

Global Battery Phase Change Composite Material Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Battery Phase Change Composite Material market size was valued at US\$ 132 million in 2025 and is forecast to a readjusted size of US\$ 312 million by 2032 with a CAGR of 13.1% during review period.

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 is a detailed and comprehensive analysis for global Battery Phase Change Composite Material market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Battery Phase Change Composite Material market size and forecasts, in consumption value (\$ Million), sales quantity (Tons), and average selling prices (US\$/kg), 2021-2032

Global Battery Phase Change Composite Material market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (Tons), and average selling prices (US\$/kg), 2021-2032

Global Battery Phase Change Composite Material market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (Tons), and average selling prices (US\$/kg), 2021-2032

Global Battery Phase Change Composite Material market shares of main players, shipments in revenue (\$ Million), sales quantity (Tons), and ASP (US\$/kg), 2021-2026

The Primary Objectives in This Report Are:

- To determine the size of the total market opportunity of global and key countries

- To assess the growth potential for Battery Phase Change Composite Material

- To forecast future growth in each product and end-use market

- To assess competitive factors affecting the marketplace

This report profiles key players in the global Battery Phase Change Composite Material market based on the following parameters - company overview, sales quantity, revenue, 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.

Market Segmentation

Battery Phase Change Composite Material market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche

markets.

Market segment by Type

Organic PCM Composite

Inorganic Hydrated Salt Composite

Eutectic PCM Composite

Polymer PCM Composite

Bio-Based PCM Composite

Other PCM Composite

Market segment 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

Market segment by Phase Change Temperature

Below 30°C

30-40°C

40-50°C

50?60?C

Above 60?C

Custom Temperature

Market segment by Functional Performance

High Thermal Conductivity

Flame Retardant

Form Stable and Leakage Resistant

Flexible and Compressible

Electrically Insulating

Other Performance

Market segment 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

Major players covered

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

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

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

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

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

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Battery Phase Change Composite Material product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Battery Phase Change Composite Material, with price, sales quantity, revenue, and global market share of Battery Phase Change Composite Material from 2021 to 2026.

Chapter 3, the Battery Phase Change Composite Material competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Battery Phase Change Composite Material breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026. and Battery Phase Change Composite Material market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Battery Phase Change Composite Material.

Chapter 14 and 15, to describe Battery Phase Change Composite Material sales channel, distributors, customers, research findings and conclusion.

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