

## **Advanced Ceramics and Nanoceramic Powders**

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

### **AVAILABLE LICENSES:**

- Single User License \$4650.00
- 2-5 Users License \$5580.00
- Site License \$6696.00
- Enterprise License \$8035.00

### **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<sub>2</sub>O<sub>3</sub>).
- Zirconia (ZrO<sub>2</sub>).
- Silicon carbide (SiC).
- Silicon nitride (Si<sub>3</sub>N<sub>4</sub>).
- 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.

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 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

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

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 yttriumstabilized zirconia (YSZ) nanoparticles significantly enhance the efficiency and lifespan of gas turbines.

## **Table of Contents:**

Table of Contents

Chapter 1 Executive Summary

Market Outlook

Scope of Report

Market Summary

Chapter 2 Market Overview

Definition of Ceramics

Traditional vs. Advanced Ceramics

Examples and Applications of Advanced Ceramics

Nanoceramics

Properties of Nanoceramics

Applications of Nanoceramics

Supply Chain Analysis

Feedstock

Advanced Ceramics and Nanoceramic Powders

Distribution and Logistics

Consumers

Porter's Five Forces Analysis

Bargaining Power of Suppliers: High

Bargaining Power of Buyers: Moderate

Competition in the Industry: High

Threat of Substitutes: Moderate

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

Potential for Market Entry: Low

Chapter 3 Market Dynamics

Market Dynamics Snapshot

Market Drivers

Increasing Demand for High-Performance Coatings

Adoption of Advanced Ceramics in Emerging End-Use Industries

Biomedical and Healthcare Applications of Nanoceramics

Market Opportunities

Nanoceramic Powders in Water Filtration and Environmental Sustainability

Next-Generation Smart Ceramics and Self-Healing Materials

Market Challenges and Restraints

High Cost Involved in Production and Maintenance of Ceramic Coatings

Alternative Materials in the Advanced Ceramics Market

Chapter 4 Regulatory Landscape

Regulatory Analysis

Chapter 5 Emerging Technologies

Emerging Technologies Innovations in Advanced Ceramics and Nanoceramic Powders

Additive Manufacturing

Nanostructured and High-Entropy Ceramics

Self-Healing Ceramics and Smart Ceramics

Next-Generation Solid-State Batteries and Energy Storage

Advanced Ceramic Coatings and Thermal Barrier Coatings

Biomedical Nanoceramics and Bioprinting

Ceramic Membranes and Environmental Applications

Transparent Ceramics for Optical and Defense Applications

Trends Driving Innovation

AI and ML in Ceramic Processing for Optimizing Material Properties

Green Manufacturing Techniques

Hybrid Ceramics with Nanocomposites and Functionalized Coatings

Advances in Ceramics-Based Electronics

Chapter 6 Market Segmentation Analysis

Advanced Ceramics Segmentation Breakdown

Advanced Ceramics Market, by Product Type

Alumina

Zirconia

Silicon Carbide

Silicon Nitride

Others

Advanced Ceramics Market, by End Use

Electronics and Semiconductors

Energy and Power

Automotive

Medical

Aerospace and Defense

Industrial

Other End Uses

Advanced Ceramics Geographic Breakdown

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

Advanced Ceramics Market, by Region

North America

Europe

Asia-Pacific

South America

Middle East and Africa

Nanoceramic Powders Segmentation Breakdown

Nanoceramic Powders Market, by Product Type

Oxide

Carbide

Nitride

Boron

Others

Nanoceramic Powders Market, by End Use

Electronics and Semiconductors

Energy and Power

Automotive

Medical

Aerospace and Defense

Industrial

Other Applications

Nanoceramic Powders Geographic Breakdown

Nanoceramic Powders Market, by Region

North America

Europe

Asia-Pacific

South America

Middle East and Africa

Chapter 7 Competitive Landscape

Market Competitiveness

Company Positioning

Company Positioning Analysis

Strategic Initiatives

Chapter 8 Sustainability in the Advanced Ceramics and Nanoceramic Powders Industry: An ESG Perspective

Importance of ESG

ESG Practices

Emerging Sustainability Trends

Concluding Remarks from BCC Research

Chapter 9 Appendix

Methodology

Information Sources

References

Abbreviations

Company Profiles

3M

ABM ADVANCE BALL MILL INC.

ADVANCED CERAMIC MATERIALS

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

CERAMTEC GMBH  
CERION LLC.  
COORSTEK INC.  
CUMI  
DENKA CO. LTD.  
ELAN TECHNOLOGY  
FERROTEC (USA) CORP.  
GENERAL ATOMICS  
GENERAL ELECTRIC CO.  
INNOVACERA  
KYOCERA CORP.  
SAINT-GOBAIN

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

**Advanced Ceramics and Nanoceramic Powders**

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

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scotts-international.com

**ORDER FORM:**

Select license	License	Price
	Single User License	\$4650.00
	2-5 Users License	\$5580.00
	Site License	\$6696.00
	Enterprise License	\$8035.00
		VAT
		Total

\*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

\*\* VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	<input type="text"/>	Phone*	<input type="text"/>
First Name*	<input type="text"/>	Last Name*	<input type="text"/>
Job title*	<input type="text"/>		
Company Name*	<input type="text"/>	EU Vat / Tax ID / NIP number*	<input type="text"/>
Address*	<input type="text"/>	City*	<input type="text"/>
Zip Code*	<input type="text"/>	Country*	<input type="text"/>
		Date	<input type="text" value="2026-03-04"/>
		Signature	

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

