Self-Healing Concrete Market Report by Form (Intrinsic, Capsule-Based, Vascular), Application (Residential, Industrial, Commercial), and Region 2023-2028

Market Report | 2023-11-02 | 141 pages | IMARC Group

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Report description:

The global self-healing concrete market size reached US$ 44.1 Billion in 2022. Looking forward, IMARC Group expects the market to reach US$ 197.4 Billion by 2028, exhibiting a growth rate (CAGR) of 28.4% during 2022-2028. The rising emphasis on sustainable construction practices, substantial investments in infrastructure development, surging awareness of cost-effectiveness, stringent environmental regulations, architectural appeal, urbanization trends, and ongoing research and development efforts are contributing to the industry growth.

Self-healing concrete is an innovative construction material designed to autonomously repair cracks and damage that may occur over time. It holds the potential to significantly extend the lifespan of concrete structures while minimizing maintenance costs and environmental impact. Self-healing concrete operates on a simple principle: the incorporation of microorganisms or capsules containing healing agents within the concrete matrix. When cracks form due to various factors such as shrinkage, temperature fluctuations, or mechanical stress, these microorganisms or capsules are activated. They then produce calcium carbonate, which fills the cracks, effectively healing the concrete. Self-healing concrete enhances the structural integrity of buildings and infrastructure, reducing the need for costly repairs and replacements. Moreover, it contributes to sustainability efforts by prolonging the lifespan of structures and reducing waste.

The industry is influenced by the growing emphasis on sustainable construction practices, which is driving the adoption of self-healing concrete as it can extend the lifespan of structures. This is further supported by the increasing investments in infrastructure development projects. Moreover, the rising awareness about the cost-effectiveness of self-healing concrete in terms of maintenance and repair expenses is attracting both construction companies and government agencies, which is augmenting the market growth. Additionally, stringent regulations on environmental sustainability are pushing the construction industry towards greener solutions, which is bolstering the market growth. Furthermore, the ability of self-healing concrete to reduce cracks and enhance structural integrity is appealing to engineers and architects, which is fueling the market growth.

Self-Healing Concrete Market Trends/Drivers:
Growing emphasis on sustainable construction practices

The industry is experiencing significant growth driven by a prominent emphasis on sustainable construction practices. In an era of heightened environmental awareness, self-healing concrete has emerged as a pioneering solution. This advanced building material contributes to sustainability by extending the lifespan of structures, thereby reducing the need for frequent repairs and replacements. Self-healing concrete possesses the remarkable ability to autonomously repair micro-cracks that develop over time, ensuring the structural integrity of buildings and infrastructure. This not only minimizes maintenance requirements but also conserves resources by reducing the demand for new construction materials. As eco-consciousness permeates the construction industry, self-healing concrete aligns perfectly with the imperative for greener and more efficient construction methods.

Increasing investments in infrastructure development

The market is propelled by substantial investments in infrastructure development projects worldwide. Especially in emerging economies, governments and private sector entities are channeling significant resources into building new infrastructure and renovating existing ones. This surge in construction activity necessitates the use of advanced building materials that can ensure the longevity and durability of structures. Self-healing concrete has the ability to autonomously repair cracks and imperfections over time, which enhances the lifespan of infrastructure and significantly reduces maintenance costs. Consequently, self-healing concrete has become a preferred choice in large-scale infrastructure projects, such as bridges, highways, and airports.

Rising awareness of cost-effectiveness

The adoption of self-healing concrete in the global construction industry is gaining momentum, driven by a growing awareness of its cost-effectiveness. One of the most compelling advantages of self-healing concrete is its ability to reduce long-term maintenance and repair expenses. Traditional concrete structures often require costly and time-consuming repairs to address cracks and deterioration, which can be particularly burdensome for property owners and infrastructure managers. In contrast, self-healing concrete can autonomously repair micro-cracks, minimizing the need for manual intervention and the associated expenses. This cost-saving feature has garnered attention from construction companies, project developers, and government agencies alike. They recognize that investments in self-healing concrete can yield substantial returns over the lifespan of a structure.

Self-Healing Concrete Industry Segmentation:
IMARC Group provides an analysis of the key trends in each segment of the global self-healing concrete market report, along with forecasts at the global, regional and country levels from 2023-2028. Our report has categorized the market based on form and application.

Breakup by Form:

Intrinsic
Capsule-Based
Vascular

Vascular dominates the market

The report has provided a detailed breakup and analysis of the market based on the form. This includes intrinsic, capsule-based, and vascular. According to the report, vascular represented the largest segment.

Vascular self-healing concrete, with its embedded vascular network containing healing agents, offers an innovative solution to repair microcracks and maintain structural integrity over time. This capability addresses a critical need in high-stress environments, making it a preferred choice for infrastructure projects. Moreover, the increasing investments in transportation and urban development projects worldwide are fueling the demand for long-lasting construction materials like vascular self-healing concrete. As cities expand and infrastructure ages, the cost-effective maintenance provided by this technology becomes increasingly appealing to governments and construction companies. In addition to this, vascular self-healing concrete aligns with sustainability goals by reducing the need for frequent repairs and replacements, which in turn conserves resources and reduces environmental impact.

Breakup by Application:

Residential
Industrial
Commercial

Industrial dominates the market

The report has provided a detailed breakup and analysis of the market based on the application. This includes food residential, industrial, and commercial. According to the report, industrial represented the largest segment.

The industrial segment in the self-healing concrete market is witnessing significant growth due to the escalating demand for durability and resilience in infrastructure. Self-healing concrete, with its ability to autonomously repair micro-cracks and maintain structural integrity, aligns perfectly with these requirements. It reduces maintenance costs and ensures uninterrupted operations, making it a preferred choice in industrial settings. Furthermore, the industrial sector is increasingly focused on sustainability and eco-friendly practices. Self-healing concrete contributes to this goal by extending the lifespan of structures, reducing the need for resource-intensive repairs or replacements. As environmental regulations tighten, industries seek materials that meet these standards, further boosting the adoption of self-healing concrete. Apart from this, the industrial sector often deals with heavy loads, harsh conditions, and extreme temperatures. Self-healing concrete's capacity to withstand these challenges makes it an attractive option. Its ability to heal and prevent cracks enhances the safety and longevity of industrial infrastructure.

Breakup by Region:

North America
United States
Canada
Asia-Pacific
China
Japan
India
South Korea
Australia
Indonesia
Others
Europe
Germany
France

United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

Europe exhibits a clear dominance, accounting for the largest self-healing concrete market share

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); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, Europe represented the largest segment.

Europe self-healing concrete market is witnessing substantial growth driven by the region?s strong commitment to sustainability in construction practices. This innovative material aligns perfectly with the region's stringent environmental regulations and the growing emphasis on reducing the carbon footprint of construction projects. In line with this, Europe's aging infrastructure requires cost-effective solutions to extend its lifespan and minimize maintenance costs. Self-healing concrete's ability to autonomously repair cracks and imperfections makes it an attractive choice for infrastructure renovation projects. Moreover, the region's architectural heritage and aesthetic sensibilities have led to increased interest in self-healing concrete. Its ability to maintain the visual integrity of structures while enhancing durability has garnered attention from architects and builders. Additionally, research and development (R&D) initiatives in Europe are continuously improving the effectiveness and affordability of self-healing concrete, making it more accessible and appealing to a broader range of construction projects. Furthermore, the region?s focus on urbanization and densely populated areas has increased the demand for resilient and low-maintenance infrastructure, further driving the adoption of self-healing concrete.

Competitive Landscape:
The competitive landscape in the market is characterized by intense rivalry and innovation among key players. As the demand for sustainable and long-lasting construction materials continues to rise, companies are striving to maintain a competitive edge. In this dynamic environment, market players are investing heavily in research and development to enhance the efficacy and cost-efficiency of self-healing concrete. They are continually exploring new formulations, manufacturing processes, and application techniques to meet evolving customer needs. Partnerships and collaborations are becoming increasingly common as companies seek to combine their expertise and resources to accelerate product development and expand their market reach. Furthermore, the competitive landscape is influenced by regulatory requirements related to environmental sustainability and building standards. Compliance with these regulations is a critical factor in gaining a competitive advantage.

The market research report has provided a comprehensive analysis of the competitive landscape. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

BASF SE
Basilisk
CEMEX S.A.B. de C.V.
GCP Applied Technologies Inc.

Hycrete Inc. (Broadview Technologies Inc.)
Kryton International Inc.
Oscrete (Christeyns UK Ltd.)
Penetron
RPM International Inc.
Sika AG
Xypex Chemical Corporation
(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)

Recent Developments:
In May 2022, Basilisk Self-Healing Concrete announced that it is expanding to Israel through a partnership with Eltra & Helion, a chemical distributor. The Israeli market has potential for using admixtures in concrete for watertightness, making it an important market for Basilisk.
In April 2023, Hycrete Inc. launched Hycrete Endure Cure, a water-based concrete curing agent that improves the durability of concrete by reducing absorption and providing enhanced protection against corrosion.
In October 2021, Kryton International completed the construction of a new manufacturing facility in Calgary, Alberta, to meet the increasing demand for its concrete products that support sustainable construction. The facility, operated by Cementec Industries, a subsidiary of Kryton, is equipped with advanced technology to ensure energy efficiency and a lower carbon footprint.

Key Questions Answered in This Report:
How has the global self-healing concrete market performed so far, and how will it perform in the coming years?
What are the drivers, restraints, and opportunities in the global self-healing concrete market?
What is the impact of each driver, restraint, and opportunity on the global self-healing concrete market?
What are the key regional markets?
Which countries represent the most attractive self-healing concrete market?
What is the breakup of the market based on the form?
Which is the most attractive form in the self-healing concrete market?
What is the breakup of the market based on the application?
Which is the most attractive application in the self-healing concrete market?
What is the competitive structure of the global self-healing concrete market?
Who are the key players/companies in the global self-healing concrete market?

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