

Nanosilica Market- Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028F, Segmented By Type (P-Type (Porous), S-Type (Spherical), Others), By Application (Rubber, Coatings, Plastics, Battery, Others), By Region and Competition

<https://marketpublishers.com/r/N433DDC0ED1FEN.html>

Date: July 2023

Pages: 117

Price: US\$ 4,900.00 (Single User License)

ID: N433DDC0ED1FEN

Abstracts

Global Nanosilica market is anticipated to grow significantly through 2028 due to the growing demand from the rubber industry. In 2021, Thailand produced 4.83 million metric tons of natural rubber.

Global nano silica market is expected to expand during the projected period due to increasing demand from the rubber industry as it increases the mechanical strength of vulcanized rubber by acting as a reinforcing agent. Nanosilica has large surface energy, strong surface adsorption due to its fine particle, high chemical purity, and good dispersion. Moreover, due to increasing demand from the construction industry due to increased interest of consumers for houses and flats, the demand for nano silica increases as nano silica act as a strengthening agent in concrete, which improves its mechanical properties such as durability, compressive strength, and flexural strength. Along with this, Nanosilica is also used in the superhydrophobic coating, which helps to create a high-water contact and low sliding angle.

For instance, in 2019, the federal government in the U.S. spent USD 29 billion on infrastructure and transferred an additional USD 67 billion in infrastructure spending to states.

Furthermore, nano silica has wide applications in various industries, including

healthcare & medicine, rubber, plastic, food, cosmetics, electronics, agriculture, batteries, gypsum, and others. Nanosilica coatings are used in the aerospace industry to reduce aerodynamic drag and prevent safety hazards. Therefore, the increasing demand for nanosilica for various applications led to the growth of the market in the projected period.

Growing Demand from the Rubber Industry

Nanosilica is worked as a reinforcing agent, which is used to strengthen vulcanized rubber's mechanical properties. Nanosilica may also be used to boost the tensile strength of natural rubber from 0.33 MPa to 15 MPa. Nanosilica is increasingly used as an additive in different types of rubber, such as silicone rubber, styrene-butadiene rubber (SBR), natural rubber, nitrile rubber (NBR), ethylene acrylic rubber (AEM) and ethylene propylene diene monomer (EPDM). Nanosilica also enhances other mechanical properties of the rubber, such as anti-friction, toughness, anti-aging, and durability.

For instance, in May 2022, Z.C. Rubber launched Westlake and Goodride ultra-high-performance passenger car tires for the European market, which use Nanosilica to improve their grip.

Additionally, Nanosilica is used as a reinforcing agent in concrete, which improves its mechanical properties such as flexural strength, compressive strength, and durability. It makes concrete more workable and less permeable. Along with this, nano silica also provides longer service life and reduced maintenance costs. In addition, nano silica-based materials are also more environmentally friendly, as they require less energy and resources to produce. Nanosilica also reduces water absorption and chloride penetration in cement concrete, which makes concrete a high-potential, high-performance, and quick restoration material. The rising demand for high-performance concrete in the construction industry increases the demand for nano silica.

For instance, Astrra Chemicals produce nano silica which is widely used in cement and concrete to improve performance because of its pozzolanic reactivity besides the pore-filling effect.

Therefore, increasing demand for nano silica from the construction and rubber industry will lead to the growth of the nanosilica market globally in the upcoming years.

Increasing Demand for Battery by Electric Vehicles

In the current battery technology, the liquids and solids interact, causing a low-level discharge. This decreases the shelf life of a battery. To overcome this problem, Nanomaterials can be used as a coating to separate the electrodes from any liquids in the battery when the battery is not in use which further helps to increase the life of the battery. Nanosilica is used in batteries as it is promising for high-capacity anodes in lithium batteries. With the increase in demand for electric vehicles, the demand for lithium-ion batteries also increases.

For instance, according to the Global E.V. Outlook 2022, consumers spent USD 250 billion on electric vehicle purchases in 2021, which is a 65% increase over 2020. Furthermore, global sales of electric cars have kept rising strongly in 2022, with 2 million sold in the first quarter, up 75% from the same period in 2021.

Therefore, a shift towards electric vehicles in developed and developing countries would increase the growth of vehicles, resulting in an increased demand for nano silica.

Additionally, Nanosilica is used as a filler in electronic materials such as encapsulants, adhesives, and coatings. It enhances the electrical, thermal, and mechanical properties of these materials, making them more efficient and durable. Moreover, nano silica is used as a tool to investigate many approaches of medical science in many ways, such as drug delivery agents, which help to improve the bioavailability and efficacy of drugs, implants & coatings, where it enhances their biocompatibility and reduces the risk of infection.

For instance, according to a study by Washington University (G.W.) Cancer Center, the nanoparticle-encapsulated doxorubicin is promising in the treatment of triple-negative carcinoma.

Thus, the utilization of nano-silica in the battery and healthcare sectors propels the growth of the Global nano silica market in the projected years.

P-Type Will Continue to Be a Key Type

P-type nano-silica is widely utilized to provide premium filler materials for various kinds of resins. Alongside being an improvement filler for concrete and a variety of composites used in the construction sector, it is also utilized as a replacement for plastics and rubber. The construction industry's growing need for P-type nano-silica and the increase in both residential and commercial buildings also collectively help in

reducing the thermal cracking produced by the heat of cement hydration, increased durability towards the attack of acid waters & sulphates, and the expansion of biomedical applications including bioimaging, drug delivery, and adjuvant treatments.

For instance, CD Bioparticles produce Nanosilica particles for various applications such as nucleic acid detection and purification, drug and gene delivery, and imaging contrast agents' construction.

Additionally, the S-type has a dispersivity property, due to which it can be used as high content filler material for several resin applications. S-type Nano silica is less costly than p-type Nano silica. Due to wide applications in various sector, including coatings, electronics, and varnishes, which help to reduce viscosity, increases fluidity and flash. Thus, all these factors make it useful for filler for liquid-type sealants, external additive materials, and sintering materials. All these factors drive Global Nanosilica market demand during the forecast period.

However, exposure to silica dust could lead to respiratory problems and lung problems, and continuous exposure to silica could lead to irritation or damage to the eyes as well as other health effects, including fever, chills, flu-like illness, cough, headache, and chest tightness. Strict government rules regarding the use of nano-silica in various consumer products such as cosmetics and personal care, food & beverages due to their harmful impact on health further is expected to restrain the growth of global nanosilica market. Moreover, the availability of substitutes for nano-silica, such as nano titanium dioxide, nano titanium oxide, and nano aluminum dioxide, provide better or equivalent results when used with concrete. These nanomaterials act as concrete fillers and help in reducing hydration rate and settling time. As titanium oxide is a naturally obtained oxide of titanium, it has a wider range of applications in coatings, cosmetics, and pharmaceutical industries. Titanium oxide has good U.V. resistance, which widens its application in cosmetic and pharmaceutical products. It is used in sunscreens to block UVA and UVB rays. The approval of nano titanium dioxide by the FDA for use in food, drugs, and cosmetics has gained manufacturers' interest resulting in restraining the growth of the market.

Recent Developments

In June 2022, the National Sugar Institute (NSI) of India discovered the first time Nano Silica from BioSource.

Using the PUREVAP Nano Silicon Reactor (NSIR) method, PyroGenesis

Canada Inc., a leading producer of innovative plasma processes and sustainable solutions, reported the successful manufacturing of its new and more sophisticated nano silicon materials in August 2021.

New Nautical Coatings, the company that owns the Sea Hawk yacht coatings brand, was acquired by AkzoNobel in December 2020.

In April 2020, Shenzhen Sanshun Nano New Materials Co., Ltd. (SUSN) was acquired by Cabot Corporation for about USD 115 million.

Market Segmentation

Global Nanosilica Market is segmented based on type, application, and region. Based on type, the market is fabricated into P-Type (Porous), S-Type (Spherical), and Others. Based on application, the market is categorized into rubber, coatings, plastics, battery, and others. Based on region, the market is divided into North America, Europe, Asia Pacific, South America, Middle East & Africa, and By Company.

Company Profiles

Evonik Industries AG, NanoPore Incorporated, nanocomposite, Bee Chems, Cabot Corporation, AkzoNobel N.V., Wacker Chemie AG, Nanostructured & Amorphous Materials, Inc., Fuso Chemical Co., Ltd., U.S. Research Nanomaterials, Inc. are some of the key players of Global Nanosilica Market.

Report Scope:

In this report, Global nanosilica market has been segmented into the following categories, in addition to the industry trends, which have also been detailed below:

Nanosilica Market, By Type:

P-Type (Porous)

S-Type (Spherical)

Others

Nanosilica Market, By Application:

Rubber

Coatings

Plastics

Battery

Others

Nanosilica Market, By Region:

North America

United States

Mexico

Canada

Europe

France

Germany

United Kingdom

Spain

Italy

Asia-Pacific

China

India

South Korea

Japan

Vietnam

Indonesia

South America

Brazil

Argentina

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive landscape

Company Profiles: Detailed analysis of the major companies in global Nanosilica market.

Available Customizations:

With the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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