

EV Thermal Management Materials Market Forecasts to 2034 – Global Analysis By Vehicle Type (Passenger Vehicles, Commercial Vehicles, Two-Wheelers, Buses and Off-Highway EVs), Material Type, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global EV Thermal Management Materials Market is accounted for \$2.05 billion in 2026 and is expected to reach \$3.58 billion by 2034 growing at a CAGR of 7.2% during the forecast period. Thermal management materials in electric vehicles are crucial for regulating heat produced by batteries, motors, and power electronics, helping maintain safety, performance, and long operational life. Key materials such as phase change systems, thermal interface layers, insulating foams, and engineered composites control temperature via heat transfer and absorption mechanisms. Innovations focus on reducing weight, improving heat dissipation, and increasing flame resistance to meet the requirements of rapid charging and higher battery capacities. Expanding EV adoption, tighter safety norms, and the pursuit of longer vehicle range are significantly boosting the global demand for efficient thermal management material solutions.

According to the U.S. Department of Energy (DOE), thermal management is critical for EV batteries because lithium-ion cells must be kept between 15–35°C for optimal performance and safety. DOE research highlights that advanced thermal interface materials and phase change materials are being tested to reduce overheating risks in EV packs.

Market Dynamics:

Driver:

Increasing battery energy density and fast charging

The shift toward high-energy-density batteries and fast-charging systems is accelerating the need for advanced EV thermal management materials. Faster charging and higher power output lead to intense heat buildup within battery packs, making effective temperature regulation critical. Specialized materials help absorb, transfer, and control heat, reducing safety risks and performance loss. Automakers are focusing on extending vehicle range while minimizing charging downtime, which places greater stress on thermal systems. This trend is significantly increasing demand for high-performance materials capable of supporting next-generation battery technologies under demanding thermal conditions.

Restraint:

High cost of advanced thermal materials

Elevated costs associated with advanced thermal management materials limit market growth. High-performance solutions required for effective heat control add substantial expense to EV manufacturing, impacting vehicle affordability. Budget-focused EV segments are particularly affected, as manufacturers must balance thermal efficiency with pricing targets. Expensive raw materials, specialized formulations, and complex processing methods make cost reduction difficult. As a result, automakers may opt for simpler or less efficient alternatives, especially in emerging markets. This pricing pressure restrains broader adoption of advanced thermal materials despite their technical benefits.

Opportunity:

Demand for lightweight and energy-efficient materials

The push for lightweight and energy-efficient EV designs is creating new opportunities in thermal management materials. Automakers aim to reduce mass while maintaining effective heat control to enhance range and efficiency. Lightweight thermal materials that offer strong conductivity and insulation are increasingly preferred. Innovations in polymers and composites support this requirement. As efficiency becomes a key competitive factor in EV design, demand for advanced thermal materials that contribute to weight reduction and performance optimization continues to grow steadily.

Threat:

Rapid technological obsolescence

Fast-moving technological change presents a threat to the EV thermal management materials market. Continuous evolution in battery designs and vehicle architectures can quickly reduce the relevance of current thermal materials. Suppliers face constant pressure to upgrade products and align with new system requirements. High R&D costs and short innovation cycles increase business risk, particularly for smaller companies. If materials fail to keep up with technological shifts, suppliers may lose market share, making technological obsolescence a persistent challenge.

Covid-19 Impact:

COVID-19 created both challenges and recovery-driven growth for the EV thermal management materials market. Early in the pandemic, supply chain interruptions and manufacturing halts reduced material availability and slowed EV production. Lower consumer demand further affected market momentum. Over time, economic revival plans and stronger emphasis on sustainable transportation boosted electric vehicle sales. This resurgence supported increased use of thermal management materials for efficient heat control and safety. The pandemic underscored the need for supply chain diversification and local sourcing, shaping long-term strategies for material suppliers and EV manufacturers alike.

The passenger vehicles segment is expected to be the largest during the forecast period

The passenger vehicles segment is expected to account for the largest market share during the forecast period, driven by large-scale manufacturing and strong consumer demand. Electric cars require efficient heat regulation systems to maintain battery safety, optimize performance, and enhance vehicle durability. Thermal materials play a crucial role in meeting expectations for range, charging speed, and overall reliability. Ongoing innovation in passenger EV design, combined with expanding charging infrastructure and supportive regulations, continues to fuel material adoption. As passenger EVs remain the most widely produced and sold electric vehicles, they represent the leading source of demand for thermal management materials.

The phase change materials (PCMs) segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the phase change materials (PCMs) segment is predicted to witness the highest growth rate, driven by their effective thermal energy storage characteristics. These materials regulate battery temperature by absorbing excess heat and releasing it when needed, enhancing operational stability and safety. PCMs support simplified thermal system designs and are well suited for modern EV batteries that experience intense heat during rapid charging cycles. With increasing focus on battery protection, space optimization, and thermal efficiency, PCMs are gaining strong adoption, positioning them as the fastest-growing material segment in EV thermal management applications.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to its leadership in electric vehicle production and widespread EV adoption. The region hosts a dense network of automakers, battery producers, and thermal material suppliers, enabling efficient supply chains and large-scale manufacturing. Policy support for clean transportation, along with expanding charging infrastructure, continues to accelerate EV deployment. The high concentration of electric passenger cars and commercial vehicles drives consistent demand for advanced thermal solutions. As a result, Asia Pacific remains the most influential region in shaping demand for EV thermal management materials.

Region with highest CAGR:

Over the forecast period, the Europe region is anticipated to exhibit the highest CAGR, driven by strict environmental policies and rapid EV penetration. The region's automotive industry is actively shifting toward electric mobility, creating rising demand for efficient heat management materials. Supportive regulations, financial incentives, and long-term decarbonisation goals are encouraging widespread EV adoption. European manufacturers also emphasize advanced, sustainable, and high-performance materials, further boosting market expansion. As electric vehicle production and innovation accelerate, Europe continues to emerge as the region with the highest growth rate in thermal management materials demand.

Key players in the market

Some of the key players in EV Thermal Management Materials Market include Robert Bosch GmbH, GENTHERM, Valeo, Dana Limited, MAHLE GmbH, Hanon Systems, 3M,

DuPont, Henkel, Parker Hannifin, Asahi Kasei, Saint-Gobain, ExxonMobil Corporation, Chevron Corporation, Polymer Science, Indium Corporation, LORD Corp and Marian.

Key Developments:

In October 2025, Saint-Gobain has signed a definitive agreement with the Brazilian group GG10, owner of the G-Haus brand, for the sale of Tumelero, a retail chain specializing in construction materials, with a strong presence in southern Brazil. Tumelero is currently operating 16 stores and 1 logistic center in Rio Grande do Sul, employs around 580 people and generated revenues of around €40 million in 2024.

In September 2025, Bosch and Alibaba Group announced an expanded strategic partnership to accelerate digital transformation through advanced cloud computing and AI technologies. The enhanced collaboration will focus on cloud-based enterprise operations, AI-driven business innovations, and e-commerce expansion.

In May 2025, 3M has reached an agreement that resolves all legacy claims related to the Chambers Works site in Salem County, New Jersey, currently owned by The Chemours Company and, before that, by DuPont. In addition, the settlement extends to PFAS-related claims that the State of New Jersey and its departments have, or may in the future have, against 3M.

Vehicle Types Covered:

Passenger Vehicles

Commercial Vehicles

Two-Wheelers

Buses

Off-Highway EVs

Material Types Covered:

Phase Change Materials (PCMs)

Thermal Interface Materials (TIMs)

Insulation Materials

Heat Sinks

Graphite & Ceramic Composites

Advanced Polymers

Applications Covered:

Cooling Applications

Thermal Insulation Applications

HVAC Systems

Charging Infrastructure Cooling

End Users Covered:

Private Use

Fleet Operations

Public Transportation

Industrial/Utility Operators

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of 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

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
 - 2.4.1 Data Collection (Primary and Secondary)
 - 2.4.2 Data Modeling and Estimation Techniques
 - 2.4.3 Data Validation and Triangulation
 - 2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

- 4.1 Porter's Five Forces Analysis
 - 4.1.1 Supplier Bargaining Power
 - 4.1.2 Buyer Bargaining Power
 - 4.1.3 Threat of Substitutes
 - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

5 GLOBAL EV THERMAL MANAGEMENT MATERIALS MARKET, BY VEHICLE TYPE

- 5.1 Passenger Vehicles
- 5.2 Commercial Vehicles
- 5.3 Two-Wheelers
- 5.4 Buses
- 5.5 Off-Highway EVs

6 GLOBAL EV THERMAL MANAGEMENT MATERIALS MARKET, BY MATERIAL TYPE

- 6.1 Phase Change Materials (PCMs)
- 6.2 Thermal Interface Materials (TIMs)
- 6.3 Insulation Materials
- 6.4 Heat Sinks
- 6.5 Graphite & Ceramic Composites
- 6.6 Advanced Polymers

7 GLOBAL EV THERMAL MANAGEMENT MATERIALS MARKET, BY APPLICATION

- 7.1 Cooling Applications
 - 7.1.1 Battery Thermal Management
 - 7.1.2 Power Electronics Cooling
- 7.2 Thermal Insulation Applications
 - 7.2.1 Safety Barriers
- 7.3 HVAC Systems
- 7.4 Charging Infrastructure Cooling

8 GLOBAL EV THERMAL MANAGEMENT MATERIALS MARKET, BY END USER

- 8.1 Private Use
- 8.2 Fleet Operations
- 8.3 Public Transportation

8.4 Industrial/Utility Operators

9 GLOBAL EV THERMAL MANAGEMENT MATERIALS MARKET, BY GEOGRAPHY

9.1 North America

9.1.1 United States

9.1.2 Canada

9.1.3 Mexico

9.2 Europe

9.2.1 United Kingdom

9.2.2 Germany

9.2.3 France

9.2.4 Italy

9.2.5 Spain

9.2.6 Netherlands

9.2.7 Belgium

9.2.8 Sweden

9.2.9 Switzerland

9.2.10 Poland

9.2.11 Rest of Europe

9.3 Asia Pacific

9.3.1 China

9.3.2 Japan

9.3.3 India

9.3.4 South Korea

9.3.5 Australia

9.3.6 Indonesia

9.3.7 Thailand

9.3.8 Malaysia

9.3.9 Singapore

9.3.10 Vietnam

9.3.11 Rest of Asia Pacific

9.4 South America

9.4.1 Brazil

9.4.2 Argentina

9.4.3 Colombia

9.4.4 Chile

9.4.5 Peru

9.4.6 Rest of South America

9.5 Rest of the World (RoW)

9.5.1 Middle East

9.5.1.1 Saudi Arabia

9.5.1.2 United Arab Emirates

9.5.1.3 Qatar

9.5.1.4 Israel

9.5.1.5 Rest of Middle East

9.5.2 Africa

9.5.2.1 South Africa

9.5.2.2 Egypt

9.5.2.3 Morocco

9.5.2.4 Rest of Africa

10 STRATEGIC MARKET INTELLIGENCE

10.1 Industry Value Network and Supply Chain Assessment

10.2 White-Space and Opportunity Mapping

10.3 Product Evolution and Market Life Cycle Analysis

10.4 Channel, Distributor, and Go-to-Market Assessment

11 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

11.1 Mergers and Acquisitions

11.2 Partnerships, Alliances, and Joint Ventures

11.3 New Product Launches and Certifications

11.4 Capacity Expansion and Investments

11.5 Other Strategic Initiatives

12 COMPANY PROFILES

12.1 Robert Bosch GmbH

12.2 GENTHERM

12.3 Valeo

12.4 Dana Limited

12.5 MAHLE GmbH

12.6 Hanon Systems

12.7 3M

12.8 DuPont

12.9 Henkel

- 12.10 Parker Hannifin
- 12.11 Asahi Kasei
- 12.12 Saint-Gobain
- 12.13 ExxonMobil Corporation
- 12.14 Chevron Corporation
- 12.15 Polymer Science
- 12.16 Indium Corporation
- 12.17 LORD Corp
- 12.18 Marian

List Of Tables

LIST OF TABLES

Table 1 Global EV Thermal Management Materials Market Outlook, By Region (2023-2034) (\$MN)

Table 2 Global EV Thermal Management Materials Market Outlook, By Vehicle Type (2023-2034) (\$MN)

Table 3 Global EV Thermal Management Materials Market Outlook, By Passenger Vehicles (2023-2034) (\$MN)

Table 4 Global EV Thermal Management Materials Market Outlook, By Commercial Vehicles (2023-2034) (\$MN)

Table 5 Global EV Thermal Management Materials Market Outlook, By Two-Wheelers (2023-2034) (\$MN)

Table 6 Global EV Thermal Management Materials Market Outlook, By Buses (2023-2034) (\$MN)

Table 7 Global EV Thermal Management Materials Market Outlook, By Off-Highway EVs (2023-2034) (\$MN)

Table 8 Global EV Thermal Management Materials Market Outlook, By Material Type (2023-2034) (\$MN)

Table 9 Global EV Thermal Management Materials Market Outlook, By Phase Change Materials (PCMs) (2023-2034) (\$MN)

Table 10 Global EV Thermal Management Materials Market Outlook, By Thermal Interface Materials (TIMs) (2023-2034) (\$MN)

Table 11 Global EV Thermal Management Materials Market Outlook, By Insulation Materials (2023-2034) (\$MN)

Table 12 Global EV Thermal Management Materials Market Outlook, By Heat Sinks (2023-2034) (\$MN)

Table 13 Global EV Thermal Management Materials Market Outlook, By Graphite & Ceramic Composites (2023-2034) (\$MN)

Table 14 Global EV Thermal Management Materials Market Outlook, By Advanced Polymers (2023-2034) (\$MN)

Table 15 Global EV Thermal Management Materials Market Outlook, By Application (2023-2034) (\$MN)

Table 16 Global EV Thermal Management Materials Market Outlook, By Cooling Applications (2023-2034) (\$MN)

Table 17 Global EV Thermal Management Materials Market Outlook, By Battery Thermal Management (2023-2034) (\$MN)

Table 18 Global EV Thermal Management Materials Market Outlook, By Power

Electronics Cooling (2023-2034) (\$MN)

Table 19 Global EV Thermal Management Materials Market Outlook, By Thermal Insulation Applications (2023-2034) (\$MN)

Table 20 Global EV Thermal Management Materials Market Outlook, By Safety Barriers (2023-2034) (\$MN)

Table 21 Global EV Thermal Management Materials Market Outlook, By HVAC Systems (2023-2034) (\$MN)

Table 22 Global EV Thermal Management Materials Market Outlook, By Charging Infrastructure Cooling (2023-2034) (\$MN)

Table 23 Global EV Thermal Management Materials Market Outlook, By End User (2023-2034) (\$MN)

Table 24 Global EV Thermal Management Materials Market Outlook, By Private Use (2023-2034) (\$MN)

Table 25 Global EV Thermal Management Materials Market Outlook, By Fleet Operations (2023-2034) (\$MN)

Table 26 Global EV Thermal Management Materials Market Outlook, By Public Transportation (2023-2034) (\$MN)

Table 27 Global EV Thermal Management Materials Market Outlook, By Industrial/Utility Operators (2023-2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) Regions are also represented in the same manner as above.

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