

Acoustic Metamaterial Market Forecasts to 2032 – Global Analysis By Metamaterial Architecture (Locally Resonant Metamaterials, Phononic Crystal / Bandgap Structures, Acoustic Metasurfaces, Labyrinthine / Coiled-space Structures, Membrane-based Metamaterials, and Hybrid Architectures), Material Platform, Functionality, Frequency Range Targeted, End User, and By Geography

<https://marketpublishers.com/r/A71DB18450C3EN.html>

Date: January 2026

Pages: 200

Price: US\$ 4,150.00 (Single User License)

ID: A71DB18450C3EN

Abstracts

According to Statistics MRC, the Global Acoustic Metamaterial Market is accounted for \$0.48 billion in 2025 and is expected to reach \$2.68 billion by 2032, growing at a CAGR of 27.7% during the forecast period. The acoustic metamaterial market focuses on engineered materials designed to control, absorb, or manipulate sound waves in ways not possible with conventional materials. It supports applications in noise reduction, vibration control, sound insulation, and acoustic imaging across construction, automotive, aerospace, and electronics sectors. Stricter noise regulations, the need for lightweight sound-control solutions, urbanization, advanced manufacturing techniques, and increased adoption in high-performance engineering applications drive the market's growth.

Market Dynamics:

Driver:

Stringent noise pollution regulations

Governments globally are enforcing rigorous noise emission standards across urban and industrial landscapes to mitigate health risks associated with chronic noise exposure. Traditional acoustic materials often struggle to dampen low-frequency sounds effectively without adding significant bulk. This regulatory pressure forces manufacturers in the automotive, construction, and heavy machinery sectors to adopt advanced acoustic metamaterials. These materials offer unprecedented control over sound waves through sub-wavelength structures, providing high-performance insulation in compact footprints.

Restraint:

Challenges in scaling up production for large-volume applications

Transitioning acoustic metamaterials from laboratory-scale prototypes to mass-market industrial components presents significant manufacturing hurdles. The intricate, sub-wavelength geometries required for these materials demand high-precision fabrication techniques, such as advanced additive manufacturing or lithography, which are currently costly and time-intensive. Scaling these processes for large-volume applications without compromising structural integrity or acoustic performance remains a critical bottleneck.

Opportunity:

Customization for specific frequency ranges and applications

Unlike conventional materials with fixed properties, metamaterials can be engineered with precise unit-cell geometries to target unique noise profiles in medical imaging, underwater sonar, or high-tech laboratories. This "acoustic by design" capability allows engineers to solve complex vibration and noise issues that were previously unmanageable. As industries move toward more specialized equipment, the demand for custom-engineered acoustic solutions is rising, enabling providers to command premium pricing while delivering superior, application-specific performance surpassing standards.

Threat:

Slow adoption cycles in conservative industries

Conservative industries, particularly heavy manufacturing and traditional construction,

often exhibit a deep-rooted reliance on established, low-cost materials that have proven track records over decades. Long product lifecycles and a risk-averse culture, which often view the higher initial investment and relative novelty of acoustic metamaterials with skepticism, characterize these sectors. The absence of long-term field data regarding the durability and aging of these advanced structures further complicates the procurement process.

Covid-19 Impact:

The global pandemic initially crippled the acoustic metamaterial market due to widespread supply chain disruptions and the temporary closure of specialized manufacturing facilities. Research and development projects faced significant delays as capital was diverted toward immediate crisis management. However, the subsequent recovery phase witnessed a surge in demand for improved acoustic environments in residential and healthcare settings. The aerospace sector's focus on cabin air quality and noise reduction also accelerated. Ultimately, while the pandemic hampered short-term growth, it highlighted the necessity for advanced material innovation.

The locally resonant metamaterials segment is expected to be the largest during the forecast period

The locally resonant metamaterials segment is expected to account for the largest market share during the forecast period due to its exceptional ability to manipulate low-frequency sound waves. These structures use internal resonators to create gaps that block sound at frequencies where regular sound absorbers usually don't work. Their compact design makes them ideal for integration into space-constrained environments such as aircraft cabins, automotive panels, and electronic enclosures. As the demand for lightweight yet highly efficient noise control solutions grows, the versatility and proven efficacy of locally resonant designs solidify their leading position within this market.

The aerospace and defense segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the aerospace and defense segment is predicted to witness the highest growth rate as operators seek innovative ways to reduce aircraft weight and enhance cabin comfort. Acoustic metamaterials are being integrated into engine nacelles and fuselage linings to dampen high-intensity noise without the weight penalties of traditional insulation. In the defense sector, these materials are critical for

developing stealth technologies and underwater acoustic cloaking for submarines. The aggressive pursuit of fuel efficiency and tactical superiority through advanced material science is driving rapid investment and adoption within this high-tech global industrial vertical.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, bolstered by a robust ecosystem of research institutions and leading aerospace companies. The United States, in particular, dominates through significant defense spending and a high concentration of tech-driven startups focusing on advanced material science. Stringent FAA regulations regarding aircraft noise and OSHA standards for industrial safety further stimulate domestic demand. Additionally, early adoption of high-end consumer electronics and premium automotive features ensures a steady market for sophisticated acoustic solutions, maintaining the region's competitive edge over other global geographic territories.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, fueled by rapid urbanization and the expansion of the automotive and electronics manufacturing sectors in China and India. Government initiatives promoting smart city infrastructure and modern transportation networks are creating a vast playground for advanced acoustic technologies. As the middle-class population grows, there is an increasing demand for quieter home appliances and premium vehicles, both of which utilize metamaterials. The region's evolving industrial landscape and favorable investment climate are attracting global players, positioning Asia Pacific as the fastest-growing innovation hub.

Key players in the market

Some of the key players in Acoustic Metamaterial Market include Metacoust, Acoustic Metamaterials Group Ltd, Acoustic Metamaterials Company Limited, Murata Manufacturing Co., Ltd., Applied Metamaterials, Merford Holding B.V., Metasonixx, Lios, Silencions, Shenzhen STRONG Advanced Materials Co., Ltd., Acentech Incorporated, Nanjing Huaqin Photoacoustic Technology Co., Ltd., Acoustic Meta Materials, Phononic Vibes, and SoundBounce.

Key Developments:

In November 2025, Murata sought co-creation partners for its Ultrasound Transmission Metamaterial, enhancing ultrasound transmission through different mediums for medical and industrial devices.

In June 2025, Huaqin Technology's S-Core Smartwatch won the German iF Design Award, integrating photoacoustic metamaterial technology into wearable devices.

Metamaterial Architectures Covered:

- Locally resonant metamaterials
- Phononic crystal / bandgap structures
- Acoustic metasurfaces
- Labyrinthine / coiled-space structures
- Membrane-based metamaterials
- Hybrid architectures

Material Platforms Covered:

- Polymer-based metamaterials
- Metal-based metamaterials
- Ceramic-based metamaterials
- Composite-based metamaterials
- Elastomer/viscoelastic-based systems
- Multi-material / graded material structures

Functionalities Covered:

Sound absorption enhancement

Sound insulation / transmission loss improvement

Noise filtering / band-stop solutions

Vibration and structure-borne noise control

Wavefront shaping

Frequency Range Targets Covered:

Low-frequency

Mid-frequency

High-frequency / ultrasonic ranges

End Users Covered:

Construction and infrastructure

Automotive and mobility

Aerospace and defense

Industrial manufacturing and heavy equipment

Consumer electronics and appliances

Healthcare and medical technology

Research institutions and laboratories

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

2 PREFACE

- 2.1 Abstract
- 2.2 Stake Holders
- 2.3 Research Scope
- 2.4 Research Methodology
 - 2.4.1 Data Mining
 - 2.4.2 Data Analysis
 - 2.4.3 Data Validation
 - 2.4.4 Research Approach
- 2.5 Research Sources
 - 2.5.1 Primary Research Sources
 - 2.5.2 Secondary Research Sources
 - 2.5.3 Assumptions

3 MARKET TREND ANALYSIS

- 3.1 Introduction
- 3.2 Drivers
- 3.3 Restraints
- 3.4 Opportunities
- 3.5 Threats
- 3.6 End User Analysis
- 3.7 Emerging Markets
- 3.8 Impact of Covid-19

4 PORTERS FIVE FORCE ANALYSIS

- 4.1 Bargaining power of suppliers
- 4.2 Bargaining power of buyers
- 4.3 Threat of substitutes
- 4.4 Threat of new entrants
- 4.5 Competitive rivalry

5 GLOBAL ACOUSTIC METAMATERIAL MARKET, BY METAMATERIAL

ARCHITECTURE

- 5.1 Introduction
- 5.2 Locally resonant metamaterials
- 5.3 Phononic crystal / bandgap structures
- 5.4 Acoustic metasurfaces
- 5.5 Labyrinthine / coiled-space structures
- 5.6 Membrane-based metamaterials
- 5.7 Hybrid architectures

6 GLOBAL ACOUSTIC METAMATERIAL MARKET, BY MATERIAL PLATFORM

- 6.1 Introduction
- 6.2 Polymer-based metamaterials
- 6.3 Metal-based metamaterials
- 6.4 Ceramic-based metamaterials
- 6.5 Composite-based metamaterials
- 6.6 Elastomer/viscoelastic-based systems
- 6.7 Multi-material / graded material structures

7 GLOBAL ACOUSTIC METAMATERIAL MARKET, BY FUNCTIONALITY

- 7.1 Introduction
- 7.2 Sound absorption enhancement
- 7.3 Sound insulation / transmission loss improvement
- 7.4 Noise filtering / band-stop solutions
- 7.5 Vibration and structure-borne noise control
- 7.6 Wavefront shaping

8 GLOBAL ACOUSTIC METAMATERIAL MARKET, BY FREQUENCY RANGE TARGETED

- 8.1 Introduction
- 8.2 Low-frequency
- 8.3 Mid-frequency
- 8.4 High-frequency / ultrasonic ranges

9 GLOBAL ACOUSTIC METAMATERIAL MARKET, BY END USER

- 9.1 Introduction
- 9.2 Construction and infrastructure
- 9.3 Automotive and mobility
- 9.4 Aerospace and defense
- 9.5 Industrial manufacturing and heavy equipment
- 9.6 Consumer electronics and appliances
- 9.7 Healthcare and medical technology
- 9.8 Research institutions and laboratories

10 GLOBAL ACOUSTIC METAMATERIAL MARKET, BY GEOGRAPHY

- 10.1 Introduction
- 10.2 North America
 - 10.2.1 US
 - 10.2.2 Canada
 - 10.2.3 Mexico
- 10.3 Europe
 - 10.3.1 Germany
 - 10.3.2 UK
 - 10.3.3 Italy
 - 10.3.4 France
 - 10.3.5 Spain
 - 10.3.6 Rest of Europe
- 10.4 Asia Pacific
 - 10.4.1 Japan
 - 10.4.2 China
 - 10.4.3 India
 - 10.4.4 Australia
 - 10.4.5 New Zealand
 - 10.4.6 South Korea
 - 10.4.7 Rest of Asia Pacific
- 10.5 South America
 - 10.5.1 Argentina
 - 10.5.2 Brazil
 - 10.5.3 Chile
 - 10.5.4 Rest of South America
- 10.6 Middle East & Africa
 - 10.6.1 Saudi Arabia
 - 10.6.2 UAE

10.6.3 Qatar

10.6.4 South Africa

10.6.5 Rest of Middle East & Africa

11 KEY DEVELOPMENTS

11.1 Agreements, Partnerships, Collaborations and Joint Ventures

11.2 Acquisitions & Mergers

11.3 New Product Launch

11.4 Expansions

11.5 Other Key Strategies

12 COMPANY PROFILING

12.1 Metacoust

12.2 Acoustic Metamaterials Group Ltd

12.3 Acoustic Metamaterials Company Limited

12.4 Murata Manufacturing Co., Ltd.

12.5 Applied Metamaterials

12.6 Merford Holding B.V.

12.7 Metasonixx

12.8 Lios

12.9 Silencions

12.10 Shenzhen STRONG Advanced Materials Co., Ltd.

12.11 Acentech Incorporated

12.12 Nanjing Huaqin Photoacoustic Technology Co., Ltd.

12.13 Acoustic Meta Materials

12.14 Phononic Vibes

12.15 SoundBounce

List Of Tables

LIST OF TABLES

Table 1 Global Acoustic Metamaterial Market Outlook, By Region (2024–2032) (\$MN)

Table 2 Global Acoustic Metamaterial Market Outlook, By Metamaterial Architecture (2024–2032) (\$MN)

Table 3 Global Acoustic Metamaterial Market Outlook, By Locally Resonant Metamaterials (2024–2032) (\$MN)

Table 4 Global Acoustic Metamaterial Market Outlook, By Phononic Crystal / Bandgap Structures (2024–2032) (\$MN)

Table 5 Global Acoustic Metamaterial Market Outlook, By Acoustic Metasurfaces (2024–2032) (\$MN)

Table 6 Global Acoustic Metamaterial Market Outlook, By Labyrinthine / Coiled-space Structures (2024–2032) (\$MN)

Table 7 Global Acoustic Metamaterial Market Outlook, By Membrane-based Metamaterials (2024–2032) (\$MN)

Table 8 Global Acoustic Metamaterial Market Outlook, By Hybrid Architectures (2024–2032) (\$MN)

Table 9 Global Acoustic Metamaterial Market Outlook, By Material Platform (2024–2032) (\$MN)

Table 10 Global Acoustic Metamaterial Market Outlook, By Polymer-based Metamaterials (2024–2032) (\$MN)

Table 11 Global Acoustic Metamaterial Market Outlook, By Metal-based Metamaterials (2024–2032) (\$MN)

Table 12 Global Acoustic Metamaterial Market Outlook, By Ceramic-based Metamaterials (2024–2032) (\$MN)

Table 13 Global Acoustic Metamaterial Market Outlook, By Composite-based Metamaterials (2024–2032) (\$MN)

Table 14 Global Acoustic Metamaterial Market Outlook, By Elastomer / Viscoelastic-based Systems (2024–2032) (\$MN)

Table 15 Global Acoustic Metamaterial Market Outlook, By Multi-material / Graded Material Structures (2024–2032) (\$MN)

Table 16 Global Acoustic Metamaterial Market Outlook, By Functionality (2024–2032) (\$MN)

Table 17 Global Acoustic Metamaterial Market Outlook, By Sound Absorption Enhancement (2024–2032) (\$MN)

Table 18 Global Acoustic Metamaterial Market Outlook, By Sound Insulation / Transmission Loss Improvement (2024–2032) (\$MN)

Table 19 Global Acoustic Metamaterial Market Outlook, By Noise Filtering / Band-stop Solutions (2024–2032) (\$MN)

Table 20 Global Acoustic Metamaterial Market Outlook, By Vibration and Structure-borne Noise Control (2024–2032) (\$MN)

Table 21 Global Acoustic Metamaterial Market Outlook, By Wavefront Shaping (2024–2032) (\$MN)

Table 22 Global Acoustic Metamaterial Market Outlook, By Frequency Range Targeted (2024–2032) (\$MN)

Table 23 Global Acoustic Metamaterial Market Outlook, By Low-frequency (2024–2032) (\$MN)

Table 24 Global Acoustic Metamaterial Market Outlook, By Mid-frequency (2024–2032) (\$MN)

Table 25 Global Acoustic Metamaterial Market Outlook, By High-frequency / Ultrasonic Ranges (2024–2032) (\$MN)

Table 26 Global Acoustic Metamaterial Market Outlook, By End User (2024–2032) (\$MN)

Table 27 Global Acoustic Metamaterial Market Outlook, By Construction and Infrastructure (2024–2032) (\$MN)

Table 28 Global Acoustic Metamaterial Market Outlook, By Automotive and Mobility (2024–2032) (\$MN)

Table 29 Global Acoustic Metamaterial Market Outlook, By Aerospace and Defense (2024–2032) (\$MN)

Table 30 Global Acoustic Metamaterial Market Outlook, By Industrial Manufacturing and Heavy Equipment (2024–2032) (\$MN)

Table 31 Global Acoustic Metamaterial Market Outlook, By Consumer Electronics and Appliances (2024–2032) (\$MN)

Table 32 Global Acoustic Metamaterial Market Outlook, By Healthcare and Medical Technology (2024–2032) (\$MN)

Table 33 Global Acoustic Metamaterial Market Outlook, By Research Institutions and Laboratories (2024–2032) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

I would like to order

Product name: Acoustic Metamaterial Market Forecasts to 2032 – Global Analysis By Metamaterial Architecture (Locally Resonant Metamaterials, Phononic Crystal / Bandgap Structures, Acoustic Metasurfaces, Labyrinthine / Coiled-space Structures, Membrane-based Metamaterials, and Hybrid Architectures), Material Platform, Functionality, Frequency Range Targeted, End User, and By Geography

Product link: <https://marketpublishers.com/r/A71DB18450C3EN.html>

Price: US\$ 4,150.00 (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/A71DB18450C3EN.html>