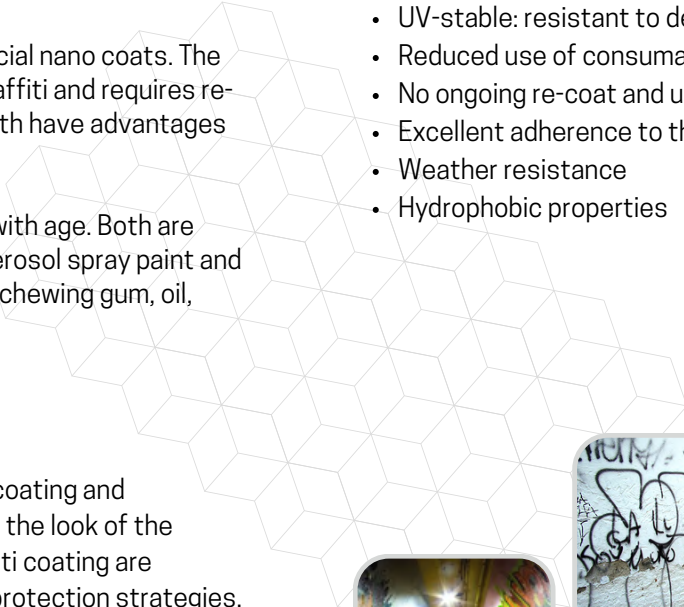
Sample

APPLICATIONS

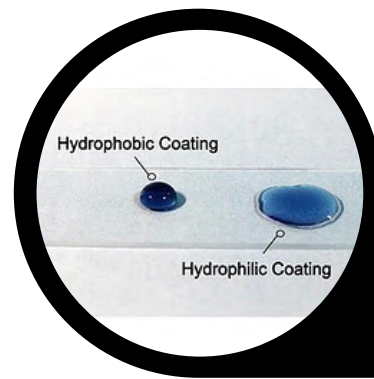
Can be used on all types of steel, including stainless, cortex and galvanized, copper, bronze, aluminium and most plastics and vinyl. Also works on porous materials like brick, concrete, unglazed tiles, sandstone, bluestone, timber, compressed cement sheeting, etc.

PROPERTIES

- Reduction in time and cost to remove graffiti
- Graffiti, tobacco spitting, etc can be removed easily, leaving no residue
- Low VOC application and 0 VOC removal
- Non sacrificial - sustains multiple graffiti removals
- Sacrificial - complete coating can be removed
- Single coat application
- Long lasting and durable
- UV-stable: resistant to degradation from UV light
- Reduced use of consumables and removers
- No ongoing re-coat and unsightly colour patches
- Excellent adherence to the substrate
- Weather resistance
- Hydrophobic properties



Anti-Fog



**DURABILITY:
PERMANENT**

WHAT IS IT?

Here's a nano-structured coating solution which becomes interesting when you encounter frequent **problems with condensation / fog** on surfaces like glass, PVC, etc.

There are **situations where a foggy surface is undesirable or even dangerous** (think: motorbike helmet-visor, diving goggles, mirrors, etc).

With a **100% permanency** hydrophilic Anti-Fog has **thousands of potential industrial applications**. We can only list here the most commonly used.

ESSENTIALLY

Smart "**Hydrophilic**" Nanotech makes sure that water droplets on a smooth surface are spread so thin and wide (wetting) that noticeable condensation as we know it just doesn't happen anymore.

A 100% clear, transparent, functional, hydrophilic layer coated on, say, a mirror, means that water droplets **just won't build or stick on it but instantly spread into the physically thinnest possible film which evaporates quicker and evenly**.

Sample

APPLICATIONS

Permanent Anti-Fog can safely be applied on most glass and plastics (PC, ETFE and more) surfaces.

- Safety goggles
- Coverings, Panels
- Glasses, sunglasses
- Sports Goggles
- Diving Masks & Swim Goggles
- Motorcycle helmets
- Mirrors
- Touchscreens
- Car windows, car mirrors
- Camera Lenses
- Heat Exchangers in Air-Conditionings

PROPERTIES

- Temperature stable up to 200 °C
- Coating thickness from 1 up to 10 µm
- No change in optical quality of substrate
- Enhanced surface scratch-resistant of up to 10 H
- Enhanced surface abrasive hardness
- Chemical-proof to usual detergents, disinfectants
- 100% transparent, Non-leaching
- Mechanically flexible; Great Substrate Adhesion
- Droplet contact angle < 90 ° to < 5 ° (Hydrophilic)
- Has "Self-Cleaning" properties
- Increases air velocity by up to 50%
- Applications ranging from agricultural to health care, from catheters to greenhouse panels, etc
- Antimicrobial





**NANOTECH CAN SOLVE MANY INDUSTRIAL CHALLENGES.
HERE'S HOW WE ASSIST OUR CLIENTS EVERY STEP OF THE WAY**

0

INDEPENDENT ADVISE, CONSULTING, FREE TRIALS

We make sure we first understand you and you understand Nano Surface Coatings. We run free product trials to determine what works best for you. We find bespoke automation solutions & train your people and so much more.

1

PROPER SURFACE PREPARATION:

We make sure the surface to be coated is properly cleaned and conditioned to ensure that the coating adheres properly and provides the desired performance.

2

QUALITY OF THE COATING MATERIAL:

We make sure the coating material we specify for you is of highest quality and purity to ensure that it performs as expected and consistently produces the desired properties.

3

SAFE & ACCURATE APPLICATION:

We apply the nano coating using the correct techniques and equipment to ensure uniform coverage and thickness.

4

COMPATIBILITY WITH THE SUBSTRATE:

We ensure the coating material is compatible with the substrate, adheres properly and doesn't cause any damage or degradation.

5

OPTIMAL DRYING AND CURING CONDITIONS:

We ensure the drying and curing process is carefully controlled to ensure the coating achieves the best possible desired effect.

6

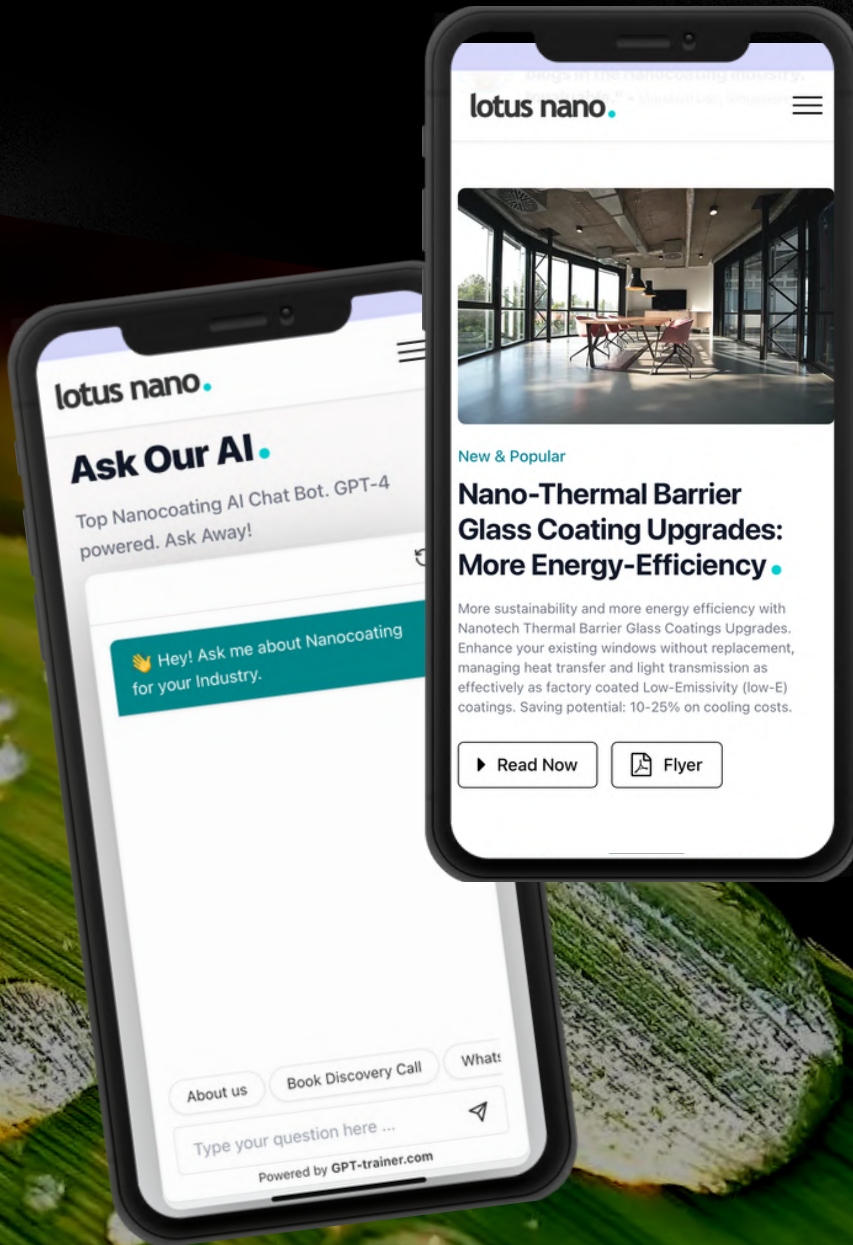
POST-PROCESSING AND MAINTENANCE:

Coated surface need to be maintained and protected in order to preserve the performance of the coating over time. We'll help you with that.

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