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Piezoelectric Composites Material Market By Material Type (Ceramic, Polymer, Others) , By Application (Actuators, Sensors, Transducers, Others) : Global Opportunity Analysis and Industry Forecast, 2024-2033

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Abstracts

Piezoelectric Composites Material Market

The piezoelectric composites material market was valued at $1.5 billion in 2023 and is projected to reach $2.4 billion by 2033, growing at a CAGR of 4.7% from 2024 to 2033.

Piezoelectric composites are materials that generate electrical charge when subjected to mechanical stress and are formed by combining at least one piezoelectric phase with a non-piezoelectric phase. There are different forms of piezoelectric composite materials such as ceramic-polymer-based, fiber-reinforced, metal-polymer-based, and ceramic-ceramic composite. When combined with polymers, metals, ceramics, or fibers—piezoelectric composites enhance their electrical, mechanical, or thermal properties. They are utilized in different applications, including sensors, energy harvesting, actuators, and medical devices.

Increase in the use of high-performance sensors across different industries is a key driver of the piezoelectric composites material market as these materials are the key components of sensors and actuators owing to their ability to facilitate interconversion among mechanical stress & electrical charge. In addition, rise in popularity of energy harvesting applications to promote sustainability has augmented the development of the market as the electrical charge generated by piezoelectric composites is collected and dissipated into Joule heat. Currently, explorations regarding the formation of piezoelectric composites using biopolymers such as cellulose and collagen are trending.

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Manufacturers are striving to imitate the mechanical strain-induced polarization of natural piezoelectric materials in biopolymers, which, when successful is projected to fuel the biodegradability of composite material and enhance sustainability.

However, the production of piezoelectric composites is a cost-intensive process, which limits their utility in low-cost applications, thereby hampering the development of the market. Furthermore, rise in concerns regarding the environmental impact of piezoelectric composite materials due to the presence of toxic materials such as lead restrains the market growth notably. On the contrary, increase in reliance of the healthcare sector on devices and ingenious technologies is presenting remunerative opportunities for the piezoelectric composites material market. For instance, WebFX—a digital marketing solutions provider—states that the medical devices industry began expanding in 2021 and is expected to reach around $695.2 billion by 2031. As several medical devices such as ultrasound transducers, pacemakers, and drug delivery systems utilize the piezoelectric effect in their operations, the market is anticipated to witness new avenues in the coming years.

Segment Review

The piezoelectric composites material market is segmented into material type, application, and region. On the basis of material type, the market is divided into ceramic, polymer, and others. As per application, it is classified into actuators, sensors, transducers, and others. Region wise, it is analyzed across North America, Europe, Asia-Pacific, and LAMEA.

Key Findings

On the basis of material type, the ceramic segment held a notable share of the market in 2023.

As per application, the sensors segment was the highest shareholder in 2023.

Region wise, Asia-Pacific was the highest revenue generator in 2023.

Competition Analysis

The major players in the global piezoelectric composites material market include Murata Manufacturing Co., Ltd., TDK Electronics AG, KYOCERA Corporation, CTS Corporation, APC International, Ltd., Sparkler Ceramics Pvt. Ltd., Piezo Technologies,

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CeramTec GmbH, KUREHA CORPORATION, and CTS Corporation (UK). These major players have adopted various key development strategies such as business expansion, new product launches, and partnerships to strengthen their foothold in the competitive market.

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Technology Trend Analysis

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Additional country or region analysis- market size and forecast

Historic market data

SWOT Analysis

Key Market Segments

By Material Type

Ceramic

Polymer

Others

By Application

Actuators

Sensors

Transducers

Others

By Region

North America

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U.S.

Canada

Mexico

Europe

France

Germany

Italy

Spain

UK

Rest of Europe

Asia-Pacific

China

Japan

India

South Korea

Australia

Rest of Asia-Pacific

LAMEA

Brazil

South Africa

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Saudi Arabia

Rest of LAMEA

Key Market Players

Murata Manufacturing Co., Ltd

TDK Electronics AG

KYOCERA Corporation

CTS Corporation

APC International, Ltd

Sparkler Ceramics Pvt. Ltd.

Piezo Technologies

CeramTec GmbH

KUREHA CORPORATION

CTS Corporation (UK)

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