

Piezoelectric Materials – A Global Market Overview

<https://marketpublishers.com/r/P99C36C14A6EN.html>

Date: July 2018

Pages: 364

Price: US\$ 4,500.00 (Single User License)

ID: P99C36C14A6EN

Abstracts

DESCRIPTION:

Report Synopsis

Piezoelectric materials constitute various types of ceramics, polymers, crystals and composites that can generate a voltage when being subjected to an external pressure or, conversely, expand upon the application of a voltage. A piezoelectric material's response to mechanical forces/pressures resulting in the generation of electric charges/voltages is referred to as the direct piezoelectric effect. In contrast, the application of electric charges/fields causing the induction of mechanical stresses or strains is termed as the converse piezoelectric effect.

Asia-Pacific leads the global market in terms of demand for piezoelectric materials, which is likely to be sustained by burgeoning auto and consumer electronics industries. The use of piezoelectric materials in the automotive sector has grown by leaps and bounds and they are finding application in fuel injectors, tire pressure sensors, engine knock sensors, backup sensors, dynamic pressure sensors and a number of other crucial safety features common in modern cars.

Research Findings & Coverage

Worldwide market for Piezoelectric Materials is explored in this report with respect to material type, applications and end-use industries

The study exclusively analyzes each reporting segment of piezoelectric material by geographic region and key country in each region

Organic Pigments for Automotive Finishes: Some Latest Developments

Organic Pigments Brightening the Plastics Industry

Recent Progress in Toner Technology with Organic Pigments

Key business trends focusing on product innovations/developments, M&As, JVs and other recent industry developments

Major companies profiled – 29

The industry guide includes the contact details for 84 companies

Product Outline

The report analyzes the market for the key types of Piezoelectric Materials including:

Piezoceramics

Piezocomposites

Piezocrystals

Piezopolymers

Applications of Piezoelectric Materials, based on devices, analyzed in this study comprise the following:

Actuators

Generators

Motors

Sensors

Transducers

Other Applications

The study examines the global markets for end-use industries of Piezoelectric Materials including the following:

Aerospace & Defense

Automotive

Consumer Goods

Healthcare

Information & Telecommunication

Other End-Use Industries

Analysis Period, Units and Growth Rates

The report reviews, analyzes and projects the global Piezoelectric Materials market for the period 2014-2023 in terms of market value in US\$; and the compound annual growth rates (CAGRs) projected from 2017 through 2023

Geographic Coverage

North America (The United States, Canada and Mexico)

Europe (France, Germany, Italy, Russia, Spain, The United Kingdom and Rest of Europe)

Asia-Pacific (China, India, Japan, South Korea and Rest of Asia-Pacific)

South America (Argentina, Brazil and Rest of South America)

Rest of World

Contents

PART A: GLOBAL MARKET PERSPECTIVE

1. INTRODUCTION

1.1 Product Outline

1.1.1 Piezoelectric Materials: An Overview

1.1.1.1 A History of Piezoelectricity

1.1.1.2 Types of Piezoelectric Materials

1.1.1.2.1 Piezocrystals

1.1.1.2.2 Piezoceramics

1.1.1.2.2.1 Barium Titanate (BaTiO_3)

1.1.1.2.2.1.1 Synthesis of Barium Titanate

Conventional Solid-State Reaction

Chemical Methods

Sol-Gel Method

Hydrothermal Method

Coprecipitation Method

Polymeric Precursor Method

Mechanochemical Synthesis

1.1.1.2.2.1.2 Piezoelectric Properties of BaTiO_3

1.1.1.2.2.2 Lead Zirconate Titanate (PZT)

1.1.1.2.2.3 Lead Titanate (PbTiO_3)

1.1.1.2.3 Piezopolymers

1.1.1.2.3.1 Semicrystalline Piezopolymers

1.1.1.2.3.1.1 Polyvinylidene Fluoride (PVDF)

1.1.1.2.3.1.2 Poly(Vinylidene Fluoride-Trifluoroethylene and Tetrafluoroethylene)

Copolymers

1.1.1.2.3.1.3 Other Semicrystalline Polymers

Polyamides

Polyureas

Biopolymers

1.1.1.2.3.2 Amorphous Piezopolymers

1.1.1.2.3.2.1 Polyvinyl Chloride (PVC)

1.1.1.2.3.2.2 PVDCN Copolymers

1.1.1.2.3.2.3 Other VDCN Polymers

1.1.1.2.3.2.4 Polyacrylonitrile (PAN)

1.1.1.2.3.2.5 Nitrile-Substituted Polyimide

- 1.1.1.2.3.2.6 Even Numbered Nylons
- 1.1.1.2.4 Piezocomposites
- 1.1.2 Applications of Piezoelectric Materials Based On Devices
 - 1.1.2.1 Actuators
 - 1.1.2.1.1 Ceramic Actuator Materials
 - 1.1.2.1.2 Modes of Displacement in Piezoelectric Actuators
 - 1.1.2.1.2.1 Longitudinal Stack Actuators
 - 1.1.2.1.2.2 Shear Actuators
 - 1.1.2.1.2.3 Tube Actuators
 - 1.1.2.1.2.4 Contracting Actuators
 - 1.1.2.1.2.5 Bending Actuators
 - 1.1.2.1.3 Actuator Designs
 - 1.1.2.1.4 Drive/Control Techniques
 - 1.1.2.2 Generators
 - 1.1.2.2.1 Piezoelectric Materials Used in Generators
 - 1.1.2.2.2 Structures of Piezoelectric Generators
 - 1.1.2.2.3 Structures with a Piezoelectric Actuator of another Shape
 - 1.1.2.3 Motors
 - 1.1.2.3.1 Resonance-Drive (Piezoelectric Ultrasonic Motors)
 - 1.1.2.3.1.1 Single-Mode Excitation Type Motors
 - 1.1.2.3.1.1.1 When Piezoelectric Element is Fully Driven
 - 1.1.2.3.1.1.2 When Piezoelectric Element is Partially Driven
 - 1.1.2.3.1.2 Multi-Mode Excitation Type Motors
 - 1.1.2.3.1.2.1 One Driving Source (Frequency Change Controls the Direction)
 - 1.1.2.3.1.2.2 One Driving Source (Driven Part Controls the Direction)
 - 1.1.2.3.2 Inertia-Drive-Type Piezoelectric Motors
 - 1.1.2.3.3 Piezo-Walk-Drive-Type Piezoelectric Motors
 - 1.1.2.4 Sensors
 - 1.1.2.4.1 Piezo Acceleration Sensors or Accelerometers
 - 1.1.2.4.1.1 Shear Mode
 - 1.1.2.4.1.2 Compression Mode
 - 1.1.2.4.1.3 Piezoelectric Bender
 - 1.1.2.4.1.4 Benefit of Piezoelectric Accelerometers
 - 1.1.2.4.2 Piezoelectric Force Sensors
 - 1.1.2.4.2.1 Low Impedance Voltage Mode (LIVM) Force Sensors
 - 1.1.2.4.2.2 Charge Mode Force Sensors
 - 1.1.2.4.3 Piezoelectric Pressure Sensors
 - 1.1.2.5 Transducers
 - 1.1.2.5.1 Materials for Piezo Transducers

- 1.1.2.5.2 Measuring Efficiency of Piezo Transducers
- 1.1.2.5.3 Benefits of Piezoelectric Transducers
- 1.1.2.5.4 Disadvantages of Piezoelectric Transducers
- 1.1.2.6 Other Applications
 - 1.1.2.6.1 Resonators and Filters
 - 1.1.2.6.2 SAW Devices
 - 1.1.2.6.3 Transformers
- 1.1.3 Applications of Piezoelectric Materials by End-Use Industry
 - 1.1.3.1 Aerospace & Defense
 - 1.1.3.1.1 Micro-Thrusters for Satellites
 - 1.1.3.1.2 Active Vibration Damping
 - 1.1.3.1.3 Structural Health Monitoring
 - 1.1.3.1.4 Micro Robotics
 - 1.1.3.1.5 Bullets that Change Course
 - 1.1.3.2 Automotive
 - 1.1.3.2.1 Piezo Automotive Actuators
 - 1.1.3.2.2 Piezo Fuel Injectors
 - 1.1.3.2.3 Piezo Pressure & Level Sensors and Air Transducers
 - 1.1.3.3 Consumer Goods and Information & Telecommunication
 - 1.1.3.3.1 Dot-Matrix Printers
 - 1.1.3.3.2 Inkjet Printers
 - 1.1.3.3.3 Piezoelectric Speakers
 - 1.1.3.3.4 Piezoelectric Buzzers
 - 1.1.3.3.5 Piezoelectric Humidifiers
 - 1.1.3.3.6 Electronic Toothbrushes
 - 1.1.3.3.7 Musical Applications
 - 1.1.3.3.7.1 Instrument Pickups
 - 1.1.3.3.7.2 Microphones
 - 1.1.3.3.8 Piezoelectric Igniters
 - 1.1.3.4 Healthcare
 - 1.1.3.4.1 Ultrasonic Dental Scalers
 - 1.1.3.4.2 Ultrasonic Surgery Instruments
 - 1.1.3.4.3 Ultrasound Scanners
 - 1.1.3.4.4 Other Healthcare Applications
 - 1.1.3.5 Other Industries
 - 1.1.3.5.1 Industrial Equipment
 - 1.1.3.5.1.1 Ultrasonic Cleaning
 - 1.1.3.5.1.2 Ultrasonic Level Meters
 - 1.1.3.5.1.3 Ultrasonic Welding

- 1.1.3.5.2 Test and Measurement Instruments
 - 1.1.3.5.2.1 Flow Meters
 - 1.1.3.5.2.2 Ultrasonic Non-Destructive Testing
- 1.1.3.5.3 Optical Communication and Laser Systems
 - 1.1.3.5.3.1 Interferometers
 - 1.1.3.5.3.2 Tunable Lasers
- 1.1.3.5.4 Sonar Systems
 - 1.1.3.5.4.1 Underwater Imaging
 - 1.1.3.5.4.2 Fishfinders
 - 1.1.3.5.4.3 Sonars for Underwater Communication

2. KEY MARKET TRENDS

- 2.1 Lead-Free Piezoceramics Alternative to Lead-Based PZT
- 2.2 Energy Harvesting Applications Get a Boost with Biodegradable Piezoelectric Polymer
- 2.3 Piezoelectric Materials Moving from Hard to Soft...
- 2.4 Piezos Help in Reducing Contaminating Auto Gases
- 2.5 Biomedical Systems Being Powered with Piezoelectric and Triboelectric Energy Harvesters
- 2.6 Biodegradable Piezoelectric Force Sensor Offer Opportunity in Healthcare Applications

3. KEY GLOBAL PLAYERS

- APC International Ltd. (The United States)
- Arkema SA (France)
- Cedrat Technologies SA (France)
- Ceramtec GmbH (Germany)
- Channel Technologies Group, LLC (The United States)
- CTS Corporation (The United States)
- Noliac A/S (Denmark)
- Harris Corporation (The United States)
- Kureha Corporation (Japan)
- Kyocera Corporation (Japan)
- Morgan Advanced Materials Plc (The United Kingdom)
- Physik Instrumente (PI) GmbH & Co., KG. (Germany)
- PI Ceramic GmbH (Germany)
- Piezo Kinetics, Inc. (The United States)

Channel Technologies Group, Llc (The United States)
Qortek, Inc. (The United States)
SEPR - Saint-Gobain Zirpro (France)
Smart Material Corporation (The United States)
Solvay SA (Belgium)
TDK Corporation (Japan)

4. KEY BUSINESS TRENDS

CTS Corporation Launches Piezoelectric Multilayer Plate Stacks at Actuator Conference 2018 in Bremen, Germany
CTS Corporation Offers Piezoelectric Single Crystals
TDK Corporation Launches PowerHap™ Piezo Actuators
Piezoelectric Single Crystals from CTS Corporation are Ideal for Ultrasound Healthcare Applications
Mide Technology Corporation Acquires Piezo Systems, Inc
Noliac A/S Expands its Piezoelectric Business in Czech Republic
PI Ceramic GmbH Manufactures Piezoelectric Tubes for Actuator Application
Aerotech, Inc Unveils QFOCUS® QF-50 Piezo Nano-positioning Stage
Aerotech, Inc Launches QNP3 series XYZ Piezo Positioning Stages
Piezo Kinetics Inc Acquires Channel Technologies Group's Ceramics Division
Aerotech, Inc Unveils QNP2 Series XY Piezo Nanopositioning Stage
Aerotech Inc Introduces QLe™ Panel-Mount Nanopositioning Piezo Drive

5. GLOBAL MARKET OVERVIEW

- 5.1 Global Piezoelectric Materials Market Overview by Material Type
 - 5.1.1 Piezoelectric Material Type Market Overview by Global Region
 - 5.1.1.1 Piezoceramics
 - 5.1.1.2 Piezocomposites
 - 5.1.1.3 Piezocrystals
 - 5.1.1.4 Piezopolymers
- 5.2 Global Piezoelectric Materials Market Overview by Application
 - 5.2.1 Piezoelectric Application Market Overview by Global Region
 - 5.2.1.1 Actuators
 - 5.2.1.2 Generators
 - 5.2.1.3 Motors
 - 5.2.1.4 Sensors
 - 5.2.1.5 Transducers

5.2.1.6 Other Applications

5.3 Global Piezoelectric Materials Market Overview by End-Use Industry

5.3.1 Piezoelectric End-Use Industry Market Overview by Global Region

5.3.1.1 Aerospace & Defense

5.3.1.2 Automotive

5.3.1.3 Consumer Goods

5.3.1.4 Healthcare

5.3.1.5 Information & Telecommunication

5.3.1.6 Other Industries

PART B: REGIONAL MARKET PERSPECTIVE

REGIONAL MARKET OVERVIEW

6. NORTH AMERICA

6.1 North American Piezoelectric Materials Market Overview by Geographic Region

6.2 North American Piezoelectric Materials Market Overview by Material Type

6.3 North American Piezoelectric Materials Market Overview by Application

6.4 North American Piezoelectric Materials Market Overview by End-Use Industry

6.5 Major Market Players

Advanced Cerametrics, Inc. (United States)

Aerotech, Inc. (United States)

APC International Ltd. (United States)

Channel Technologies Group, LLC (United States)

CTS Corporation (United States)

Harris Corporation (United States)

Mad City Labs, Inc. (United States)

Mide Technology Corporation (United States)

Piezo Systems, Inc. (United States)

Piezo Kinetics, Inc. (United States)

Qortek, Inc. (United States)

Smart Material Corporation (United States)

6.6 Country-wise Analysis of North American Piezoelectric Materials Market

6.6.1 The United States

6.6.1.1 United States Piezoelectric Materials Market Overview by Material Type

6.6.1.2 United States Piezoelectric Materials Market Overview by Application

6.6.1.3 United States Piezoelectric Materials Market Overview by End-Use Industry

6.6.2 Canada

- 6.6.2.1 Canadian Piezoelectric Materials Market Overview by Material Type
- 6.6.2.2 Canadian Piezoelectric Materials Market Overview by Application
- 6.6.2.3 Canadian Piezoelectric Materials Market Overview by End-Use Industry
- 6.6.3 Mexico
 - 6.6.3.1 Mexican Piezoelectric Materials Market Overview by Material Type
 - 6.6.3.2 Mexican Piezoelectric Materials Market Overview by Application
 - 6.6.3.3 Mexican Piezoelectric Materials Market Overview by End-Use Industry

7. EUROPE

- 7.1 European Piezoelectric Materials Market Overview by Geographic Region
- 7.2 European Piezoelectric Materials Market Overview by Material Type
- 7.3 European Piezoelectric Materials Market Overview by Application
- 7.4 European Piezoelectric Materials Market Overview by End-Use Industry
- 7.5 Major Market Players
 - Arkema SA (France)
 - Piezotech (France)
 - Cedrat Technologies SA (France)
 - Ceramtec GmbH (Germany)
 - Morgan Advanced Materials Plc (The United Kingdom)
 - Noliac A/S (Denmark)
 - Physik Instrumente (PI) GmbH & Co., KG. (Germany)
 - PI Ceramic GmbH (Germany)
 - Piezomechanik Dr. Lutz Pickelmann GmbH (Germany)
 - Piezosystem Jena GmbH (Germany)
 - SEPR - Saint-Gobain ZirPro (France)
 - Solvay SA (Belgium)
- 7.6 Country-wise Analysis of European Piezoelectric Materials Market
 - 7.6.1 France
 - 7.6.1.1 French Piezoelectric Materials Market Overview by Material Type
 - 7.6.1.2 French Piezoelectric Materials Market Overview by Application
 - 7.6.1.3 French Piezoelectric Materials Market Overview by End-Use Industry
 - 7.6.2 Germany
 - 7.6.2.1 German Piezoelectric Materials Market Overview by Material Type
 - 7.6.2.2 German Piezoelectric Materials Market Overview by Application
 - 7.6.2.3 German Piezoelectric Materials Market Overview by End-Use Industry
 - 7.6.3 Italy
 - 7.6.3.1 Italian Piezoelectric Materials Market Overview by Material Type
 - 7.6.3.2 Italian Piezoelectric Materials Market Overview by Application

7.6.3.3 Italian Piezoelectric Materials Market Overview by End-Use Industry

7.6.4 Russia

7.6.4.1 Russian Piezoelectric Materials Market Overview by Material Type

7.6.4.2 Russian Piezoelectric Materials Market Overview by Application

7.6.4.3 Russian Piezoelectric Materials Market Overview by End-Use Industry

7.6.5 Spain

7.6.5.1 Spanish Piezoelectric Materials Market Overview by Material Type

7.6.5.2 Spanish Piezoelectric Materials Market Overview by Application

7.6.5.3 Spanish Piezoelectric Materials Market Overview by End-Use Industry

7.6.6 The United Kingdom

7.6.6.1 United Kingdom Piezoelectric Materials Market Overview by Material Type

7.6.6.2 United Kingdom Piezoelectric Materials Market Overview by Application

7.6.6.3 United Kingdom Piezoelectric Materials Market Overview by End-Use Industry

7.6.7 Rest of Europe

7.6.7.1 Rest of Europe Piezoelectric Materials Market Overview by Material Type

7.6.7.2 Rest of Europe Piezoelectric Materials Market Overview by Application

7.6.7.3 Rest of Europe Piezoelectric Materials Market Overview by End-Use Industry

8. ASIA-PACIFIC

8.1 Asia-Pacific Piezoelectric Materials Market Overview by Geographic Region

8.2 Asia-Pacific Piezoelectric Materials Market Overview by Material Type

8.3 Asia-Pacific Piezoelectric Materials Market Overview by Application

8.4 Asia-Pacific Piezoelectric Materials Market Overview by End-Use Industry

8.5 Major Market Players

AAC Technologies Holdings, Inc. (China)

Kureha Corporation (Japan)

Kyocera Corporation (Japan)

Sparkler Ceramics Pvt., Ltd. (India)

TDK Corporation (Japan)

8.6 Country-wise Analysis of Asia-Pacific Piezoelectric Market

8.6.1 China

8.6.1.1 Chinese Piezoelectric Materials Market Overview by Material Type

8.6.1.2 Chinese Piezoelectric Materials Market Overview by Application

8.6.1.3 Chinese Piezoelectric Materials Market Overview by End-Use Industry

8.6.2 India

8.6.2.1 Indian Piezoelectric Materials Market Overview by Material Type

8.6.2.2 Indian Piezoelectric Materials Market Overview by Application

8.6.2.3 Indian Piezoelectric Materials Market Overview by End-Use Industry

8.6.3 Japan

8.6.3.1 Japanese Piezoelectric Materials Market Overview by Material Type

8.6.3.2 Japanese Piezoelectric Materials Market Overview by Application

8.6.3.3 Japanese Piezoelectric Materials Market Overview by End-Use Industry

8.6.4 South Korea

8.6.4.1 Korean Piezoelectric Materials Market Overview by Material Type

8.6.4.2 Korean Piezoelectric Materials Market Overview by Application

8.6.4.3 Korean Piezoelectric Materials Market Overview by End-Use Industry

8.6.5 Rest of Asia-Pacific

8.6.5.1 Rest of Asia-Pacific Piezoelectric Materials Market Overview by Material Type

8.6.5.2 Rest of Asia-Pacific Piezoelectric Materials Market Overview by Application

8.6.5.3 Rest of Asia-Pacific Piezoelectric Materials Market Overview by End-Use Industry

9. SOUTH AMERICA

9.1 South American Piezoelectric Materials Market Overview by Geographic Region

9.2 South American Piezoelectric Materials Market Overview by Material Type

9.3 South American Piezoelectric Materials Market Overview by Application

9.4 South American Piezoelectric Materials Market Overview by End-Use Industry

9.5 Country-wise Analysis of South American Piezoelectric Materials Market

9.5.1 Argentina

9.5.1.1 Argentine Piezoelectric Materials Market Overview by Material Type

9.5.1.2 Argentine Piezoelectric Materials Market Overview by Application

9.5.1.3 Argentine Piezoelectric Materials Market Overview by End-Use Industry

9.5.2 Brazil

9.5.2.1 Brazilian Piezoelectric Materials Market Overview by Material Type

9.5.2.2 Brazilian Piezoelectric Materials Market Overview by Application

9.5.2.3 Brazilian Piezoelectric Materials Market Overview by End-Use Industry

9.5.3 Rest of South America

9.5.3.1 Rest of South America Piezoelectric Materials Market Overview by Material Type

9.5.3.2 Rest of South America Piezoelectric Materials Market Overview by Application

9.5.3.3 Rest of South America Piezoelectric Materials Market Overview by End-Use Industry

10. REST OF WORLD

- 10.1 Rest of World Piezoelectric Materials Market Overview by Material Type
- 10.2 Rest of World Piezoelectric Materials Market Overview by Application
- 10.3 Rest of World Piezoelectric Materials Market Overview by End-Use Industry

PART C: GUIDE TO THE INDUSTRY

1. NORTH AMERICA

2. EUROPE

3. ASIA-PACIFIC

4. SOUTH AMERICA

PART D: ANNEXURE

1. RESEARCH METHODOLOGY

2. FEEDBACK

LIST OF TABLES:

Table 1: Comparison of Properties between PVDF and PZT

Table 2: Comparison between Properties of Some Semicrystalline Polymeric Materials

Table 3: Comparison between Properties of Some Amorphous Polymeric Materials

Table 4: Values of the Dipole Moments within the Nitrile-Substituted Polyimide

Table 5: Classification of Resonance-Drive Type Piezoelectric (Ultrasonic) Motors

List Of Charts

LIST OF CHARTS & GRAPHS

PART A: GLOBAL MARKET PERSPECTIVE

Chart 1: Global Piezoelectric Materials Market (2017 & 2023) by Geographic Region

Chart 2: Global Piezoelectric Materials Market (2017 & 2023) by Material Type

Chart 3: Global Piezoelectric Materials Market (2017 & 2023) by Application

Chart 4: Global Piezoelectric Materials Market (2017 & 2023) by End-Use Industry

Chart 5: Global Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 6: Global Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 7: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 8: Global Piezoceramics Market Analysis (2014-2023) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 9: Glance at 2014, 2018 and 2023 Global Piezoceramics Market Share (%) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 10: Global Piezocomposites Market Analysis (2014-2023) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 11: Glance at 2014, 2018 and 2023 Global Piezocomposites Market Share (%) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 12: Global Piezocrystals Market Analysis (2014-2023) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 13: Glance at 2014, 2018 and 2023 Global Piezocrystals Market Share (%) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 14: Global Piezopolymers Market Analysis (2014-2023) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 15: Glance at 2014, 2018 and 2023 Global Piezopolymers Market Share (%) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 16: Global Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 17: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 18: Global Piezoelectric Materials Market Analysis (2014-2023) in Actuators by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 19: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Actuators by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 20: Global Piezoelectric Materials Market Analysis (2014-2023) in Generators by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 21: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Generators by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 22: Global Piezoelectric Materials Market Analysis (2014-2023) in Motors by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 23: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Motors by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 24: Global Piezoelectric Materials Market Analysis (2014-2023) in Sensors by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 25: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Sensors by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 26: Global Piezoelectric Materials Market Analysis (2014-2023) in Transducers by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 27: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Transducers by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 28: Global Piezoelectric Materials Market Analysis (2014-2023) in Other Applications by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 29: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Other Applications by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 30: Global Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 31: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Chart 32: Global Piezoelectric Materials Market Analysis (2014-2023) in Aerospace & Defense Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 33: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Aerospace & Defense Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 34: Global Piezoelectric Materials Market Analysis (2014-2023) in Automotive Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 35: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Automotive Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 36: Global Piezoelectric Materials Market Analysis (2014-2023) in Consumer Goods Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 37: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Consumer Goods Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 38: Global Piezoelectric Materials Market Analysis (2014-2023) in Healthcare Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 39: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Healthcare Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 40: Global Piezoelectric Materials Market Analysis (2014-2023) in Information & Telecommunication Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 41: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Information & Telecommunication Industry by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

Chart 42: Global Piezoelectric Materials Market Analysis (2014-2023) in Other Industries by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 43: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) in Other Industries by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

PART B: REGIONAL MARKET PERSPECTIVE

Chart 44: Global Piezoelectric Materials Market Analysis (2014-2023) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World in USD Million

Chart 45: Glance at 2014, 2018 and 2023 Global Piezoelectric Materials Market Share (%) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World

REGIONAL MARKET OVERVIEW

NORTH AMERICA

Chart 46: North American Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 47: North American Piezoelectric Materials Market Analysis (2014-2023) by Geographic Region – United States, Canada and Mexico in USD Million

Chart 48: Glance at 2014, 2018 and 2023 North American Piezoelectric Materials Market Share (%) by Region – United States, Canada and Mexico

Chart 49: North American Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 50: Glance at 2014, 2018 and 2023 North American Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 51: North American Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 52: Glance at 2014, 2018 and 2023 North American Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 53: North American Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 54: Glance at 2014, 2018 and 2023 North American Piezoelectric Materials

Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

The United States

Chart 55: United States Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 56: United States Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 57: Glance at 2014, 2018 and 2023 United States Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 58: United States Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 59: Glance at 2014, 2018 and 2023 United States Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 60: United States Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 61: Glance at 2014, 2018 and 2023 United States Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Canada

Chart 62: Canadian Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 63: Canadian Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 64: Glance at 2014, 2018 and 2023 Canadian Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 65: Canadian Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 66: Glance at 2014, 2018 and 2023 Canadian Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 67: Canadian Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare,

Information & Telecommunication and Other Industries in USD Million

Chart 68: Glance at 2014, 2018 and 2023 Canadian Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Mexico

Chart 69: Mexican Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 70: Mexican Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 71: Glance at 2014, 2018 and 2023 Mexican Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 72: Mexican Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 73: Glance at 2014, 2018 and 2023 Mexican Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 74: Mexican Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 75: Glance at 2014, 2018 and 2023 Mexican Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

EUROPE

Chart 76: European Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 77: European Piezoelectric Materials Market Analysis (2014-2023) by Geographic Region – France, Germany, Italy, Russia, Spain, United Kingdom and Rest of Europe in USD Million

Chart 78: Glance at 2014, 2018 and 2023 European Piezoelectric Materials Market Share (%) by Region – France, Germany, Italy, Russia, Spain, United Kingdom and Rest of Europe

Chart 79: European Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 80: Glance at 2014, 2018 and 2023 European Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and

Piezopolymers

Chart 81: European Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 82: Glance at 2014, 2018 and 2023 European Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 83: European Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 84: Glance at 2014, 2018 and 2023 European Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

France

Chart 85: French Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 86: French Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 87: Glance at 2014, 2018 and 2023 French Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 88: French Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 89: Glance at 2014, 2018 and 2023 French Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 90: French Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 91: Glance at 2014, 2018 and 2023 French Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Germany

Chart 92: German Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 93: German Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 94: Glance at 2014, 2018 and 2023 German Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and

Piezopolymers

Chart 95: German Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 96: Glance at 2014, 2018 and 2023 German Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 97: German Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 98: Glance at 2014, 2018 and 2023 German Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Italy

Chart 99: Italian Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 100: Italian Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 101: Glance at 2014, 2018 and 2023 Italian Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 102: Italian Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 103: Glance at 2014, 2018 and 2023 Italian Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 104: Italian Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 105: Glance at 2014, 2018 and 2023 Italian Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Russia

Chart 106: Russian Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 107: Russian Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 108: Glance at 2014, 2018 and 2023 Russian Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and

Piezopolymers

Chart 109: Russian Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 110: Glance at 2014, 2018 and 2023 Russian Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 111: Russian Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 112: Glance at 2014, 2018 and 2023 Russian Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Spain

Chart 113: Spanish Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 114: Spanish Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 115: Glance at 2014, 2018 and 2023 Spanish Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 116: Spanish Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 117: Glance at 2014, 2018 and 2023 Spanish Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 118: Spanish Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 119: Glance at 2014, 2018 and 2023 Spanish Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

The United Kingdom

Chart 120: United Kingdom Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 121: United Kingdom Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 122: Glance at 2014, 2018 and 2023 United Kingdom Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 123: United Kingdom Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 124: Glance at 2014, 2018 and 2023 United Kingdom Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 125: United Kingdom Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 126: Glance at 2014, 2018 and 2023 United Kingdom Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries
Rest of Europe

Chart 127: Rest of Europe Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 128: Rest of Europe Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 129: Glance at 2014, 2018 and 2023 Rest of Europe Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 130: Rest of Europe Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 131: Glance at 2014, 2018 and 2023 Rest of Europe Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 132: Rest of Europe Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 133: Glance at 2014, 2018 and 2023 Rest of Europe Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

ASIA-PACIFIC

Chart 134: Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 135: Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) by Geographic Region – China, India, Japan, South Korea and Rest of Asia-Pacific in USD Million

Chart 136: Glance at 2014, 2018 and 2023 Asia-Pacific Piezoelectric Materials Market Share (%) by Region – China, India, Japan, South Korea and Rest of Asia-Pacific

Chart 137: Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 138: Glance at 2014, 2018 and 2023 Asia-Pacific Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 139: Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 140: Glance at 2014, 2018 and 2023 Asia-Pacific Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 141: Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 142: Glance at 2014, 2018 and 2023 Asia-Pacific Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

China

Chart 143: Chinese Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 144: Chinese Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 145: Glance at 2014, 2018 and 2023 Chinese Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 146: Chinese Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 147: Glance at 2014, 2018 and 2023 Chinese Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 148: Chinese Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 149: Glance at 2014, 2018 and 2023 Chinese Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

India

Chart 150: Indian Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 151: Indian Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 152: Glance at 2014, 2018 and 2023 Indian Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 153: Indian Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 154: Glance at 2014, 2018 and 2023 Indian Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 155: Indian Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 156: Glance at 2014, 2018 and 2023 Indian Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Japan

Chart 157: Japanese Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 158: Japanese Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 159: Glance at 2014, 2018 and 2023 Japanese Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 160: Japanese Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 161: Glance at 2014, 2018 and 2023 Japanese Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and

Other Applications

Chart 162: Japanese Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 163: Glance at 2014, 2018 and 2023 Japanese Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

South Korea

Chart 164: South Korean Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 165: South Korean Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 166: Glance at 2014, 2018 and 2023 South Korean Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 167: South Korean Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 168: Glance at 2014, 2018 and 2023 South Korean Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 169: South Korean Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 170: Glance at 2014, 2018 and 2023 South Korean Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Rest of Asia-Pacific

Chart 171: Rest of Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 172: Rest of Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 173: Glance at 2014, 2018 and 2023 Rest of Asia-Pacific Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 174: Rest of Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other

Applications in USD Million

Chart 175: Glance at 2014, 2018 and 2023 Rest of Asia-Pacific Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 176: Rest of Asia-Pacific Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 177: Glance at 2014, 2018 and 2023 Rest of Asia-Pacific Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

SOUTH AMERICA

Chart 178: South American Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 179: South American Piezoelectric Materials Market Analysis (2014-2023) by Geographic Region – Argentina, Brazil and Rest of South America in USD Million

Chart 180: Glance at 2014, 2018 and 2023 South American Piezoelectric Materials Market Share (%) by Region – Argentina, Brazil and Rest of South America

Chart 181: South American Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 182: Glance at 2014, 2018 and 2023 South American Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 183: South American Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 184: Glance at 2014, 2018 and 2023 South American Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 185: South American Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 186: Glance at 2014, 2018 and 2023 South American Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Argentina

Chart 187: Argentine Piezoelectric Materials Market Analysis (2014-2023) in USD

Million

Chart 188: Argentine Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 189: Glance at 2014, 2018 and 2023 Argentine Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 190: Argentine Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 191: Glance at 2014, 2018 and 2023 Argentine Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 192: Argentine Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 193: Glance at 2014, 2018 and 2023 Argentine Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Brazil

Chart 194: Brazilian Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 195: Brazilian Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 196: Glance at 2014, 2018 and 2023 Brazilian Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 197: Brazilian Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 198: Glance at 2014, 2018 and 2023 Brazilian Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 199: Brazilian Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 200: Glance at 2014, 2018 and 2023 Brazilian Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

Rest of South America

Chart 201: Rest of South American Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 202: Rest of South American Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 203: Glance at 2014, 2018 and 2023 Rest of South American Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 204: Rest of South American Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 205: Glance at 2014, 2018 and 2023 Rest of South American Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 206: Rest of South American Piezoelectric Materials Market Analysis (2014-2023) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 207: Glance at 2014, 2018 and 2023 Rest of South American Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

REST OF WORLD

Chart 208: Rest of World Piezoelectric Materials Market Analysis (2014-2023) in USD Million

Chart 209: Rest of World Piezoelectric Materials Market Analysis (2014-2023) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers in USD Million

Chart 210: Glance at 2014, 2018 and 2023 Rest of World Piezoelectric Materials Market Share (%) by Material Type – Piezoceramics, Piezocomposites, Piezocrystals and Piezopolymers

Chart 211: Rest of World Piezoelectric Materials Market Analysis (2014-2023) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications in USD Million

Chart 212: Glance at 2014, 2018 and 2023 Rest of World Piezoelectric Materials Market Share (%) by Application – Actuators, Generators, Motors, Sensors, Transducers and Other Applications

Chart 213: Rest of World Piezoelectric Materials Market Analysis (2014-2023) by End-

Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries in USD Million

Chart 214: Glance at 2014, 2018 and 2023 Rest of World Piezoelectric Materials Market Share (%) by End-Use Industry – Aerospace & Defense, Automotive, Consumer Goods, Healthcare, Information & Telecommunication and Other Industries

List Of Figures

LIST OF FIGURES:

- Fig 1: Perovskite Structure ABO_3
- Fig 2: Longitudinal Stack Actuators
- Fig 3: Shear Actuators
- Fig 4: Axial Displacement
- Fig 5: Radial Displacement
- Fig 6: Bending Actuators
- Fig 7: Contracting Actuators
- Fig 8: Displacement of a Bending Actuator
- Fig 9: All-Ceramic Bending Actuator for Parallel Circuiting
- Fig 10: All-Ceramic Bending Actuator for Serial Circuiting
- Fig 11: Two-Layer Composite Bender with One-Sided Displacement
- Fig 12: Symmetrical Three-Layer Composite Bender for Parallel Circuiting
- Fig 13: Multilayer Actuator
- Fig 14: Bimorph Actuator
- Fig 15: Moonie
- Fig 16: Schematic of PFC and MFC Structures
- Fig 17: Cantilever Beam as the Structure Base of the Piezoelectric Generator
- Fig 18: Piezoelectric Stack in Generator
- Fig 19: Cubic Generator Made from PZT Plates
- Fig 20: A Piezo Walk-Drive Mechanism Using Clamping and Moving Principle
- Fig 21: A Piezo Walk-Drive Motor
- Fig 22: Shear Mode Piezoelectric Accelerometer
- Fig 23: Compression Mode Piezoelectric Accelerometer
- Fig 24: Cantilevered Beam Piezoelectric Accelerometer
- Fig 25: LIVM Force Sensors
- Fig 26: Simplified Schematic of a Charge Amplifier
- Fig 27: Trapped-Energy Filter
- Fig 28: Typical SAW Bidirectional Filter Comprising Two Interdigital Transducers
- Fig 29: Rosen-Type Piezoelectric Transformer
- Fig 30: Thickness Vibration Piezoelectric Transformer; (a) Single Layer; (b) Multilayer
- Fig 31: Radial Mode Piezoelectric Transformer
- Fig 32: Structure of a PZT/Silicon MEMS Blood Tester
- Fig 33: Diagram of a Magnetic Noise Sensor

I would like to order

Product name: Piezoelectric Materials – A Global Market Overview

Product link: <https://marketpublishers.com/r/P99C36C14A6EN.html>

Price: US\$ 4,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/P99C36C14A6EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970