

Global Battery Phase Change Composite Material Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Battery Phase Change Composite Material market size is expected to reach \$ 312 million by 2032, rising at a market growth of 13.1% CAGR during the forecast period (2026-2032).

Battery Phase Change Composite Materials are thermal energy storage and temperature-control materials used in thermal management systems for power batteries, energy storage batteries, and high-rate battery modules. They are typically based on paraffin waxes, fatty acids, polyethylene glycol (PEG), hydrated salts, or bio-based phase change materials, and are compounded with expanded graphite, graphene, metal foams, ceramic thermally conductive fillers, flame retardants, polymer frameworks, or silicone encapsulation layers. By absorbing or releasing latent heat near a predefined phase transition temperature, these materials reduce cell temperature rise and temperature differences within battery modules while also providing leakage resistance, electrical insulation, flexible cushioning, and thermal runaway mitigation. The overall gross margin is approximately 46%.

Growth in battery phase change composite materials is primarily driven by the evolution of battery systems toward higher charging rates, higher energy density, and greater safety redundancy. Air cooling alone is increasingly insufficient for temperature uniformity control, while liquid cooling, although now the mainstream solution, still requires complementary passive materials to address localized thermal hotspots, temperature equalization during idle conditions, low-temperature thermal retention, and thermal runaway propagation suppression. As a result, phase change materials are increasingly incorporated into battery pack designs as liquid cooling plate interlayers, module gap fillers, cylindrical cell spacers, and side-mounted pads for pouch and prismatic cells.

Product development is shifting from simple paraffin- or PEG-based materials toward high-thermal-conductivity, shape-stabilized, and flame-retardant composite systems. Procurement decisions typically focus on phase transition temperature range, latent heat capacity, thermal conductivity, dielectric strength, flame-retardant performance, cycling stability, compression recovery, and risks associated with volatilization or leakage. Temperature windows between 40°C and 60°C are particularly well suited for fast-charging power battery applications and thermal safety management in energy storage systems. The incorporation of expanded graphite, boron nitride, alumina, silicone encapsulation technologies, and polymer support frameworks improves thermal conductivity and structural stability, although these additions can reduce latent heat capacity. Consequently, material formulations must carefully balance energy storage capability, thermal conductivity, and manufacturing cost.

The market remains in the qualification and project adoption stage, with a current market size smaller than thermally conductive pads, potting compounds, and liquid cooling plates. However, demand driven by energy storage safety, lightweight battery pack designs for overseas markets, passive thermal management in electric two-wheelers and low-speed vehicles, and thermal runaway protection is expected to support growth rates exceeding those of conventional thermal interface materials. Key challenges include long automotive qualification cycles, strong customization requirements for different cell formats, and evolving standards related to long-term cycling performance and flame-retardant safety.

This report studies the global Battery Phase Change Composite Material production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Battery Phase Change Composite Material and provides market size (US\$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Battery Phase Change Composite Material that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Battery Phase Change Composite Material total production and demand, 2021-2032, (Tons)

Global Battery Phase Change Composite Material total production value, 2021-2032, (USD Million)

Global Battery Phase Change Composite Material production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Tons), (based on production site)

Global Battery Phase Change Composite Material consumption by region & country, CAGR, 2021-2032 & (Tons)

U.S. VS China: Battery Phase Change Composite Material domestic production, consumption, key domestic manufacturers and share

Global Battery Phase Change Composite Material production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Tons)

Global Battery Phase Change Composite Material production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Tons)

Global Battery Phase Change Composite Material production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Tons)

This report profiles key players in the global Battery Phase Change Composite Material market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Beam Global, Pluss Advanced Technologies, Rubitherm Technologies, Phase Change Material Products, Croda, PureTemp, Microtek Laboratories, Honeywell, Henkel, Parker Hannifin, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Battery Phase Change Composite Material market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US\$ Millions), volume (production, consumption) & (Tons) and average price (US\$/kg) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Battery Phase Change Composite Material Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Battery Phase Change Composite Material Market, Segmentation by Type:

Organic PCM Composite

Inorganic Hydrated Salt Composite

Eutectic PCM Composite

Polymer PCM Composite

Bio-Based PCM Composite

Other PCM Composite

Global Battery Phase Change Composite Material Market, Segmentation by Reinforcement/Encapsulation Structure:

Expanded Graphite or Carbon Composite

Metal Foam or Honeycomb Composite

Ceramic Insulating Filler Composite

Polymer Encapsulated Composite

Silicone Encapsulated Composite

Other Reinforced Composite

Global Battery Phase Change Composite Material Market, Segmentation by Phase Change Temperature:

Below 30°C

30-40°C

40-50°C

50-60°C

Above 60°C

Custom Temperature

Global Battery Phase Change Composite Material Market, Segmentation by Functional Performance:

High Thermal Conductivity

Flame Retardant

Form Stable and Leakage Resistant

Flexible and Compressible

Electrically Insulating

Other Performance

Global Battery Phase Change Composite Material Market, Segmentation by Application:

EV Power Battery Packs

Energy Storage Battery Systems

Two-Wheeler and Light EV Batteries

Portable Electronics Batteries

Battery Testing and Safety Modules

Other Battery Thermal Management

Companies Profiled:

Beam Global

Pluss Advanced Technologies

Rubitherm Technologies

Phase Change Material Products

Croda

PureTemp

Microtek Laboratories

Honeywell

Henkel

Parker Hannifin

Boyd

Kingbali

Allied

GLPOLY

Zhongjia New Material

Saimo New Energy

Key Questions Answered:

1. How big is the global Battery Phase Change Composite Material market?
2. What is the demand of the global Battery Phase Change Composite Material market?
3. What is the year over year growth of the global Battery Phase Change Composite Material market?
4. What is the production and production value of the global Battery Phase Change Composite Material market?
5. Who are the key producers in the global Battery Phase Change Composite Material market?
6. What are the growth factors driving the market demand?

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