



# LATEST DEVELOPMENTS AND TRENDS IN CHEMICAL COATINGS TECHNOLOGY



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*Sustainability and resistance*

## INNOVATIVE DEVELOPMENTS AND TRENDS EMERGING EVERY DAY

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Chemical coatings technology has been advancing steadily over the past few years, with new and innovative developments and trends emerging every day driven by increasing demand for high-performance coatings with improved durability, corrosion resistance, and environmental sustainability.

From the development of superhydrophobic coatings to anti-corrosion coatings, chemical coatings technology has been making significant advances. Here are some of the latest developments and trends in chemical coatings technology.

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Actuality

## Self-Healing Coatings

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Designed to repair themselves when damaged, which can extend the lifespan of the coating and reduce maintenance costs. Can repair damage from scratches, abrasions, and other surface damage.

This type of coating is made up of a micro-encapsulated material that releases a healing agent when the coating is damaged. This healing agent then repairs the damage and restores the coating's original state.



## Superhydrophobic Coatings

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Are extremely water-repellent and can repel water droplets from their surface. These coatings are usually composed of a combination of materials such as silica, polymers, and nanostructures. They are often used in medical devices and electronics to protect them from water damage.

## Anti-corrosion Coatings

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Are used to protect metal surfaces from corrosion. These coatings are composed of materials such as polyurethane, polyvinylidene fluoride, and epoxy that form a protective layer on the metal surface. The layer prevents oxygen and other corrosive substances from reaching the metal surface and causing damage.



## Environmentally friendly Coatings

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With growing awareness of environmental issues, there is an increasing demand for coatings that are free of harmful chemicals and have a low environmental impact. Eco-friendly coatings are often made from sustainable materials and have low VOC (volatile organic compound) emissions

## Nano-Coatings

Extremely thin coatings that are composed of nanoparticles used to provide enhanced properties such as water repellency, scratch resistance, and anti-corrosion. These coatings are used to protect surfaces from corrosion, chemical attack, and biological attack.

They are also used to improve the surface properties of materials such as increased lubricity and reduced friction. Are becoming increasingly popular in various industries, including automotive, aerospace, and construction.

## Smart Coatings

Smart coatings are a type of functional coating that can respond to changes in their environment, such as temperature, pressure, or light. They have applications in a range of industries, including medical, military, and automotive.

## Thermal Barrier Coatings

Thermal barrier coatings are used to protect surfaces from extreme temperatures. These coatings are usually composed of ceramic materials such as aluminum oxide and zirconia that can withstand high temperatures.

## Anti-fouling Coatings

Anti-fouling coatings are used to reduce the formation of biofouling on surfaces. These coatings are usually composed of materials such as silanes and polymers that prevent the growth of algae, bacteria, and other organisms on the surface.

## Conductive Coatings

These types of coatings are used to provide electrical conductivity to a surface. Are made up of materials such as silver, copper, and nickel and are often used in electronic components.

## Anti-Microbial Coatings

Anti-microbial coatings are designed to prevent the growth of bacteria, viruses, and other microorganisms on surfaces. They are increasingly used in healthcare facilities, food processing plants, and other environments where hygiene is critical.

## High-performance Coatings

High-performance coatings are designed to withstand extreme conditions such as high temperatures, corrosive chemicals, and abrasion. They are used in a range of industries, including oil and gas, aerospace, and automotive.

Increased  
durability

Overall, the trend in chemical coatings technology is towards higher performance, improved durability, and greater environmental sustainability. As new materials and technologies continue to emerge, we can expect to see further developments in this field in the years to come.