

Metallic Glasses Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

<https://marketpublishers.com/r/M7FF1AE5654EEN.html>

Date: May 2025

Pages: 235

Price: US\$ 4,850.00 (Single User License)

ID: M7FF1AE5654EEN

Abstracts

The Global Metallic Glasses Market was valued at USD 1.8 billion in 2024 and is estimated to grow at a CAGR of 6.5% to reach USD 3.3 billion by 2034, driven by the unique properties of metallic glasses, which combine high tensile strength with excellent corrosion resistance and malleability. These materials' amorphous atomic structure allows them to perform exceptionally well under challenging conditions, making them ideal for structural strength and precision. They are useful in industries requiring durability and resistance to wear, such as electrical and magnetic components. As industries continue to demand more advanced and efficient materials, the versatile applications of metallic glasses are gaining traction.

The market benefits from increased demand in the electromagnetic and electronics sectors. Metallic glasses' low power dissipation and high efficiency make them suitable for magnetic cores, sensors, and transformers. Moreover, advancements in manufacturing technologies, such as rapid solidification and physical vapor deposition, are reducing production costs and enabling scalable operations. The biomedical sector is another key growth area for metallic glasses, as their biocompatibility and mechanical strength make them ideal for medical implants and surgical tools. Their resistance to bacteria and wear adds to their appeal for healthcare applications.

In 2024, the metal-metalloid segment of the metallic glasses market was valued at USD 1.1 billion and is projected to grow at a CAGR of 5.7% through 2034 fueled by the rising demand for lightweight and cost-effective materials, particularly in industries such as consumer electronics, augmented reality/virtual reality (AR/VR), and medical devices. These materials offer the perfect balance of strength and flexibility, making them ideal for the miniaturized components in these fast-evolving sectors. As technological advancements push for smaller, more efficient products, the adoption of metal-metalloid

glasses is expected to accelerate across various applications.

The ribbons segment, valued at USD 700 million in 2024, is also projected to experience a growth rate of 5.1% through 2034, attributed to their exceptional magnetic properties, which make them particularly suitable for use in transformers and magnetic sensors. As the demand for advanced electronic systems, energy-efficient equipment, and more precise sensor technologies increases, ribbons made from metallic glasses will continue to play a crucial role in these applications. Their ability to perform under demanding conditions while maintaining high performance makes them an asset for industries focusing on power generation, energy distribution, and high-tech sensing technologies.

U.S. Metallic Glasses Market was valued at USD 530 million in 2024, with a projected growth rate of 6% CAGR from 2025 to 2034, driven by the growing demand for metallic glasses in aerospace, defense systems, and electronics. Close collaboration between manufacturers and defense contractors is expediting the development and distribution of new metallic glass solutions. Additionally, research institutions in the U.S. are playing a vital role in advancing new alloys and optimizing production processes, which further supports the market's expansion.

Key companies in the Global Metallic Glasses Market include Heraeus Holding GmbH, Liquidmetal Technologies Inc., Materion Corporation, Usha Amorphous Metals Limited, and Hitachi Metals Ltd. To strengthen their presence, companies in the metallic glasses market focus on expanding production capabilities and refining manufacturing processes to reduce costs. Strategic partnerships and collaborations with research institutions and other industry players are helping accelerate innovation and the introduction of new materials. Manufacturers invest in technological advancements, such as additive manufacturing and advanced alloy development, to meet the growing demand for high-performance materials across various industries.

Companies Mentioned

Amorphology Inc. , Antai Technology Co., Ltd. , EPSON ATMIX Corporation , Exmet AB , Glassimetal Technology , Heraeus Holding , Hitachi Metals Ltd. , Liquidmetal Technologies Inc. , Materion Corporation , PrometalTech , PX Group SA , Qingdao Yunlu Advanced Materials Technology Co., Ltd. , RS Alloys , Usha Amorphous Metals Limited

Contents

CHAPTER 1 METHODOLOGY & SCOPE

- 1.1 Market scope & definition
- 1.2 Base estimates & calculations
- 1.3 Forecast calculation
- 1.4 Data sources
 - 1.4.1 Primary
 - 1.4.2 Secondary
 - 1.4.2.1 Paid sources
 - 1.4.2.2 Public sources
- 1.5 Primary research and validation
 - 1.5.1 Primary sources
 - 1.5.2 Data mining sources

CHAPTER 2 EXECUTIVE SUMMARY

- 2.1 Industry synopsis, 2021-2034

CHAPTER 3 INDUSTRY INSIGHTS

- 3.1 Market definition and evolution
 - 3.1.1 Definition and classification of metallic glasses
 - 3.1.2 Historical development of metallic glasses
 - 3.1.3 Material composition and properties
 - 3.1.3.1 Atomic structure and characteristics
 - 3.1.3.2 Mechanical properties
 - 3.1.3.3 Magnetic properties
 - 3.1.3.4 Corrosion resistance
 - 3.1.3.5 Thermal properties
 - 3.1.4 Manufacturing processes
 - 3.1.4.1 Rapid solidification techniques
 - 3.1.4.2 Melt spinning
 - 3.1.4.3 Gas atomization
 - 3.1.4.4 Suction casting
 - 3.1.4.5 Additive manufacturing
 - 3.1.5 Comparative analysis: metallic glasses vs. Conventional materials
 - 3.1.5.1 Metallic glasses vs. Crystalline metals

- 3.1.5.2 Metallic glasses vs. Ceramics
- 3.1.5.3 Metallic glasses vs. Polymers
- 3.1.6 Technological advancements in metallic glasses
- 3.2 Impact of trump administration tariffs – structured overview
 - 3.2.1 Impact on trade
 - 3.2.1.1 Trade volume disruptions
 - 3.2.1.2 Retaliatory measures
 - 3.2.2 Impact on the industry
 - 3.2.2.1 Supply-side impact (raw materials)
 - 3.2.2.2 Price volatility in key materials
 - 3.2.2.3 Supply chain restructuring
 - 3.2.2.4 Production cost implications
 - 3.2.2.2 Demand-side impact (selling price)
 - 3.2.2.2.1 Price transmission to end markets
 - 3.2.2.2.2 Market share dynamics
 - 3.2.2.2.3 Consumer response patterns
 - 3.2.3 Key companies impacted
 - 3.2.4 Strategic industry responses
 - 3.2.4.1 Supply chain reconfiguration
 - 3.2.4.2 Pricing and product strategies
 - 3.2.4.3 Policy engagement
 - 3.2.5 Outlook and future considerations
- 3.3 Trade statistics (hs code)
 - 3.3.1 Major exporting countries
 - 3.3.1.1 Country 1
 - 3.3.1.2 Country 2
 - 3.3.1.3 Country 3
 - 3.3.2 Major importing countries
 - 3.3.2.1 Country 1
 - 3.3.2.2 Country 2
 - 3.3.2.3 Country 3
 - 3.3.2.4 Note: the above trade statistics will be provided for key countries only.
- 3.4 Profit margin analysis
- 3.5 Regulatory landscape and standards
 - 3.5.1 Global regulatory framework
 - 3.5.2 Regional regulatory frameworks
 - 3.5.2.1 North america
 - 3.5.2.1.1 Fda regulations (for medical applications)
 - 3.5.2.1.2 Astm standards

- 3.5.2.1.3 Other relevant regulations
- 3.5.2.2 Europe
 - 3.5.2.2.1 Eu medical device regulation (mdr)
 - 3.5.2.2.2 Ce marking requirements
 - 3.5.2.2.3 Reach regulations
- 3.5.2.3 Asia-pacific
 - 3.5.2.3.1 China's regulations
 - 3.5.2.3.2 Japan's regulations
 - 3.5.2.3.3 Other regional regulations
- 3.5.2.4 Rest of the world
- 3.5.3 Product certification and standards
 - 3.5.3.1 Quality standards
 - 3.5.3.2 Safety standards
 - 3.5.3.3 Performance standards
- 3.5.4 Compliance challenges and strategies
- 3.5.5 Future regulatory trends and their implications
- 3.6 Market dynamics
 - 3.6.1 Market drivers
 - 3.6.1.1 Superior material properties
 - 3.6.1.2 Increasing demand in electronics and energy sectors
 - 3.6.1.3 Advancements in manufacturing technologies
 - 3.6.1.4 Growing applications in biomedical field
 - 3.6.2 Market restraints
 - 3.6.2.1 High production costs
 - 3.6.2.2 Limited size and shape capabilities
 - 3.6.2.3 Brittleness and limited ductility
 - 3.6.2.4 Competition from conventional materials
 - 3.6.3 Market opportunities
 - 3.6.3.1 Emerging applications in aerospace and defense
 - 3.6.3.2 Advancements in additive manufacturing
 - 3.6.3.3 Growing demand for sustainable materials
 - 3.6.3.4 Expansion in developing economies
 - 3.6.4 Market challenges
 - 3.6.4.1 Scaling up production
 - 3.6.4.2 Achieving consistent quality
 - 3.6.4.3 Regulatory compliance
 - 3.6.4.4 Market awareness and acceptance
- 3.7 Porter's five forces analysis
- 3.8 Pestle analysis

- 3.9 Value chain analysis
 - 3.9.1 Raw material suppliers
 - 3.9.2 Manufacturers
 - 3.9.3 Distributors
 - 3.9.4 End users
- 3.10 Environmental, social, and governance (esg) analysis
 - 3.10.1 Environmental impact assessment
 - 3.10.1.1 Carbon footprint analysis
 - 3.10.1.2 Life cycle assessment (lca)
 - 3.10.1.3 Waste management and recycling
 - 3.10.1.4 Energy consumption in production
 - 3.10.2 Social implications
 - 3.10.2.1 Labor practices and working conditions
 - 3.10.2.2 Community impact and engagement
 - 3.10.2.3 Health and safety considerations
 - 3.10.3 Governance and ethical considerations
 - 3.10.3.1 Corporate governance practices
 - 3.10.3.2 Ethical supply chain management
 - 3.10.3.3 Transparency and reporting
 - 3.10.4 Esg performance benchmarking of key players
 - 3.10.5 Esg risk assessment and mitigation strategies
 - 3.10.6 Future esg trends in the metallic glasses industry
- 3.11 Manufacturing and production analysis
 - 3.11.1 Manufacturing process overview
 - 3.11.1.1 Raw material procurement and preparation
 - 3.11.1.2 Alloy melting and homogenization
 - 3.11.1.3 Rapid solidification techniques
 - 3.11.1.4 Post-processing and finishing
 - 3.11.1.5 Quality control and testing
 - 3.11.2 Production cost analysis
 - 3.11.2.1 Raw material costs
 - 3.11.2.2 Energy costs
 - 3.11.2.3 Labor costs
 - 3.11.2.4 Manufacturing overheads
 - 3.11.2.5 Cost optimization strategies
 - 3.11.3 Manufacturing facilities analysis
 - 3.11.3.1 Key manufacturing locations
 - 3.11.3.2 Production capacity assessment
 - 3.11.3.3 Facility expansion plans

- 3.11.4 Supply chain challenges and solutions
- 3.11.5 Sustainability in manufacturing processes
 - 3.11.5.1 Energy efficiency measures
 - 3.11.5.2 Waste reduction strategies
 - 3.11.5.3 Eco-friendly materials and processes
- 3.12 Consumer behavior and market trends analysis
 - 3.12.1 Consumer preferences and purchasing patterns
 - 3.12.2 Factors influencing purchase decisions
 - 3.12.2.1 Performance and quality
 - 3.12.2.2 Cost considerations
 - 3.12.2.3 Sustainability factors
 - 3.12.2.4 Brand reputation
 - 3.12.3 Industry-specific adoption trends
 - 3.12.3.1 Electronics industry adoption
 - 3.12.3.2 Automotive industry adoption
 - 3.12.3.3 Medical industry adoption
 - 3.12.3.4 Aerospace industry adoption
 - 3.12.4 Regional variations in consumer behavior
 - 3.12.5 Impact of digital transformation on consumer engagement
 - 3.12.6 Future consumer trends and their implications
- 3.13 Technological landscape and innovation analysis
 - 3.13.1 Current technological trends in metallic glasses
 - 3.13.2 Emerging technologies and their potential impact
 - 3.13.2.1 Advanced manufacturing techniques
 - 3.13.2.2 Novel alloy compositions
 - 3.13.2.3 Surface modification technologies
 - 3.13.2.4 Composite metallic glasses
 - 3.13.3 R&d activities and innovation hubs
 - 3.13.4 Technology adoption trends across applications
 - 3.13.5 Technology readiness assessment
 - 3.13.6 Future technology roadmap (2025–2034)
- 3.14 Pricing analysis and economic factors
 - 3.14.1 Pricing trends analysis
 - 3.14.1.1 Historical price trends
 - 3.14.1.2 Current pricing scenario
 - 3.14.1.3 Price forecast
 - 3.14.2 Factors affecting pricing
 - 3.14.2.1 Raw material costs
 - 3.14.2.2 Production complexity

- 3.14.2.3 Scale of production
- 3.14.2.4 Market competition
- 3.14.2.5 Application-specific requirements
- 3.14.3 Regional price variations
- 3.14.4 Price-value relationship analysis
- 3.14.5 Economic indicators impacting the market
 - 3.14.5.1 Gdp growth and industrial production
 - 3.14.5.2 R&d spending
 - 3.14.5.3 Metal commodity prices
 - 3.14.5.4 Energy costs
- 3.14.6 Pricing strategies of key market players
- 3.15 Raw materials and supply chain analysis
 - 3.15.1 Key raw materials overview
 - 3.15.1.1 Metals and metalloids
 - 3.15.1.2 Rare earth elements
 - 3.15.1.3 Other critical materials
 - 3.15.2 Raw material sourcing and procurement
 - 3.15.2.1 Global supply sources
 - 3.15.2.2 Supply concentration and risks
 - 3.15.2.3 Sustainable sourcing initiatives
 - 3.15.3 Supply chain structure and dynamics
 - 3.15.3.1 Upstream supply chain
 - 3.15.3.2 Midstream processing
 - 3.15.3.3 Downstream distribution
 - 3.15.4 Supply chain challenges
 - 3.15.4.1 Raw material availability and criticality
 - 3.15.4.2 Price volatility
 - 3.15.4.3 Geopolitical factors
 - 3.15.4.4 Logistics and transportation
 - 3.15.5 Supply chain risk mitigation strategies
 - 3.15.6 Future trends in raw materials and supply chain

CHAPTER 4 COMPETITIVE LANDSCAPE, 2024

- 4.1 Market share analysis of key players
- 4.2 Competitive positioning matrix
- 4.3 Competitive strategies adopted by key players
 - 4.3.1 Product innovation and development
 - 4.3.2 Mergers and acquisitions

- 4.3.3 Partnerships and collaborations
- 4.3.4 Expansion strategies
- 4.4 Investment analysis and market attractiveness
 - 4.4.1 Current investment scenario
 - 4.4.2 Investment opportunities by segment
 - 4.4.3 Investment opportunities by region
 - 4.4.4 Roi analysis
 - 4.4.5 Venture capital and private equity landscape
 - 4.4.6 M&a activity analysis
 - 4.4.7 Future investment outlook
- 4.5 Risk assessment and mitigation strategies
 - 4.5.1 Market risks
 - 4.5.2 Technological risk
 - 4.5.3 Regulatory risks
 - 4.5.4 Competitive risks
 - 4.5.5 Supply chain risks
 - 4.5.6 Environmental and sustainability risks
 - 4.5.7 Risk mitigation strategies

CHAPTER 5 MARKET ESTIMATES AND FORECAST, BY TYPE, 2021 – 2034 (USD BILLION) (KILO TONS)

- 5.1 Key trends
- 5.2 Metal-metal metallic glasses
- 5.3 Metal-metalloid metallic glasses

CHAPTER 6 MARKET ESTIMATES AND FORECAST, BY FORM, 2021 – 2034 (USD BILLION) (KILO TONS)

- 6.1 Key trends
- 6.2 Ribbons
- 6.3 Wires
- 6.4 Powders
- 6.5 Sheets
- 6.6 Others

CHAPTER 7 MARKET ESTIMATES AND FORECAST, BY MATERIAL COMPOSITION, 2021 – 2034 (USD BILLION) (KILO TONS)

- 7.1 Key trends
- 7.2 Iron-based
- 7.3 Zirconium-based
- 7.4 Titanium-based
- 7.5 Copper-based
- 7.6 Palladium-based
- 7.7 Magnesium-based
- 7.8 Aluminum-based
- 7.9 Other compositions

CHAPTER 8 MARKET ESTIMATES AND FORECAST, BY MANUFACTURING PROCESS, 2021 – 2034 (USD BILLION) (KILO TONS)

- 8.1 Key trends
- 8.2 Extremely rapid cooling
- 8.3 Physical vapor deposition
- 8.4 Solid-state reaction
- 8.5 Ion irradiation
- 8.6 Others

CHAPTER 9 MARKET ESTIMATES AND FORECAST, BY END USE INDUSTRY, 2021 – 2034 (USD BILLION) (KILO TONS)

- 9.1 Key trends
- 9.2 Electronics and electrical
- 9.3 Automotive and transportation
- 9.4 Aerospace and defense
- 9.5 Medical and healthcare
- 9.6 Sports and leisure
- 9.7 Energy
- 9.8 Industrial equipment
- 9.9 Others

CHAPTER 10 MARKET ESTIMATES AND FORECAST, BY REGION, 2021 – 2034 (USD BILLION) (KILO TONS)

- 10.1 Key trends
- 10.2 North America
 - 10.2.1 U.S.

- 10.2.2 Canada
- 10.3 Europe
 - 10.3.1 Germany
 - 10.3.2 UK
 - 10.3.3 France
 - 10.3.4 Spain
 - 10.3.5 Italy
- 10.4 Asia Pacific
 - 10.4.1 China
 - 10.4.2 India
 - 10.4.3 Japan
 - 10.4.4 Australia
 - 10.4.5 South Korea
- 10.5 Latin America
 - 10.5.1 Brazil
 - 10.5.2 Mexico
 - 10.5.3 Argentina
- 10.6 Middle East and Africa
 - 10.6.1 Saudi Arabia
 - 10.6.2 South Africa
 - 10.6.3 UAE

CHAPTER 11 COMPANY PROFILES

- 11.1 Amorphology Inc.
- 11.2 Antai Technology Co., Ltd.
- 11.3 EPSON ATMIX Corporation
- 11.4 Exmet AB
- 11.5 Glassimetal Technology
- 11.6 Heraeus Holding
- 11.7 Hitachi Metals Ltd.
- 11.8 Liquidmetal Technologies Inc.
- 11.9 Materion Corporation
- 11.10 PrometalTech
- 11.11 PX Group SA
- 11.12 Qingdao Yunlu Advanced Materials Technology Co., Ltd.
- 11.13 RS Alloys
- 11.14 Usha Amorphous Metals Limited

I would like to order

Product name: Metallic Glasses Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

Product link: <https://marketpublishers.com/r/M7FF1AE5654EEN.html>

Price: US\$ 4,850.00 (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/M7FF1AE5654EEN.html>