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Global Phase Change Materials (PCM) for Cooling Market Growth 2025-2031

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Abstracts

The global Phase Change Materials (PCM) for Cooling market size is predicted to grow from US$ 814 million in 2025 to US$ 1583 million in 2031; it is expected to grow at a CAGR of 11.7% from 2025 to 2031.

The impact of the latest U.S. tariff measures and the corresponding policy responses from countries worldwide on market competitiveness, regional economic performance, and supply chain configurations will be comprehensively evaluated in this report.

Phase Change Materials (PCM) for Cooling are substances that absorb, store, and release large amounts of latent heat during phase transitions—typically from solid to liquid and vice versa—at specific temperatures. These materials are engineered to maintain a near-constant temperature while absorbing heat, making them ideal for thermal energy storage and temperature regulation applications. PCMs used for cooling can be organic (like paraffins or fatty acids), inorganic (such as salt hydrates), or eutectic mixtures, each offering varying thermal conductivity, stability, and energy storage capacity. They are widely utilized in passive cooling systems, cold chain logistics, HVAC systems, building insulation, electronics thermal management, and personal cooling products. Key characteristics include phase transition temperature range (commonly between 0°C and 30°C for cooling applications), high latent heat capacity (typically 150–250 kJ/kg), non-toxicity, and long cycle stability.

Phase Change Materials (PCMs) for cooling applications typically feature a phase change temperature range between -20°C and +30°C, tailored to use cases such as vaccine transport, HVAC systems, or personal cooling. These materials possess a latent heat of fusion between 150 and 250 kJ/kg, enabling efficient thermal energy storage during melting and solidification. They generally exhibit thermal conductivity

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between 0.2 and 0.6 W/m·K, density ranging from 800 to 1,500 kg/m?, and specific heat capacity of 1.8 to 2.5 kJ/kg·K. Most PCMs maintain stable performance over 1,000+ thermal cycles, with a melting/freezing point hysteresis of less than 2 °C, ensuring predictable energy release. Volume expansion during phase transition typically ranges from 5% to 15%, requiring compatible encapsulation. PCMs can be formulated as salt hydrates, paraffin waxes, fatty acids, or bio-based compounds, and are offered in bulk, macroencapsulated (e.g., pouches, panels), or microencapsulated (e.g., textile coatings)forms, depending on application requirements.

LP Information, Inc. (LPI) ' newest research report, the “Phase Change Materials (PCM) for Cooling Industry Forecast” looks at past sales and reviews total world Phase Change Materials (PCM) for Cooling sales in 2024, providing a comprehensive analysis by region and market sector of projected Phase Change Materials (PCM) for Cooling sales for 2025 through 2031. With Phase Change Materials (PCM) for Cooling sales broken down by region, market sector and sub-sector, this report provides a detailed analysis in US$ millions of the world Phase Change Materials (PCM) for Cooling industry.

This Insight Report provides a comprehensive analysis of the global Phase Change Materials (PCM) for Cooling landscape and highlights key trends related to product segmentation, company formation, revenue, and market share, latest development, and M&A activity. This report also analyzes the strategies of leading global companies with a focus on Phase Change Materials (PCM) for Cooling portfolios and capabilities, market entry strategies, market positions, and geographic footprints, to better understand these firms’ unique position in an accelerating global Phase Change Materials (PCM) for Cooling market.

This Insight Report evaluates the key market trends, drivers, and affecting factors shaping the global outlook for Phase Change Materials (PCM) for Cooling and breaks down the forecast by Type, by Application, geography, and market size to highlight emerging pockets of opportunity. With a transparent methodology based on hundreds of bottom-up qualitative and quantitative market inputs, this study forecast offers a highly nuanced view of the current state and future trajectory in the global Phase Change Materials (PCM) for Cooling.

This report presents a comprehensive overview, market shares, and growth opportunities of Phase Change Materials (PCM) for Cooling market by product type, application, key manufacturers and key regions and countries.

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Segmentation by Type:

- Organic PCMs
- Inorganic PCMs

Segmentation by Application:

- Cold Chain Logistics
- HVAC Systems
- Battery Cooling
- Others

This report also splits the market by region:

- Americas
  - United States
  - Canada
  - Mexico
  - Brazil
- APAC
  - China
  - Japan
  - Korea
  - Southeast Asia

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India

Australia

Europe

Germany

France

UK

Italy

Russia

Middle East & Africa

Egypt

South Africa

Israel

Turkey

GCC Countries

The below companies that are profiled have been selected based on inputs gathered from primary experts and analysing the company's coverage, product portfolio, its market penetration.

Rubitherm

BASF

Outlast Technologies

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Climator

PCM Products

Phase Change Energy Solutions

EMCOOL

Croda International

Entropy Solutions

Pluss Advanced Technologies

Cold Chain Technologies

Cristopia Energy Systems

RGEES

Va-Q-tec

Honeywell

GreenTEG

Thermavance Technologies

Key Questions Addressed in this Report
What is the 10-year outlook for the global Phase Change Materials (PCM) for Cooling market?
What factors are driving Phase Change Materials (PCM) for Cooling market growth, globally and by region?
Which technologies are poised for the fastest growth by market and region?
How do Phase Change Materials (PCM) for Cooling market opportunities vary by end market size?
How does Phase Change Materials (PCM) for Cooling break out by Type, by

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Application?

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