

## Silica Sand Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Grade (A, B, C, D, E, F, Others), By Application (Glass Manufacturing, Foundry, Hydraulic Fracturing, Chemical Production, Construction, Paints & Coatings, Ceramics & Refractories, Others), By Region and Competition

Market Report (3 business days) | 2023-10-03 | 180 pages | TechSci Research

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#### **Report description:**

Global Silica Sand Market has valued at USD22.68 billion in 2022 and is anticipated to project robust growth in the forecast period with a CAGR of 5.24% through 2028. Silica sand, also known as quartz or industrial sand, is composed mostly of two elements, silica, and Oxygen. This sand is utilized in a wide range of applications, including road paving, glass manufacturing, foundries, and coal-fired boilers, oil and water filtering, industrial casting, and sandblasting.

Moreover, the increasing use of silica in glass manufacturing is owing to its high chemical purity and strong thermal and radiation resistance, which significantly enhances the applicability of the glass. Silica sand provides high transparency across the ultraviolet to infrared spectral range, making it suitable for various applications such as crockery and windows. Its effectiveness as a filter medium makes it highly sought after for filtration purposes in portable water Filters, pool filters, and sewage treatment plants. Its unique property to retain impurity-containing precipitates and dirt particles while ensuring adequate filtering makes it an ideal choice.

Furthermore, silica sand finds extensive usage in foundries and coal-fired boilers due to its physical and chemical properties. With a higher melting temperature compared to iron, copper, Aluminum, and other common metals, it simplifies the preparation of castings. Its excellent resistance to heat and chemical reactions, combined with its strength and high quartz concentration, makes it an essential component in the hydraulic fracturing process. The unique properties of silica sand, including its strength and homogenous shape and size, make it an excellent filter bed, yielding desired results and making it the preferred choice. Despite the presence of commonly occurring impurities, the absence of these impurities in silica sand makes it less chemically reactive, light in color, pure, and endowed with a vitreous luster. These qualities make it highly preferred over other types of sand. Additionally, silica sand is a nonconductor of electricity, diamagnetic, and possesses remarkable hardness and strength, further

expanding its applications in construction and manufacturing activities, thereby driving market revenue growth. Key Market Drivers

Growing Demand of Silica Sand in Construction Industry

The global silica sand market is experiencing significant growth, driven by the increasing demand within the construction industry. This demand is primarily fueled by the ongoing urbanization and infrastructure development projects taking place worldwide, particularly in emerging economies. As cities expand and new infrastructure initiatives are launched, the need for construction materials like silica sand continues to rise, leading to a surge in its usage in various construction applications.

Silica sand, also known as industrial sand, holds a pivotal role in the construction sector as one of the most commonly used materials. It serves as a crucial ingredient in the production of concrete and glass, which are essential components of modern construction projects. Additionally, silica sand finds utility in the manufacturing of fillers and extenders, soil and turf infill, and certain types of specialty glass.

The demand for silica sand is particularly high in fast-growing economies such as China and India. These countries are witnessing rapid urbanization and significant infrastructure development, driving the need for abundant construction materials. Moreover, technological advancements in the construction sector, like the rising trend of using silica sand in 3D printing processes, contribute to the increasing demand. Through additive manufacturing, silica sand acts as a primary raw material for creating molds and cores for casting metal parts, further fueling its usage.

Furthermore, silica sand plays a role in promoting sustainable construction practices. An example of this is its use in the manufacture of eco-friendly bricks, known as "sand-lime" or "calcium silicate" bricks. By combining silica sand with lime, these bricks offer a sustainable and cost-effective alternative to traditional clay bricks, aligning with the growing emphasis on environmentally friendly construction materials.

As the construction industry continues to evolve and witness advancements, the demand for silica sand is expected to persist and even grow further. The versatile applications, along with its contribution to sustainable construction practices, make silica sand an indispensable resource in the ever-expanding realm of construction materials.

Growing Demand of Silica Sand in Oil and Gas Industry

Silica sand, commonly known as 'frac sand' in the oil and gas industry, plays a crucial and indispensable role in the extraction of oil and natural gas reserves. Particularly in hydraulic fracturing, a technique employed to access previously inaccessible oil and gas reservoirs, a high-pressure fluid containing water and sand is injected into underground rock formations. The immense pressure generated creates fractures within the rocks, and the sand particles serve as proppants, holding these fractures open to enable the free flow of oil or gas.

The escalating global energy consumption stands as a primary catalyst driving the surging demand for silica sand. As populations continue to grow and economies develop, the need for energy sources such as oil and gas becomes increasingly paramount. Consequently, this surge in energy demand further fuels the essential requirement for silica sand, which remains a fundamental component in the extraction process of these invaluable resources.

Technological advancements are also significantly contributing to the escalating demand for silica sand. The advent of new drilling technologies has revolutionized the extraction of oil and gas from previously untapped or economically unviable locations. These innovative techniques, often reliant on hydraulic fracturing, intensify the demand for silica sand as a vital proppant.

While it is imperative to address the environmental concerns associated with hydraulic fracturing, commendable efforts are already underway to render the process more sustainable. For instance, various companies are actively developing and implementing methods to recycle and reuse the water and sand utilized in fracking operations, thereby reducing the overall environmental impact. These ongoing endeavors to enhance the sustainability of oil and gas extraction hold the potential to ensure the long-term demand for silica sand.

With its unrivaled significance in the oil and gas industry, silica sand continues to be an indispensable resource, synergistically meeting the rising global energy needs while concurrently promoting sustainable extraction practices.

Key Market Challenges

Environmental Concerns and Regulations

Silica sand mining, a prevalent industry, has significant environmental impacts that cannot be overlooked. This extractive activity can lead to the degradation of land, resulting in the loss of vital ecosystems and the displacement of diverse wildlife. Moreover,

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the release of mining by-products can contaminate groundwater, posing a threat to both human and ecological health. Furthermore, the process of silica sand mining contributes to air pollution, as minute particles of silica dust become airborne. These airborne particles can have detrimental effects on human respiratory systems and can also settle on nearby vegetation, impairing plant growth and agricultural productivity.

In response to the environmental concerns associated with silica sand mining, governments across the globe are taking necessary steps to implement stricter regulations. These regulations mandate mining companies to conduct comprehensive environmental impact assessments and develop robust environmental management plans. Additionally, companies are required to implement measures to mitigate the negative impacts of their operations, further ensuring the protection of the environment and local communities.

While these regulations are crucial for safeguarding the environment, they also pose challenges to the growth and expansion of the silica sand market. Compliance with these regulations increases operational costs for mining companies, making it more difficult to sustain profitability and hinder the market's potential growth.

Moreover, there is mounting pressure on companies in the silica sand market to embrace sustainable practices. This includes adopting eco-friendly mining techniques that minimize habitat disruption and reduce the consumption of water and energy resources. Additionally, companies are encouraged to implement measures to restore mined areas, promoting ecological balance and biodiversity conservation.

While the adoption of sustainable practices can help mitigate the environmental impact of silica sand mining, it necessitates significant investment. This financial commitment further adds to operational costs, posing challenges for companies already navigating a competitive market landscape.

#### Key Market Trends

#### Rising Demand in the Glass Industry

Silica sand, known for its high silica content and minimal impurities, plays a crucial role as a raw material in glass manufacturing. Its abundant silicon dioxide content determines the color, clarity, and strength of the final glass product, making it an indispensable component in the industry.

The global glass industry is experiencing rapid expansion, primarily driven by the thriving construction, automotive, and electronics sectors that heavily rely on glass applications. Moreover, the growing production of consumer goods, including food and beverage packaging, household appliances, and personal care products, further fuels the demand for glass and subsequently amplifies the need for silica sand.

The continuous innovations in glass manufacturing, such as the development of energy-efficient, self-cleaning, and smart glass, are expected to significantly contribute to the escalating demand for silica sand. Additionally, sustainability trends within the glass industry, encompassing recycling and lightweighting, necessitate the utilization of high-quality silica sand to ensure the production of lightweight, high-strength, and recyclable glass products.

While the initial impact of the COVID-19 pandemic resulted in a decline in demand due to reduced consumer spending and travel restrictions, the market is now witnessing a rebound as economies recover and businesses gradually reopen. Notably, the increased installation of glass barriers in public spaces as a safety measure during the pandemic has further stimulated the resurgence of the glass industry and, consequently, the silica sand market.

#### Segmental Insights

#### Grade Insights

Based on the category of grade A, the epoxy segment emerged as the dominant player in the global market for Silica Sand in 2022. Grade A silica sand, with its purity ranging from 99.5% to 99.9%, stands as a testament to its exceptional quality. This superior grade of silica sand has become the preferred choice for various industries, thanks to its unrivaled purity and performance. Take, for example, the glass industry, which held the largest market share in 2021; it heavily relies on the use of high-quality silica sand to produce clear, strong, and durable glass products that meet the highest standards. Beyond the glass industry, high-grade silica sand plays a critical role in technological advancements that shape today's digital

age. It finds extensive use in the manufacturing of fiber optics and electronics, both of which are integral to the seamless functioning of modern communication systems. Moreover, the production of solar panels, a sector experiencing substantial growth due to the global shift towards renewable energy, heavily relies on high-purity silica sand. The exceptional properties of this silica

sand contribute to the efficiency and performance of solar panels, making them a reliable and sustainable source of clean energy for the future.

#### **Application Insights**

The Glass Manufacturing segment is projected to experience rapid growth during the forecast period. According to the National Institute Sand Association (NISA), the production of glass involves the utilization of a diverse range of commodities. Silica, in particular, accounts for over 70% of the final weight of the glass. Within the glass industry, various segments exist, including flat glass, fiberglass insulation, specialty glass, container glass, and more. Flat glass finds widespread application in automotive and construction sectors, while container glass is commonly used in the food and beverage industry, as well as tableware applications. The market for glass is expected to experience significant growth during the forecast period. This growth can be attributed to the increasing investments and expansions in response to the growing demand from these sectors. The continuous advancements in technology and the rising focus on sustainability are also driving the market's growth, as glass is considered an eco-friendlier alternative in many applications.

#### **Regional Insights**

Asia Pacific emerged as the dominant player in the Global Silica Sand Market in 2022, holding the largest market share in terms of value. Silica sand, a key component in various chemicals such as sodium silicate, silicon tetrachloride, and silicon gels, plays a crucial role in the production of a wide range of materials. From household to industrial cleaners, fiber optics, and the removal of impurities from cooking oil and brewed beverages, these chemicals are indispensable.

Furthermore, the market growth rate is set to escalate due to the growing investments and expansions in the fiber optic manufacturing sector, driven by the rising demand from 5G rollout. In December 2020, Sterlite Technologies announced its plans to invest \$40.3 million in India to expand the fiber optic manufacturing facility, aiming to meet the increasing demand. Moreover, the Asian Infrastructure Investment Bank (AIIB) announced in November 2019 its investment of up to \$2.5 billion in urban transport projects, including Metro commuter-rail networks and radial roads, contributing to New Delhi's Smart City initiative. This significant investment is expected to drive the growth of the silica sand market.

In addition, industrial sand plays a vital role in deep well applications, where it is pumped down holes to prop open rock fissures, increasing the flow rate of natural gas or oil. With the Indian oil and natural gas sector projected to witness an investment of US\$ 206 billion in the next eight to ten years, the opportunities for the silica sand market are promising. In December 2020, The Indian Oil Corporation (IOCL) announced plans to invest US\$ 228.81 million in new projects in Andhra Pradesh, including petro products infrastructure and LPG storage facilities, further complementing the growth of the silica sand market.

**Key Market Players Badger Mining Corporation** Chongging Changjiang River Moulding Material (Group) Co. Ltd. Covia Holdings LLC Euroquarz GmbH (Possehl Group) JFE Mineral & Alloy Company Ltd. (JFE Holdings Inc.) Manley Bros. of Indiana Inc. Mitsubishi Corporation Quarzwerke GmbH **Tochu Corporation** SCR-Sibelco NV Report Scope: In this report, the Global Silica Sand Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below: ? Silica Sand Market, By Grade: o∏A o∏B o∏C

o∏D o∏E o∏F o[]Others ? Silica Sand Market, By Application: o
Glass Manufacturing o
||Foundry o[Hydraulic Fracturing o
Chemical Production o⊓Construction o[Paints & Coatings oOCeramics & Refractories o∏Others ?[Silica Sand Market, By Region: o[]North America ?[United States ?[]Canada ?[Mexico o ?[France ?[United Kingdom ?[]Italy ?[Germany ?[]Spain o[]Asia-Pacific ?[China ?∏India ?[]apan ?[Australia ?
South Korea o∏South America ?[]Brazil ?

Argentina ?∏Colombia o[Middle East & Africa ?

South Africa ?

Saudi Arabia ?[]UAE ?[Kuwait ?[]Turkey ?[Egypt Competitive Landscape Company Profiles: Detailed analysis of the major companies present in the Global Silica Sand Market. Available Customizations: Global Silica Sand Market report with the given market data, Tech Sci 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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