

## **Lead-Free Piezoelectric Ceramics: Technologies and Global Opportunities**

Market Research Report | 2025-07-28 | 122 pages | BCC Research

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### **Report description:**

Description

Report Scope

This report provides a qualitative as well as quantitative assessment of the global market for lead-free piezoelectric ceramics. It uses 2024 as the base year and provides revenue forecasts from 2025 to 2030 (USD thousands). The report analyzes the market in the following segments:

- By material.
  - Potassium sodium niobate (KNN).
  - Bismuth sodium titanate (BNT).
  - Barium Titanate (BT).
  - Others.
- By configuration.
  - Monolith.
  - Multilayer.
  - Thin films.
- By end user.
  - Consumer electronics and optoelectronics.
  - Transportation.
  - Industrial equipment.
  - Medical.
  - Others.
- By Region.
  - Asia-Pacific: China, Japan, South Korea and Rest of APAC.
  - Europe: Germany, France, Italy and Rest of Europe.

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- North America: U.S., Canada and Mexico.
- Rest of the World: South America, and the Middle East and Africa.

#### Report Includes

- 51 data tables and 44 additional tables
- An analysis of the global market for lead-free piezoelectric ceramics (LFPECs), including materials, applications and fabrication processes
- Analyses of the global market trends, with revenue data from 2024, estimates for 2025, forecast for 2029 and projected CAGRs through 2030
- Estimates of the market's size and revenue prospects, accompanied by a market share analysis based on material type, configuration, end-user industry and region
- Facts and figures pertaining to market dynamics, technological advancements, regulations, industry structure and the impacts of macroeconomic variables
- Review of the current market status for Pb-free piezoelectric ceramic products, key technology issues, competitive scenario and R&D activities
- Insights derived from Porter's Five Forces model and global value chain analysis
- An analysis of U.S. patents across each major category, and emerging trends and developments in patent activity
- Overview of sustainability trends and ESG developments, with emphasis on consumer attitudes, and the ESG scores and practices of leading companies
- Analysis of the industry structure, including companies' market shares and rankings, strategic alliances, M&A activity and a venture funding outlook
- Profiles of the leading companies, including CTS Corp., PI Ceramic GmbH, Niterra Co. Ltd., Kyocera Corp., and Sumitomo Chemical Co. Ltd.

#### Executive Summary

##### Summary:

The global market for lead-free piezoelectric ceramics is projected to grow from \$307.3 million in 2025 to reach \$549.8 million by the end of 2030, at a compound annual growth rate (CAGR) of 12.3% from 2025 through 2030.

#### Market Dynamics and Drivers

The global market for lead-free piezoelectric ceramics is growing because conventional lead-based piezoelectric ceramics are increasingly being scrutinized for their environmental impact. The toxic impacts of lead on human health and the environment are driving the shift toward eco-friendly alternative material choices. Lead-free piezoelectric ceramics are increasingly being used in sensors, actuators, and transducers. In addition, regulations pertaining to the composition of lead are also a factor in the market's growth. The need to develop advanced lead-free variants will increase as the regulations become more stringent.

#### Trends and Future Developments

Lead-free piezoelectric ceramics are receiving increased focus from researchers as concerns about the ecological effects of lead-based materials mount. These substitutes not only have a reduced impact on the environment but also exhibit competitive performance. High-performance lead-free piezoelectric ceramics have also remained the focus in recent years due to increased demand for eco-friendly energy harvesting techniques.

R&D has focused on materials such as bismuth-layered structure, barium titanate, tungsten-bronze structure, bismuth sodium titanate and niobate-based lead-free piezoelectric ceramics. Of these, the latter have emerged as the most promising material

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category.

Researchers are also focusing on the development of new piezoelectric materials with superior electromechanical properties to replace lead-containing oxides. They are conducting studies to improve the production process and broaden the application areas of lead-free piezoelectric ceramics.

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Company Profiles

CERAMTEC GMBH

CTS CORP.

FUJI CERAMICS CORP.

HONDA ELECTRONICS CO. LTD.

IONIX AT

KEMET CORP.

KYOCERA CORP.

NITERRA CO. LTD.

NINGBO FBELE ELECTRONICS CO. LTD.

PI CERAMIC GMBH

PZT ELECTRONIC CERAMIC CO. LTD.

SEIKO EPSON CORP.

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