Photocatalyst Market Report by Type (Titanium Dioxide, Zinc Oxide, and Others), Form (Powder, Fines, Sponge, Bars/Blocks, Granules, Ingots), Application (Self-Cleaning, Air Purification, Water Treatment, Anti-Fogging, and Others), and Region 2024-2032

Market Report | 2024-09-10 | 145 pages | IMARC Group

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Report description:

The global photocatalyst market size reached US$ 2.6 Billion in 2023. Looking forward, IMARC Group expects the market to reach US$ 4.9 Billion by 2032, exhibiting a growth rate (CAGR) of 7.1% during 2024-2032. The rising demand for low volatile organic compounds (VOC) coatings is propelling the overall market.

Photocatalyst Market Analysis:
-Major Market Drivers: The elevating requirement for substances that have superior chemical properties and the ability to decompose organic compounds is augmenting the market.
-Key Market Trends: Extensive investments in R&D activities to introduce innovative photocatalyst materials using calcium sulfide (CdS) and zinc oxide (ZnO) are acting as significant growth-inducing factors.
-Competitive Landscape: Some of the prominent companies in the global market include Daicel Corporation, Ishihara Sangyo Kaisha Ltd, Japan Photocatalyst Center Co. Ltd., Kaltech Co. Ltd., Nanoptek Corporation, Sakai Chemical Industry Co Ltd, Showa Denko K. K., Souma Co. Ltd., Tayca Corporation, The Chemours Company, Toto Ltd., and Tronox Limited, among many others.
-Geographical Trends: The growing concerns toward inflating pollution levels are catalyzing the market in North America. Moreover, the expanding construction industry is also bolstering the market in Asia Pacific. Apart from this, the extensive applications of glass surfaces are further fueling the market across Europe. Rapid industrialization levels are augmenting the market in Latin America.
-Challenges and Opportunities: The high cost of current materials is hindering the market. However, investments in advanced research are expected to fuel the market in the coming years.

Photocatalyst Market Trends:

Extensive R&D Activities

Academic institutions, governments, and private companies are dedicating substantial resources to optimize existing ones, explore new photocatalyst materials, and expand their applications. Additionally, collaborative efforts are leading to significant breakthroughs in nanotechnology, which is positively influencing the photocatalyst market outlook. For instance, in February 2024, a professor from the Department of Chemistry at the University of Hong Kong (HKU) led a research project that aims to transform organic synthesis. His group developed a new heterogeneous copper photocatalyst that effectively forms cyclobutane rings, an essential structural component of a wide range of bioactive compounds.

Expanding Industrial Applications

The rising trend towards industrial applications is propelled by the need for eco-friendly and cost-effective solutions that can improve operational efficiency and reduce environmental impact. Moreover, the ability of this material to enhance efficiency and sustainability in various processes is also creating a positive impact on the market. In February 2024, Alfa Chemistry introduced three types of photochemistry-related materials, i.e., photocatalysts, photosensitizers, and quantum dots, to its versatile product portfolios. They bring vast possibilities for future studies in both chemistry and biology, which is escalating the photocatalyst market demand.

Rising Usage in Consumer Products

The growing integration of advanced technologies into everyday items to enhance functionality and user benefits is stimulating the market. Photocatalysts are widely being incorporated into anti-bacterial coatings, self-cleaning surfaces, and anti-fogging materials. This trend is driven by consumer demand for hygienic, low-maintenance, and environmentally friendly products. In March 2024, Samsung Electronics developed a new model of its premium air purifier series featuring an innovative photocatalyst filter that eliminates the need for periodic filter replacements.

Global Photocatalyst Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the market, along with the photocatalyst market forecast at the global, regional, and country levels for 2024-2032. Our report has categorized the market based on the type, form, and application.

Breakup by Type:

- Titanium Dioxide
- Zinc Oxide
- Others

The report has provided a detailed breakup and analysis of the market based on the type. This includes titanium dioxide, zinc oxide, and others.

Titanium dioxide exhibits photocatalytic properties, stability, and cost-effectiveness. Consequently, it finds applications, such as air purification, water treatment, and self-cleaning surfaces. Zinc oxide is also valued for its high efficiency under UV light. The others category includes emerging materials like tungsten trioxide and cadmium sulfide. This is expanding the photocatalyst market value.

Breakup by Form:

- Powder
- Fines
- Sponge
- Bars/Blocks
- Granules
- Ingots

The report has provided a detailed breakup and analysis of the market based on the form. This includes powder, fines, sponge, bars/blocks, granules, and ingots.

Powdered photocatalysts are highly favored for their extensive surface area. Fines, which are smaller particles, are ideal for high-precision applications. Sponge forms are further used for their high porosity and surface area, which are beneficial in water and air purification systems. Bars and blocks are adopted in structured reactor designs for industrial-scale processes. Granules provide a balance between surface area and ease of handling, suitable for filtration and catalyst beds. Ingots are used where solid forms of photocatalysts are required. This is increasing the photocatalyst market revenue across the segmentation.
Breakup by Application:
-Self-Cleaning
-Air Purification
-Water Treatment
-Anti-Fogging
-Others

The report has provided a detailed breakup and analysis of the market based on the application. This includes self-cleaning, air purification, water treatment, anti-fogging, and others.
In self-cleaning applications, photocatalysts are incorporated into building materials, textiles, and coatings to break down organic dirt. Air purification systems utilize photocatalysts to degrade volatile organic compounds (VOCs), thereby improving indoor and outdoor air quality. In water treatment, photocatalysts are employed to decompose harmful contaminants and pathogens. On the other hand, anti-fogging applications benefit from the hydrophilic properties of photocatalysts, which prevent water droplet formation on surfaces like lenses and mirrors. This is elevating the photocatalyst market share.
Breakup by Region:
-North America
oUnited States
oCanada
-Asia-Pacific
oChina
oJapan
oIndia
oSouth Korea
oAustralia
oIndonesia
oOthers
-Europe
oGermany
oFrance
oUnited Kingdom
oItaly
oSpain
oRussia
oOthers
-Latin America
oBrazil
oMexico
oOthers
-Middle East and Africa

The market research report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe

(Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa.
As per the photocatalyst market overview, in North America, the market is driven by advancements in environmental technologies. The Asia Pacific region, led by countries like China and Japan, is experiencing rapid growth due to increasing industrialization. In September 2023, Scientists from Nanyang Technological University, Singapore (NTU Singapore) created a process that can upcycle most plastics into chemical ingredients useful for energy storage. Furthermore, stringent environmental regulations are propelling the market in Europe. In Latin America, the market is gradually expanding with new initiatives focusing on affordable water purification.
Competitive Landscape:
The market research report has provided a comprehensive analysis of the competitive landscape. Detailed profiles of all major market companies have also been provided. Some of the key players in the market include:
-Daicel Corporation
-Ishihara Sangyo Kaisha Ltd
-Japan Photocatalyst Center Co. Ltd.
-Kaltech Co. Ltd.
-Nanoptek Corporation
-Sakai Chemical Industry Co Ltd
-Showa Denko K. K.
-Souma Co. Ltd.
-Tayca Corporation
-The Chemours Company
-Toto Ltd.
-Tronox Limited

(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)
Photocatalyst Market Recent Developments:
-March 2024: Samsung Electronics developed a new model of its premium air purifier series featuring an innovative photocatalyst filter that eliminates the need for periodic filter replacements.
-February 2024: Alfa Chemistry introduced three types of photochemistry-related materials, i.e., photocatalysts, photosensitizers, and quantum dots, to its versatile product portfolios.
-February 2024: A professor from the Department of Chemistry at the University of Hong Kong (HKU) led a research project by creating a new heterogeneous copper photocatalyst that effectively forms cyclobutane rings.

Key Questions Answered in This Report:
-How has the global photocatalyst market performed so far, and how will it perform in the coming years?
-What has been the impact of COVID-19 on the global photocatalyst market growth?
-What are the key regional markets?
-What is the breakup of the market based on the type?
-What is the breakup of the market based on the form?
-What is the breakup of the market based on the application?
-What are the various stages in the value chain of the industry?
-What are the key driving factors and challenges in the industry?
-What is the structure of the global photocatalyst market, and who are the key players?
-What is the degree of competition in the industry?

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