

The Global Market for Self-Cleaning Coatings 2020

<https://marketpublishers.com/r/GA0E65143FBEN.html>

Date: August 2020

Pages: 261

Price: US\$ 1,000.00 (Single User License)

ID: GA0E65143FBEN

Abstracts

Most self-cleaning coatings on glass can be divided into two categories, hydrophobic and hydrophilic.

Hydrophobic surface finishes are inspired by the self-cleaning mechanism of lotus plants and other organisms (e.g., many large-winged insects). They have been applied to paints, glass, textiles, and more, reducing the need for chemical detergents and costly labour. The coatings unique nano-textured surface and overcoat reduces surface energy and contact surface area, giving the coatings anti-contamination and self-cleaning properties that minimize dust, liquid, and ice accumulation on its surface, similar to a leaf on the Lotus plant.

Hydrophilic self-cleaning coatings utilizes photocatalytic decomposition to self-clean glass. The working principle of the hydrophilic layer is based on having a film of titanium dioxide coating, which has two working stages: the photo-catalytic stage and the hydrophilic sheathing stage. During the 'hydrophilic' stage, rain washes away the dirt and leaves almost no streaks on the glass as the hydrophilic glass spreads the water evenly over the surface coating. Self-cleaning surfaces based on photocatalytic processes are applied in areas such as buildings, road paving, vehicle side-view mirrors, lamps, and even in textiles. Among the nanoscale semiconductor materials based on oxides, titanium dioxide (TiO₂) is widely used.

Report contents include:

Evolution of self-cleaning coatings to now and future prospects.

Development of self-cleaning coatings-production methods, recent developments, new products.

Analysis of hydrophobic and hydrophilic surfaces and the emergence of super-hydrophobic and super-hydrophilic coatings technologies.

New developments in self-cleaning coatings including multi-functional and smart self-cleaning coatings.

Applications and market analysis for self-cleaning coating in Construction, Automotive, Solar, Textiles and Apparel, Consumer Electronics, Medical Coatings, Marine and Household Care sectors.

Revenue forecasts to 2030 across all sectors.

132 company profiles including products and target markets. Companies profiled include Adaptive Surface Technologies, Advanced Materials-JTJ s.r.o., TOTO, Pureti Group LLC, Swift Coat Inc and many more.

Contents

1 EXECUTIVE SUMMARY

- 1.1 Why nanocoatings?
- 1.2 Advantages over traditional coatings
- 1.3 Self-cleaning
 - 1.3.1 Hydrophobic coating
 - 1.3.2 Hydrophilic coating
- 1.4 Markets for self-cleaning coatings
- 1.5 Developments in solar cells
- 1.6 Improvements and disruption in coatings markets
- 1.7 Anti-viral nanoparticles and nanocoatings
- 1.8 End user market for self-cleaning coatings
- 1.9 The self-cleaning coatings market in 2020
 - 1.9.1 Global revenues by nanocoatings, by type
 - 1.9.2 Regional demand for self-cleaning coatings
- 1.10 Market challenges

2 DEVELOPMENT OF SELF-CLEANING COATINGS

- 2.1 Properties
- 2.2 Benefits of using nanocoatings
 - 2.2.1 Types of nanocoatings
- 2.3 Production and synthesis methods
- 2.4 Hydrophobic coatings and surfaces
 - 2.4.1 Hydrophobic coatings
 - 2.4.1.1 Properties
 - 2.4.2 Hydrophilic/photocatalytic coatings
 - 2.4.3 Super Hydrophilic Surfaces
 - 2.4.3.1 Application in facemasks
- 2.5 Superhydrophobic coatings and surfaces
 - 2.5.1 Properties
 - 2.5.1.1 Antibacterial use
 - 2.5.2 Durability issues
- 2.6 Oleophobic and omniphobic coatings and surfaces
 - 2.6.1 SLIPS
 - 2.6.2 Covalent bonding
 - 2.6.3 Step-growth graft polymerization

2.6.4 Applications

3 SELF-CLEANING NANOCOATINGS MARKET ANALYSIS

3.1 SELF-CLEANING HYDROPHOBIC COATINGS

3.1.1 Market overview

3.1.2 Market assessment

3.1.3 Market drivers

3.1.4 Applications

3.1.5 Global market size

3.1.5.1 Adjusted for COVID-19 market growth scenarios

3.2 SELF-CLEANING HYDROPHILIC (PHOTOCATALYTIC) COATINGS

3.2.1 Market overview

3.2.2 Market assessment

3.2.3 Market drivers

3.2.4 Applications

3.2.4.1 Self-Cleaning Coatings

3.2.4.2 Indoor Air Pollution and Sick Building Syndrome

3.2.4.3 Outdoor Air Pollution

3.2.4.4 Water Treatment

3.2.5 Global market size

3.2.5.1 Adjusted for COVID-19 market growth scenarios

4 END USER MARKET ANALYSIS FOR SELF-CLEANING COATINGS

4.1 AUTOMOTIVE

4.1.1 Market drivers and trends

4.1.2 Applications

4.1.3 Global market size

4.1.4 Companies

4.2 CONSTRUCTION

4.2.1 Market drivers and trends

4.2.2 Applications

4.2.2.1 Protective coatings for glass, concrete and other construction materials

4.2.2.2 Photocatalytic nano-TiO₂ coatings

4.2.2.3 Anti-graffiti

4.2.2.4 UV-protection

4.2.2.5 Titanium dioxide nanoparticles

4.2.2.6 Zinc oxide nanoparticles

- 4.2.3 Global market size
- 4.2.4 Companies
- 4.3 HOUSEHOLD CARE, SANITARY AND INDOOR AIR QUALITY
 - 4.3.1 Market drivers and trends
 - 4.3.2 Applications
 - 4.3.2.1 Self-cleaning and easy-to-clean
 - 4.3.2.2 Food preparation and processing
 - 4.3.2.3 Indoor pollutants and air quality
 - 4.3.3 Global market size
 - 4.3.4 Companies
- 4.4 MARINE
 - 4.4.1 Market drivers and trends
 - 4.4.2 Applications
 - 4.4.3 Global market size
 - 4.4.4 Companies
- 4.5 CONSUMER ELECTRONICS
 - 4.5.1 Market drivers
 - 4.5.2 Applications
 - 4.5.3 Global market size
 - 4.5.4 Companies
- 4.6 MEDICAL & HEALTHCARE
 - 4.6.1 Market drivers and trends
 - 4.6.2 Applications
 - 4.6.2.1 Anti-fouling
 - 4.6.2.2 Anti-microbial and infection control
 - 4.6.2.3 Nanosilver
 - 4.6.2.4 Medical device coatings
 - 4.6.3 Global market size
 - 4.6.4 Companies
- 4.7 TEXTILES AND APPAREL
 - 4.7.1 Market drivers and trends
 - 4.7.2 Applications
 - 4.7.3 Global market size
 - 4.7.4 Companies
- 4.8 ENERGY
 - 4.8.1 Market drivers and trends
 - 4.8.2 Applications
 - 4.8.3 Global market size
 - 4.8.4 Companies

4.9 AVIATION AND AEROSPACE

4.9.1 Market drivers and trends

4.9.2 Applications

4.9.3 Global market size

4.9.4 Companies

5 SELF-CLEANING COATINGS COMPANIES 166 (132 COMPANY PROFILES)

6 RESEARCH METHODOLOGY

6.1 Aims and objectives of the study

7 REFERENCES

Tables

TABLES

- Table 1: Properties of nanocoatings.
- Table 2: Market drivers and trends in nanocoatings.
- Table 3: End user markets for nanocoatings.
- Table 4: Global revenues for nanocoatings, 2010-2030, millions USD, by type.
- Table 5: Market and technical challenges for nanocoatings.
- Table 6: Technology for synthesizing nanocoatings agents.
- Table 7: Film coatings techniques.
- Table 8: Contact angles of hydrophilic, super hydrophilic, hydrophobic and superhydrophobic surfaces.
- Table 9: Generations of TiO₂ photocatalytic coatings.
- Table 10: Disadvantages of commonly utilized superhydrophobic coating methods.
- Table 11: Applications of oleophobic & omniphobic coatings.
- Table 12: Market overview for self-cleaning bionic coatings.
- Table 13: Market assessment for self-cleaning (bionic) coatings.
- Table 14: Market drivers for self-cleaning (bionic) coatings.
- Table 15: Self-cleaning (bionic) coatings-Markets and applications.
- Table 16: Revenues for self-cleaning (bionic) coatings, 2010-2030, US\$.
- Table 18: Market overview for self-cleaning photocatalytic coatings.
- Table 19: Market assessment for self-cleaning photocatalytic coatings.
- Table 20: Market drivers and trends in self-cleaning photocatalytic coatings.
- Table 21: Self-cleaning photocatalytic coatings.-Markets, applications and potential addressable market size by 2027.
- Table 22: Revenues for self-cleaning (photocatalytic) coatings, 2010-2030, US\$.
- Table 24: Market drivers and trends for nanocoatings in the automotive market.
- Table 25: Anti-scratch automotive nanocoatings.
- Table 26: Conductive automotive nanocoatings.
- Table 27: Hydro- and oleophobic automotive nanocoatings.
- Table 28: Anti-corrosion automotive nanocoatings.
- Table 29: UV-resistance automotive nanocoatings.
- Table 30: Thermal barrier automotive nanocoatings.
- Table 31: Flame retardant automotive nanocoatings.
- Table 32: Anti-fingerprint automotive nanocoatings.
- Table 33: Anti-bacterial automotive nanocoatings.
- Table 34: Self-healing automotive nanocoatings.
- Table 35: Revenues for nanocoatings in the automotive industry, 2010-2030, US\$.

conservative and optimistic estimate.

Table 36: Automotive nanocoatings product developers.

Table 37: Market drivers and trends for nanocoatings in the construction market.

Table 38: Nanocoatings applied in the construction industry-type of coating, nanomaterials utilized and benefits.

Table 39: Photocatalytic nanocoatings-Markets and applications.

Table 40: Revenues for nanocoatings in construction, architecture and exterior protection, 2010-2030, US\$.

Table 41: Construction, architecture and exterior protection nanocoatings product developers.

Table 42: Market drivers and trends for nanocoatings in household care and sanitary.

Table 43: Revenues for nanocoatings in household care, sanitary and indoor air quality, 2010-2030, US\$.

Table 44: Household care, sanitary and indoor air quality nanocoatings product developers.

Table 45: Market drivers and trends for nanocoatings in the marine industry.

Table 46: Nanocoatings applied in the marine industry-type of coating, nanomaterials utilized and benefits.

Table 47: Revenues for nanocoatings in the marine sector, 2010-2030, US\$.

Table 48: Marine nanocoatings product developers.

Table 49: Market drivers for nanocoatings in electronics.

Table 50: Main companies in waterproof nanocoatings for electronics, products and synthesis methods.

Table 51: Conductive electronics nanocoatings.

Table 52: Anti-fingerprint electronics nanocoatings.

Table 53: Anti-abrasion electronics nanocoatings.

Table 54: Conductive electronics nanocoatings.

Table 55: Revenues for nanocoatings in electronics, 2010-2030, US\$.

Table 56: Nanocoatings applications developers in electronics.

Table 57: Market drivers and trends for nanocoatings in medicine and healthcare.

Table 58: Nanocoatings applied in the medical industry-type of coating, nanomaterials utilized, benefits and applications.

Table 59: Types of advanced coatings applied in medical devices and implants.

Table 60: Nanomaterials utilized in medical implants.

Table 61: Revenues for nanocoatings in medical and healthcare, 2010-2030, US\$.

Table 62: Medical and healthcare nanocoatings product developers.

Table 63: Market drivers and trends for nanocoatings in the textiles and apparel industry.

Table 64: Applications in textiles, by advanced materials type and benefits thereof.

Table 65: Nanocoatings applied in the textiles industry-type of coating, nanomaterials utilized, benefits and applications.

Table 66: Applications and benefits of graphene in textiles and apparel.

Table 67: Revenues for nanocoatings in textiles and apparel, 2010-2030, US\$.

Table 68: Textiles nanocoatings product developers.

Table 69: Market drivers and trends for nanocoatings in the energy industry.

Table 70: Revenues for nanocoatings in energy, 2010-2030, US\$.

Table 71: Renewable energy nanocoatings product developers.

Table 72: Market drivers and trends for nanocoatings in aviation and aerospace.

Table 73: Types of nanocoatings utilized in aerospace and application.

Table 74: Revenues for nanocoatings in the aerospace industry, 2010-2030.

Table 75: Aerospace nanocoatings product developers.

Table 76: Photocatalytic coating schematic.

Figures

FIGURES

Figure 1. Water droplet on Lotus WC2 coating with 150 degree contact angle (left); and Microscopic nano-texture of Lotus WC2 (right).

Figure 2. Water drops picking up and removing dust and dirt particles from a highly superhydrophobic surface.

Figure 3. Schematic of anti-viral coating using nano-actives for inactivation of any adhered virus on the surfaces.

Figure 4: Global revenues for nanocoatings, 2010-2030, millions USD, by type.

Figure 5: Regional demand for nanocoatings, 2010-2020, millions USD.

Figure 6: Hydrophobic fluoropolymer nanocoatings on electronic circuit boards.

Figure 7: Nanocoatings synthesis techniques.

Figure 8: Techniques for constructing superhydrophobic coatings on substrates.

Figure 9: Electrospray deposition.

Figure 10: CVD technique.

Figure 11: Schematic of ALD.

Figure 12: SEM images of different layers of TiO₂ nanoparticles in steel surface.

Figure 13: The coating system is applied to the surface. The solvent evaporates.

Figure 14: A first organization takes place where the silicon-containing bonding component (blue dots in figure 2) bonds covalently with the surface and cross-links with neighbouring molecules to form a strong three-dimensional.

Figure 15: During the curing, the compounds organize themselves in a nanoscale monolayer. The fluorine-containing repellent component (red dots in figure 3) on top makes the glass hydrophobic and oleophobic.

Figure 16: (a) Water drops on a lotus leaf.

Figure 17: A schematic of (a) water droplet on normal hydrophobic surface with contact angle greater than 90° and (b) water droplet on a superhydrophobic surface with a contact angle > 150°.

Figure 18: Contact angle on superhydrophobic coated surface.

Figure 19: Self-cleaning nanocellulose dishware.

Figure 20: SLIPS repellent coatings.

Figure 21: Omniphobic coatings.

Figure 22: Self-cleaning superhydrophobic coating schematic.

Figure 23: Potential addressable market for self-cleaning (bionic) coatings by 2030.

Figure 24: Revenues for self-cleaning (bionic) nanocoatings, 2010-2030, US\$.

Figure 25. Revenues for self-cleaning (bionic) nanocoatings, 2019-2030, US\$, adjusted for COVID-19 related demand, conservative and high estimates

Figure 26: Principle of superhydrophilicity.

Figure 27: Schematic of photocatalytic air purifying pavement.

Figure 28: Tokyo Station GranRoof. The titanium dioxide coating ensures long-lasting whiteness.

Figure 29: Potential addressable market for self-cleaning (photocatalytic) nanocoatings by 2030.

Figure 30: Revenues for self-cleaning (photocatalytic) coatings, 2010-2030, US\$.

I would like to order

Product name: The Global Market for Self-Cleaning Coatings 2020

Product link: <https://marketpublishers.com/r/GA0E65143FBEN.html>

Price: US\$ 1,000.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/GA0E65143FBEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970