Advanced Ceramics and Nanoceramic Powders

Market Research Report | 2025-03-28 | 181 pages | BCC Research

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Report description:

Description

Report Scope
This report analyzes the global market for advanced ceramics and nanoceramic powders by segmenting it based on product type, end use and region at the global and regional levels. The base year for this analysis is 2023, and market estimates and forecasts are provided from 2024 through 2029. The market estimates are provided in terms of revenue ($ million).
By product type, the advanced ceramics market is segmented into:
- Alumina (Al?O?).
- Zirconia (ZrO?).
- Silicon carbide (SiC).
- Silicon nitride (Si?N?).
- Others.
By end use, the advanced ceramics market is segmented into:
- Electronics and semiconductor.
- Energy and power.
- Automotive.
- Medical.
- Aerospace and defense.
- Industrial.
- Others.
By region, the advanced ceramics market is segmented into:
- North America.
- Europe.
- Asia-Pacific.

- South America.
- Middle East and Africa.

By product type, the nanoceramic powders market is segmented into:

- Oxide.
- Carbide.
- Nitride.
- Boron.
- Others.

By end use, the nanoceramic powders market is segmented into:

- Electronics and semiconductors.
- Energy and power.
- Automotive.
- Medical.
- Aerospace and defense.
- Industrial.
- Others.

Based on region, the nanoceramic powders market is segmented into:

- North America.
- Europe.
- Asia-Pacific.
- South America.
- Middle East and Africa.

Report Includes

- 93 data tables and 38 additional tables
- A review of the global market for advanced ceramics and nanoceramic powders
- Analyses of the global market trends, with sales data for 2023, estimates for 2024, forecasts for 2028, and projections of compound annual growth rates (CAGRs) through 2029
- Evaluation and forecast of the size of the market for advanced ceramics and nanoceramic powders, and a corresponding market share analysis by product type, end use industry and region
- Analysis of emerging technologies, opportunities and gaps in current and future demand for advanced ceramics and nanoceramic powders
- Discussion of the properties, advantages and disadvantages of ceramic and nanosized ceramic powders
- Coverage of the technological and business issues related to the commercial production and use of advanced ceramic and nanoceramic powders
- Identification of the companies best positioned to meet demand for these products
- Discussion of the industry value chain, demand-supply gap, and factors driving the growth of market
- A patent analysis with emphasis on emerging technologies and new developments in the market
- A discussion of the industry's ESG challenges and practices
- Market share analysis of the key companies and their proprietary technologies, strategic alliances, and other market strategies
- Profiles of the leading companies, including 3M, CeramTec GmbH, CoorsTek Inc., CUMI, Kyocera Corp., and Ferrotec (USA) Corp.

Executive Summary

Summary:

The global market for advanced ceramics and nanoceramic powders totaled $22.2 billion in 2023. It is expected to grow from $23.9 billion in 2024 to reach $35.1 billion by the end of 2029, at a compound annual growth rate (CAGR) of 8.0% from 2024

through 2029.

Advanced ceramics are renowned for their outstanding mechanical strength, corrosion resistance and durability. This makes them indispensable in many industrial processes and diverse end-use sectors. Furthermore, their role in energy-related industries, such as renewable energy, nuclear power and energy storage, is increasingly significant. In renewable energy, for instance, advanced ceramics are used in critical components like turbine blades and fuel cells, improving energy efficiency and sustainability. As global energy systems shift toward cleaner and more efficient sources, the demand for ceramics in these applications is expected to grow, driving market expansion.

Nanoceramic powders serve as essential precursors for creating nanostructured ceramics and coatings, which exhibit superior properties due to their nanoscale dimensions. With characteristics like dielectricity, ferromagnetism, piezoelectricity, magnetoresistance and superconductivity, nanoceramic powders are perfectly suited for applications in power transmission devices, industrial capacitors, highenergy storage systems and more.

The electronics industry benefits significantly from nanoceramic powders. They are instrumental in manufacturing high-speed computing chips used in devices like smartphones, laptops, gaming consoles and other portable electronics. Nanoceramic alumina, a popular choice in this sector, offers exceptional voltage resistance and can be custom shaped to fit various device sizes.

Recent innovations have further expanded the potential of nanoceramic powders. For instance, sol-gelderived nanopowders enable the production of highly uniform and pure materials for advanced batteries and fuel cells. Additionally, nanostructured thermal barrier coatings (TBCs) made from yttriastabilized zirconia (YSZ) nanoparticles significantly enhance the efficiency and lifespan of gas turbines.

Table of Contents:

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