ANMD-MRS2-019 · Advanced Building Materials

Phase Change Materials — Thermal Mass

A Global Sustainability Due Diligence & Market Research Study

History 2020–2024 · Base Year 2025 · Forecast 2025–2032 · Outlooks 2035 / 2040 / 2050 · Currency US$

WHY THIS REPORT

Phase change materials (PCMs) store and release latent heat to flatten building temperature swings, turning walls, ceilings and HVAC into passive thermal batteries. This decision-grade study sizes the global market three ways — value, mass (kg) and volume (tonnes) — across PCM type, form and application, across seven regions and four scenarios to 2032, with outlooks to 2050.

SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone, not an afterthought. Beyond performance, phase change materials deliver measurable peak-load shifting, HVAC energy savings and thermal comfort, while reduced cooling and heating demand strengthen the natural-capital story.

Mapped Sustainable Development Goals:

SDG 7	SDG 9	SDG 11	SDG 13
Affordable Clean Energy	Industry & Innovation	Sustainable Cities	Climate Action

Measurable sustainability outcomes assessed:

- Peak-load shifting and reduced HVAC energy demand
- Improved thermal comfort across the building fabric
- Lower operational carbon from heating and cooling
- Embodied carbon, circularity and material sourcing as material risks

Framework alignment: Double materiality mapped to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, with greenwashing and SDG-washing screens applied throughout.

WHAT'S INSIDE AT A GLANCE

53 Chapters	**9** Report Parts	**7** Regions Covered	**40+** Country Markets
2025–32 Forecast Horizon	**4** Forward Scenarios	**25+** Companies Profiled	**4** SDGs Mapped

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. Europe is the technology leader (Germany, United Kingdom, Sweden) on a deep PCM industry and energy codes; North America scales on building-energy and thermal-storage demand; other regions assessed on their own merits.

MARKET OVERVIEW

From early adoption to mainstream scale — where building fabric becomes a passive thermal battery.

The phase change materials thermal mass market is moving from early adoption to mainstream commercial scale. Demand is driven by building decarbonisation converging with energy codes and green-building rules, supported by maturing incentives across Europe, North America and Asia Pacific. The market is read three ways — value, mass (kg) and volume (tonnes) — and forecast under four scenarios, each region reported separately.

- Europe is the technology leader — Germany, United Kingdom and Sweden, on a deep PCM industry and energy codes
- North America scales on building-energy and thermal-storage demand
- Whole-life carbon is the differentiator — operational-energy savings plus comfort, increasingly with green-premium value
- PCM type and application segment the value across organic, inorganic, microencapsulated and board forms

REGIONAL OUTLOOK

Across seven reporting regions, the report separates early commercialisation leaders from high-growth and emerging markets — each profiled in full rather than aggregated into Rest of World.

Region	Stage	Lead Markets & Drivers
Europe	Technology leader	Germany, United Kingdom, Sweden — PCM industry, energy codes
North America	Scaling	United States, Canada — building energy, thermal storage
Asia Pacific	High-growth	Japan, China, India — cooling demand, energy efficiency
Middle East	High-growth	UAE, Saudi Arabia — cooling loads, passive design
Latin America	Emerging	Brazil, Mexico — cooling demand, comfort
Africa	Emerging	South Africa, Egypt — passive cooling, energy access

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Building-energy + thermal-storage convergence • Operational-carbon reduction & energy savings • Policy incentives (energy codes, green-building rules, carbon rules) • Developer & contractor cost-and-compliance economics • Material, encapsulation & performance technology gains	• Cost premium vs conventional material • Performance, standards & certification hurdles • Building-code, approval & specification rules • Raw-material & energy cost inflation • Specifier adoption, financing & code-update lag

SEGMENTATION SNAPSHOT

By PCM Type	Organic (paraffin/bio) · inorganic (salt hydrates) · microencapsulated · boards · panels/mats
By Form	Bulk · microencapsulated · board / panel
By Application	Wall & ceiling integration · HVAC & storage · passive cooling
By End User	Builders & contractors · developers · precasters · architects · public works
By Business Model	Direct sale · distributor · project-supply · specification-led
By Scale	Project · regional · national supply

TABLE OF CONTENTS — PARTS & CHAPTERS

The full report is organised into nine parts across 53 chapters, listed below. Detailed sub-headings, country tables and directories are provided in the full report.

Part V — Company, Competition, Patent and Project Intelligence

Part VI — Sustainability, ESG, SDG, Climate and Natural-Capital Intelligence

Part VII — Supply Chain, Policy, Legal, Economics and Finance

Part VIII — Scenario, Future Intelligence and Final Due Diligence Verdict

Part IX — Annexes, Directories and Reference Material

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans specialist phase-change-material producers, established chemicals majors, and regional manufacturers. Deal activity — capacity investment, technology licensing and demonstration projects — signals a market consolidating around bankable, scalable production.

Representative players profiled in the full report:

Croda International Plc (Crodatherm) · Rubitherm Technologies GmbH · PCM Products Ltd · Phase Change Solutions, Inc. · Microtek Laboratories, Inc. · and 20+ further profiled players across producers, encapsulators and board fabricators.

Investment intelligence: venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a Go / No-Go / Conditional-Go investment verdict.

KEY QUESTIONS THIS REPORT ANSWERS

- ? How large is the global phase change materials market, and how fast will it grow to 2032?
- ? Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- ? How does whole-life carbon change value versus conventional materials?
- ? Who leads, and where is the competitive and patent white space?
- ? Is the investment case bankable — and under what conditions?
- ? How does the material align with the SDGs, green-building codes and disclosure regulation?

WHY ANMD — THE DIFFERENCE

Most market studies stop at units and revenue. This report is built as a sustainability due diligence instrument — fusing market sizing with ESG, SDG, climate, water and natural-capital intelligence and a decision-ready bankability verdict in a single architecture.

- › Triangulated sizing — every market read three ways so value, volume and area views reconcile rather than conflict.
- › Region-honest forecasting — Latin America, Africa and the Middle East reported in full, never hidden inside Rest of World, every forecast resolved to the 2025 base year.
- › Integrated evidence base — company, patent and project databases linked to the analysis, with published-filing patents and FTO treated as an indicator, not a legal conclusion.
- › No-fabrication discipline — every estimate carries a data-confidence rating and disclosed sources; gaps are flagged for further diligence, never filled with invented numbers.
- › Anti-greenwashing rigour — SDG-washing and greenwashing screens plus claim-substantiation checks built into the ESG and project analysis.
- › Decision-first structure — 9 Parts and 53 Chapters culminating in stakeholder playbooks and a clear Go / No-Go / Conditional-Go investment verdict.

WHO SHOULD BUY THIS REPORT

Investors and infrastructure / PE funds, material producers and manufacturers, builders, developers and contractors, architects and specifiers, green-building certifiers, policymakers, and corporate strategy and ESG teams.

Access the Full Report

The complete report delivers all 53 chapters in full, with every sub-heading, country table, company and patent directory, forecast model and due diligence checklist.

Purchase at **www.anewmarketdynamics.com** · Standard & Premium licences · Single-Site (SSL) and Global-Site (GSL) options at checkout.

Want the Complete Detailed Table of Contents?

This prospectus lists the nine parts and 53 chapters. The complete detailed table of contents — every sub-heading, country table, exhibit, company and patent directory and annex — is available on request to registered users. To receive it, register with your official company email at **www.anewmarketdynamics.com**. The full detailed table of contents will be sent directly to your registered company email address.