

Phase Change Material Market by type (Inorganic, Organic), Application (Building & Construction, HVAC, Cold Chain & Packaging, Electronics, Textile) and Region (North America, Europe, APAC, Rest of World) - Global Forecasts to 2026

<https://marketpublishers.com/r/P4F8F2BA9DFEN.html>

Date: February 2022

Pages: 242

Price: US\$ 4,950.00 (Single User License)

ID: P4F8F2BA9DFEN

Abstracts

The phase change material market is estimated to grow to USD 1,004 million by 2026 from USD 477 million in 2021, at a CAGR of 16.0%. Global warming and changing climate patterns are major environmental concerns. The European Union (EU) planned to reduce greenhouse gas emissions by 20% by 2020 and by 40% by 2030, with new environment-friendly technologies being required to achieve this objective. The use of phase change material is expected to reduce the demand for coolers and heaters, and subsequently lower the demand for electricity. Through incorporating phase change material in applications such as building and HVAC, companies now have the potential to earn 10–20 times more carbon credits than available through using other green insulating materials. Regulations for carbon emission reductions such as the CRC Energy Efficiency Scheme in the UK have made it mandatory for non-energy-intensive organizations in the public and private sectors to reduce carbon emissions. There is an increasing demand for phase change material in buildings that reduces the required compressor load for heating and cooling buildings by maintaining required room temperatures, thus decreasing carbon emissions. All these factors are expected to drive the phase change material market.

Inorganic expected to be the largest phase change material type of the phase change material market, in terms of value, between 2021 and 2026

By type, the phase change material market is segmented into inorganic, and organic. Phase change material stores energy as latent heat, in contrast to materials that store

energy as sensible heat or chemical energy. Inorganic accounted for the larger share of the global phase change material market in 2020 in terms of value. Rising demand for class-A fire rating phase change material in the country, accompanied by its increasing use in applications such as cold chain & packaging, and refrigeration & equipment drives the demand for inorganic phase change materials.

“government initiatives for construction of green buildings to drive the demand for phase change materials in the Europe.”

Europe was the largest market for phase change material in terms of both, value and volume in 2020. Growth of the overall phase change material market in the region is driven majorly by demand from the building & construction application and stringent government regulations regarding carbon emissions. The initiatives of governments for the construction of green buildings boosted market growth as phase change material helps in saving carbon credits allotted to each building. The cost of energy is also high in Europe, which drives demand for phase change material in the region.

By Company Type: Tier 1 - 46%, Tier 2 - 31%, and Tier 3 - 23%

By Designation: C-Level - 46%, Director Level - 27%, and Others - 27%

By Region: North America - 33%, Europe - 27%, APAC - 27%, South America - 7%, Middle East & Africa - 6%,

The key players profiled in the report include Cold Chain Technologies, Inc. (US), Croda International Plc. (UK), Microtek Laboratories Inc. (US), Sasol Limited (South Africa), PureTemp LLC. (US), Henkel AG & Company KGAA (Germany), Outlast Technologies LLC (US), Climator Sweden AB (Sweden), among others.

Research Coverage

This report segments the market for phase change material based type, application, and region, and provides estimations for the overall market size across various regions. A detailed analysis of key industry players has been conducted to provide insights into their business overviews, products & services, key strategies, associated with the market for phase change material.

Reasons to Buy this Report

Phase Change Material Market by type (Inorganic, Organic), Application (Building & Construction, HVAC, Cold Ch...

This research report is focused on various levels of analysis — industry analysis (industry trends), market share analysis of top players, and company profiles, which together provide an overall view on the competitive landscape; emerging and high-growth segments of the construction lubricants market; high-growth regions; and market drivers, restraints, and opportunities.

The report provides insights on the following pointers:

Market Penetration: Comprehensive information on phase change materials offered by top players in the global market

Market Development: Comprehensive information about lucrative emerging markets — the report analyzes the markets for phase change material across regions

Market Diversification: Exhaustive information about new products, untapped regions, and recent developments in the global phase change material market

Competitive Assessment: In-depth assessment of market shares, strategies, products, and manufacturing capabilities of leading players in the phase change material market

Contents

1 INTRODUCTION

1.1 OBJECTIVES OF THE STUDY

1.2 MARKET DEFINITION

1.2.1 PHASE CHANGE MATERIAL MARKET: INCLUSIONS AND EXCLUSIONS

1.2.2 PHASE CHANGE MATERIAL: MARKET DEFINITION AND INCLUSIONS, BY TYPE

1.2.3 PHASE CHANGE MATERIAL: MARKET DEFINITION AND INCLUSIONS, BY APPLICATION

1.3 MARKET DEFINITION

FIGURE 1 PHASE CHANGE MATERIAL MARKET SEGMENTATION

1.3.1 REGIONS COVERED

1.3.2 YEARS CONSIDERED FOR THE STUDY

1.4 CURRENCY

1.5 UNITS CONSIDERED

1.6 STAKEHOLDERS

1.7 SUMMARY OF CHANGES

2 RESEARCH METHODOLOGY

2.1 RESEARCH DATA

FIGURE 2 PHASE CHANGE MATERIAL MARKET: RESEARCH DESIGN

2.1.1 SECONDARY DATA

2.1.2 PRIMARY DATA

2.1.2.1 Primary interviews: demand-side and supply-side

2.1.2.2 Key industry insights

2.1.2.3 Breakdown of primary interviews

2.2 MARKET SIZE ESTIMATION

2.2.1 BOTTOM-UP APPROACH

FIGURE 3 MARKET SIZE ESTIMATION - APPROACH 1 (SUPPLY-SIDE): REVENUE FROM SALE OF PHASE CHANGE MATERIAL

FIGURE 4 MARKET SIZE ESTIMATION - BOTTOM-UP (SUPPLY-SIDE):

COLLECTIVE REVENUE OF ALL PHASE CHANGE MATERIAL COMPANIES

FIGURE 5 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 2 – BOTTOM-UP (DEMAND-SIDE): PRODUCTS SOLD AND THEIR AVERAGE SELLING PRICE

2.2.2 TOP-DOWN APPROACH

FIGURE 6 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 3 – TOP-

DOWN

2.3 DATA TRIANGULATION

FIGURE 7 PHASE CHANGE MATERIAL MARKET: DATA TRIANGULATION

2.4 GROWTH RATE ASSUMPTIONS/GROWTH FORECAST

2.4.1 SUPPLY-SIDE

FIGURE 8 MARKET CAGR PROJECTIONS FROM SUPPLY-SIDE

2.4.2 DEMAND-SIDE

FIGURE 9 MARKET GROWTH PROJECTIONS FROM DEMAND SIDE:

DRIVERS AND OPPORTUNITIES

2.5 FACTORS ANALYSIS

2.6 ASSUMPTIONS

2.7 LIMITATIONS

2.8 RISK ASSESSMENT

TABLE 1 PHASE CHANGE MATERIAL MARKET: RISK ASSESSMENT

3 EXECUTIVE SUMMARY

FIGURE 10 COLD CHAIN & PACKAGING ESTIMATED TO BE THE LARGEST APPLICATION SEGMENT OF THE PHASE CHANGE MATERIAL MARKET IN 2020

FIGURE 11 INORGANIC PHASE CHANGE MATERIAL EXPECTED TO DOMINATE THE PHASE CHANGE MATERIAL MARKET BETWEEN 2021 AND 2026

FIGURE 12 EUROPE ACCOUNTED FOR THE LARGEST MARKET SHARE IN 2020

4 PREMIUM INSIGHTS

4.1 ATTRACTIVE OPPORTUNITIES IN THE PHASE CHANGE MATERIAL MARKET

FIGURE 13 THE GROWING DEMAND FROM THE COLD CHAIN & PACKAGING APPLICATION TO DRIVE THE PHASE CHANGE MATERIAL MARKET DURING THE FORECAST PERIOD

4.2 PHASE CHANGE MATERIAL MARKET SIZE, BY REGION

FIGURE 14 EUROPE EXPECTED TO BE THE LARGEST MARKET FOR PHASE CHANGE MATERIALS DURING THE FORECAST PERIOD

4.3 EUROPE: PHASE CHANGE MATERIAL MARKET, BY APPLICATION AND COUNTRY, 2020

FIGURE 15 THE UK ACCOUNTED FOR THE LARGEST SHARE OF THE PHASE CHANGE MATERIAL MARKET IN 2020

4.4 PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION

FIGURE 16 COLD CHAIN & PACKAGING EXPECTED TO BE THE LARGEST APPLICATION SEGMENT OF THE PHASE CHANGE MATERIAL MARKET IN 2026

4.5 PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION VS REGION

FIGURE 17 COLD CHAIN & PACKAGING EXPECTED TO BE THE DOMINANT APPLICATION OF THE PHASE CHANGE MATERIAL MARKET IN MOST REGIONS

4.6 PHASE CHANGE MATERIAL MARKET, BY KEY COUNTRIES

FIGURE 18 THE PHASE CHANGE MATERIAL MARKET IN THE US PROJECTED TO REGISTER THE HIGHEST CAGR BETWEEN 2021 AND 2026

5 MARKET OVERVIEW

5.1 INTRODUCTION

5.2 MARKET DYNAMICS

FIGURE 19 PHASE CHANGE MATERIAL MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES

5.2.1 DRIVERS

5.2.1.1 Regulations for the reduction of greenhouse gas emissions

TABLE 2 REGION-WISE ENVIRONMENTAL NORMS: REGULATIONS DRIVING GROWTH OF THE PHASE CHANGE MATERIAL MARKET

5.2.1.2 Use of phase change material for temperature control and greater comfort

FIGURE 20 A COMPARISON BETWEEN TEMPERATURES WITH AND WITHOUT THE USE OF PHASE CHANGE MATERIAL

5.2.1.3 Use of phase change material for peak-load shifting

5.2.1.4 Alternative for reducing energy cost

5.2.1.5 Reduction in operating cost for cold chain and packaging industry

5.2.1.6 Effective solution for temperature-sensitive applications

5.2.1.7 Technical superiority over conventional materials

5.2.1.7.1 Wide range of melting temperatures

TABLE 3 PHASE CHANGE MATERIAL APPLICATIONS WITH RESPECT TO THEIR TEMPERATURE

5.2.1.7.2 Availability of phase change material in various grades

TABLE 4 TYPES AND FORMS OF PHASE CHANGE MATERIAL

5.2.1.7.3 Long operating life

5.2.1.7.4 Use for both, cooling and heating purposes

5.2.1.7.5 High heat storage capacity

FIGURE 21 HEAT CAPACITY OF PHASE CHANGE MATERIAL VS. OTHER INSULATING MATERIALS

5.2.2 RESTRAINTS

5.2.2.1 Lack of awareness for the benefits of PCM

5.2.2.2 Flammability and corrosiveness restrict the usage of PCM

5.2.2.3 Lack of government subsidies

5.2.3 OPPORTUNITIES

5.2.3.1 The rise in the need for cold chain logistics

5.2.3.2 R&D initiatives for enhanced phase change material efficiency

FIGURE 22 GLOBAL R&D INITIATIVES TO INCREASE THE EFFICIENCY OF PHASE CHANGE MATERIAL

5.2.4 CHALLENGES

5.2.4.1 Relatively high cost of switching from conventional materials

5.2.4.2 Impact of COVID-19

TABLE 5 COUNTRY-WISE PERCENTAGE DEVIATION ACROSS THE MANUFACTURING AND SERVICE SECTORS FROM BENCHMARKS DUE TO COVID-19

5.3 PORTER'S FIVE FORCES ANALYSIS

FIGURE 23 PORTER'S FIVE FORCES ANALYSIS OF PHASE CHANGE MATERIAL MARKET

TABLE 6 PHASE CHANGE MATERIAL MARKET: PORTER'S FIVE FORCES ANALYSIS

5.3.1 THREAT OF SUBSTITUTES

5.3.2 THREAT OF NEW ENTRANTS

5.3.3 BARGAINING POWER OF SUPPLIERS

5.3.4 BARGAINING POWER OF BUYERS

5.3.5 INTENSITY OF COMPETITIVE RIVALRY

5.4 TECHNOLOGY ANALYSIS

5.4.1 ACTIVE COOLING--BASED BATTERY THERMAL MANAGEMENT USING COMPOSITE PHASE CHANGE MATERIALS

5.4.2 NANOSCALE SWITCHING

5.5 MACROECONOMIC INDICATORS

5.5.1 GDP TRENDS AND FORECAST OF MAJOR ECONOMIES

TABLE 7 GDP TRENDS AND FORECAST, BY MAJOR ECONOMIES, 2018–2026 (USD BILLION)

5.6 COVID-19 IMPACT

5.6.1 INTRODUCTION

5.6.2 COVID-19 HEALTH ASSESSMENT

FIGURE 24 COUNTRY-WISE SPREAD OF COVID-19

5.6.3 COVID-19 ECONOMIC ASSESSMENT

FIGURE 25 REVISED GDP FORECASTS FOR SELECT G20 COUNTRIES IN 2021

5.6.3.1 COVID-19 Impact on the Economy—Scenario Assessment

FIGURE 26 FACTORS IMPACTING THE GLOBAL ECONOMY

5.7 IMPACT OF COVID-19: CUSTOMER ANALYSIS

6 INDUSTRY TRENDS

6.1 SUPPLY CHAIN ANALYSIS

FIGURE 27 PHASE CHANGE MATERIALS: SUPPLY CHAIN

6.1.1 RAW MATERIAL

6.1.2 MANUFACTURING OF PHASE CHANGE MATERIAL

6.1.3 DISTRIBUTION TO END USERS

6.1.4 APPLICATION

6.2 TRENDS/DISRUPTIONS IMPACTING CUSTOMER'S BUSINESS

6.2.1 REVENUE SHIFTS & REVENUE POCKETS FOR PHASE CHANGE MATERIAL MARKET

FIGURE 28 REVENUE SHIFT FOR PHASE CHANGE MATERIALS MARKET

6.3 CONNECTED MARKETS: ECOSYSTEM

TABLE 8 PHASE CHANGE MATERIAL MARKET: SUPPLY CHAIN

FIGURE 29 PHASE CHANGE MATERIAL MARKET: ECOSYSTEM

6.4 CASE STUDY ANALYSIS

6.4.1 A CASE STUDY ON HEATVENTORS SERVER COOLING USING CRODATHERM

6.4.2 A CASE STUDY ON COLD CHAIN LOGISTICS

6.5 TRADE ANALYSIS

6.5.1 IMPORT SCENARIO OF PHASE CHANGE MATERIAL

FIGURE 30 PHASE CHANGE MATERIALS IMPORTS, BY KEY COUNTRY, 2016-2020

TABLE 9 PHASE CHANGE MATERIAL IMPORTS, BY REGION, 2016-2020 (USD BILLION)

6.5.2 EXPORT SCENARIO OF PHASE CHANGE MATERIAL

FIGURE 31 PHASE CHANGE MATERIALS EXPORTS, BY KEY COUNTRY, 2016-2020

TABLE 10 PHASE CHANGE MATERIAL EXPORTS, BY REGION, 2016-2020 (USD BILLION)

6.6 AVERAGE SELLING PRICE

FIGURE 32 AVERAGE SELLING PRICE OF PHASE CHANGE MATERIAL, BY REGION (USD/KG)

TABLE 11 AVERAGE SELLING PRICE OF PHASE CHANGE MATERIAL, BY REGION (USD/KG)

6.7 PHASE CHANGE MATERIAL MARKET: REALISTIC, PESSIMISTIC, OPTIMISTIC, AND NON-COVID-19 SCENARIO

FIGURE 33 MARKET SIZE UNDER REALISTIC, PESSIMISTIC, OPTIMISTIC, AND NON-COVID-19 SCENARIO

TABLE 12 PHASE CHANGE MATERIAL MARKET: MARKET FORECAST SCENARIO,

2019-2026 (USD MILLION)

6.7.1 NON-COVID-19 SCENARIO

6.7.2 OPTIMISTIC SCENARIO

6.7.3 PESSIMISTIC SCENARIO

6.7.4 REALISTIC SCENARIO

6.8 REGULATORY LANDSCAPE

6.8.1 REGULATIONS RELATED TO PHASE CHANGE MATERIAL MARKET

6.9 PATENT ANALYSIS

6.9.1 APPROACH

6.9.2 DOCUMENT TYPE

TABLE 13 GRANTED PATENTS ACCOUNT FOR 16 % OF ALL PATENTS IN LAST 10 YEARS

FIGURE 34 PATENTS REGISTERED FOR PHASE CHANGE MATERIAL, 2010–2020

FIGURE 35 PATENTS PUBLICATION TRENDS FOR PHASE CHANGE MATERIAL, 2010–2020

FIGURE 36 LEGAL STATUS OF PATENTS

6.9.3 JURISDICTION ANALYSIS

FIGURE 37 MAXIMUM PATENTS FILED BY COMPANIES IN CHINA

6.9.4 TOP APPLICANTS

FIGURE 38 IBM REGISTERED MAXIMUM NUMBER OF PATENTS FROM 2010 TO 2020

TABLE 14 LIST OF PATENTS BY IBM

TABLE 15 LIST OF PATENTS BY MICRON TECHNOLOGY INC.

TABLE 16 LIST OF PATENTS BY COMMISSARIAT ENERGIE ATOMIQUE

TABLE 17 TOP 10 PATENT OWNERS IN US, 2010–2020

7 PHASE CHANGE MATERIAL MARKET, BY TYPE

7.1 INTRODUCTION

FIGURE 39 THE INORGANIC SEGMENT PROJECTED TO DOMINATE THE PHASE CHANGE MATERIAL MARKET FROM 2021 TO 2026

TABLE 18 COMPARATIVE ANALYSIS OF DIFFERENT TYPES OF PHASE CHANGE MATERIAL

TABLE 19 PHASE CHANGE MATERIAL TYPE, BY APPLICATION

TABLE 20 PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 21 PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 22 PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 23 PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

7.2 INORGANIC PCM

7.2.1 THE INFLAMMABLE NATURE OF INORGANIC PCMS TO DRIVE THE DEMAND DURING THE FORECAST PERIOD

TABLE 24 LIST OF INORGANIC PCM MATERIALS ALONG WITH THEIR PROPERTIES

FIGURE 40 EUROPE PROJECTED TO BE THE LARGEST INORGANIC PCM MARKET DURING THE FORECAST PERIOD

TABLE 25 INORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2016–2019 (USD MILLION)

TABLE 26 INORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2020–2026 (USD MILLION)

TABLE 27 INORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2016–2019 (TON)

TABLE 28 INORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2020–2026 (TON)

7.3 ORGANIC PCM

7.3.1 PARAFFIN ARE THE MOST WIDELY USED ORGANIC PCMS

7.3.2 BIO-BASED PCM

FIGURE 41 NORTH AMERICA IS PROJECTED TO BE THE FASTEST-GROWING ORGANIC PCM MARKET FROM 2021 TO 2026

TABLE 29 ORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2016–2019 (USD MILLION)

TABLE 30 ORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2020–2026 (USD MILLION)

TABLE 31 ORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2016–2019 (TON)

TABLE 32 ORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2020–2026 (TON)

TABLE 33 ORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 34 ORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 35 ORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 36 ORGANIC PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 37 LIST OF NON-PARAFFIN BASED ORGANIC PCM MATERIALS ALONG WITH THEIR PROPERTIES

TABLE 38 LIST OF PARAFFIN BASED ORGANIC PCM MATERIALS ALONG WITH THEIR PROPERTIES

8 PHASE CHANGE MATERIAL MARKET, BY APPLICATION

8.1 INTRODUCTION

FIGURE 42 COLD CHAIN & PACKAGING TO BE THE FASTEST-GROWING APPLICATION DURING THE FORECAST PERIOD

TABLE 39 PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 40 PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 41 PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 42 PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

8.2 COLD CHAIN & PACKAGING

8.2.1 THE NEED TO TRANSPORT TEMPERATURE-SENSITIVE GOODS TO DRIVE DEMAND FOR PHASE CHANGE MATERIAL

FIGURE 43 EUROPE PROJECTED TO BE THE LARGEST PHASE CHANGE MATERIAL MARKET IN THE COLD CHAIN & PACKAGING FROM 2021 TO 2026

TABLE 43 PHASE CHANGE MATERIAL MARKET SIZE IN COLD CHAIN & PACKAGING APPLICATION, BY REGION, 2016–2019 (USD MILLION)

TABLE 44 PHASE CHANGE MATERIAL MARKET SIZE IN COLD CHAIN & PACKAGING APPLICATION, BY REGION, 2020–2026 (USD MILLION)

TABLE 45 PHASE CHANGE MATERIAL MARKET SIZE IN THE COLD CHAIN & PACKAGING APPLICATION, BY REGION, 2016–2019 (TON)

TABLE 46 PHASE CHANGE MATERIAL MARKET SIZE IN THE COLD CHAIN & PACKAGING APPLICATION, BY REGION, 2020–2026 (TON)

8.3 BUILDING & CONSTRUCTION

8.3.1 THE NEED FOR TEMPERATURE CONTROL IN BUILDING & CONSTRUCTION TO DRIVE DEMAND FOR PHASE CHANGE MATERIALS

FIGURE 44 NORTH AMERICA IS PROJECTED TO BE THE FASTEST-GROWING PCM MARKET IN THE BUILDING & CONSTRUCTION FROM 2021 TO 2026

TABLE 47 PHASE CHANGE MATERIAL MARKET SIZE IN BUILDING & CONSTRUCTION APPLICATION, BY REGION, 2016–2019 (USD MILLION)

TABLE 48 PHASE CHANGE MATERIAL MARKET SIZE IN BUILDING & CONSTRUCTION APPLICATION, BY REGION, 2020–2026 (USD MILLION)

TABLE 49 PHASE CHANGE MATERIAL MARKET SIZE IN THE BUILDING &

CONSTRUCTION APPLICATION, BY REGION, 2016–2019 (TON)

TABLE 50 PHASE CHANGE MATERIAL MARKET SIZE IN THE BUILDING &
CONSTRUCTION APPLICATION, BY REGION, 2020–2026 (TON)

8.4 HVAC

8.4.1 THE NEED FOR INTELLIGENT HEATING AND COOLING SYSTEMS TO
DRIVE THE DEMAND FOR PHASE CHANGE MATERIAL

FIGURE 45 FUNCTION OF PHASE CHANGE MATERIAL IN REDUCING PEAK LOAD

FIGURE 46 EUROPE PROJECTED TO BE THE LARGEST MARKET FOR PHASE
CHANGE MATERIAL IN THE HVAC APPLICATION FROM 2021 TO 2026

TABLE 51 PHASE CHANGE MATERIAL MARKET SIZE IN HVAC APPLICATION, BY
REGION, 2016–2019 (USD MILLION)

TABLE 52 PHASE CHANGE MATERIAL MARKET SIZE IN HVAC APPLICATION, BY
REGION, 2020–2026 (USD MILLION)

TABLE 53 PHASE CHANGE MATERIAL MARKET SIZE IN HVAC APPLICATION, BY
REGION, 2016–2019 (TON)

TABLE 54 PHASE CHANGE MATERIAL MARKET SIZE IN HVAC APPLICATION, BY
REGION, 2020–2026 (TON)

8.5 THERMAL ENERGY STORAGE (TES)

8.5.1 THE USE OF PHASE CHANGE MATERIAL FOR STORING RENEWABLE
ENERGY TO DRIVE DEMAND IN THE TES APPLICATION

8.5.2 BOILER/ POWER PLANT

8.5.3 SOLAR ENERGY STORAGE

TABLE 55 COMMERCIALLY AVAILABLE PHASE CHANGE MATERIALS FOR SOLAR
ENERGY STORAGE

8.5.4 GEOTHERMAL ENERGY STORAGE

FIGURE 47 NORTH AMERICA PROJECTED TO BE THE SECOND-LARGEST
MARKET FOR PHASE CHANGE MATERIAL IN THE THERMAL ENERGY STORAGE
APPLICATION FROM 2021 TO 2026

TABLE 56 PHASE CHANGE MATERIAL MARKET SIZE IN THERMAL ENERGY
STORAGE APPLICATION, BY REGION, 2016–2019 (USD MILLION)

TABLE 57 PHASE CHANGE MATERIAL MARKET SIZE IN THERMAL ENERGY
STORAGE APPLICATION, BY REGION, 2020–2026 (USD MILLION)

TABLE 58 PHASE CHANGE MATERIAL MARKET SIZE IN THERMAL ENERGY
STORAGE APPLICATION, BY REGION, 2016–2019 (TON)

TABLE 59 PHASE CHANGE MATERIAL MARKET SIZE IN THERMAL ENERGY
STORAGE APPLICATION, BY REGION, 2020–2026 (TON)

8.6 REFRIGERATION & EQUIPMENT

8.6.1 THE INCREASING USE OF CHILLERS, PASSIVE SHIPPERS, AND ACTIVE
COMPRESSOR UNITS TO DRIVE THE DEMAND FOR PHASE CHANGE MATERIALS

8.6.2 FIXED REFRIGERATION

FIGURE 48 EUROPE TO BE THE LARGEST MARKET FOR PHASE CHANGE MATERIAL IN THE REFRIGERATION & EQUIPMENT APPLICATION FROM 2021 TO 2026

TABLE 60 PHASE CHANGE MATERIAL MARKET SIZE IN THE REFRIGERATION & EQUIPMENT APPLICATION, BY REGION, 2016–2019 (USD MILLION)

TABLE 61 PHASE CHANGE MATERIAL MARKET SIZE IN THE REFRIGERATION & EQUIPMENT APPLICATION, BY REGION, 2020–2026 (USD MILLION)

TABLE 62 PHASE CHANGE MATERIAL MARKET SIZE IN THE REFRIGERATION & EQUIPMENT APPLICATION, BY REGION, 2016–2019 (TON)

TABLE 63 PHASE CHANGE MATERIAL MARKET SIZE IN THE REFRIGERATION & EQUIPMENT APPLICATION, BY REGION, 2020–2026 (TON)

8.7 TEXTILES

8.7.1 THE DEMAND FOR PHASE CHANGE MATERIALS IN TEXTILES IS INCREASING OWING TO THE NEED FOR THERMO-PHYSICAL COMFORT

8.7.2 INCORPORATION OF PHASE CHANGE MATERIAL IN TEXTILES

FIGURE 49 ASIA PACIFIC PROJECTED TO BE THE FASTEST-GROWING MARKET FOR PHASE CHANGE MATERIAL IN THE TEXTILE APPLICATION FROM 2021 TO 2026

TABLE 64 PHASE CHANGE MATERIAL MARKET SIZE IN TEXTILE APPLICATION, BY REGION, 2016–2019 (USD MILLION)

TABLE 65 PHASE CHANGE MATERIAL MARKET SIZE IN TEXTILE APPLICATION, BY REGION, 2020–2026 (USD MILLION)

TABLE 66 PHASE CHANGE MATERIAL MARKET SIZE IN THE TEXTILE APPLICATION, BY REGION, 2016–2019 (TON)

TABLE 67 PHASE CHANGE MATERIAL MARKET SIZE IN THE TEXTILE APPLICATION, BY REGION, 2020–2026 (TON)

8.8 ELECTRONICS

8.8.1 THE USE OF PHASE CHANGE MATERIALS FOR THERMAL MANAGEMENT IN ELECTRONIC ITEMS TO DRIVE DEMAND

8.8.2 PHASE CHANGE MEMORY (PCRAM)

TABLE 68 COMPARATIVE ANALYSIS: DIFFERENT MEMORY TYPES

8.8.3 THERMAL INTERFACE MATERIAL (TIM)

FIGURE 50 NORTH AMERICA PROJECTED TO BE THE FASTEST-GROWING MARKET FOR PHASE CHANGE MATERIAL IN THE ELECTRONICS APPLICATION FROM 2021 TO 2026

TABLE 69 PHASE CHANGE MATERIAL MARKET SIZE IN THE ELECTRONICS APPLICATION, BY REGION, 2016–2019 (USD MILLION)

TABLE 70 PHASE CHANGE MATERIAL MARKET SIZE IN THE ELECTRONICS

APPLICATION, BY REGION, 2020–2026 (USD MILLION)

TABLE 71 PHASE CHANGE MATERIAL MARKET SIZE IN THE ELECTRONICS

APPLICATION, BY REGION, 2016–2019 (TON)

TABLE 72 PHASE CHANGE MATERIAL MARKET SIZE IN THE ELECTRONICS

APPLICATION, BY REGION, 2020–2026 (TON)

8.9 OTHERS

8.9.1 AUTOMOTIVE

8.9.2 HEALTHCARE

8.9.3 TELECOMMUNICATION

FIGURE 51 EUROPE IS PROJECTED TO BE THE LARGEST MARKET IN OTHER APPLICATIONS OF PHASE CHANGE MATERIAL FROM 2021 TO 2026

TABLE 73 PHASE CHANGE MATERIAL MARKET SIZE IN THE OTHER

APPLICATIONS, BY REGION, 2016–2019 (USD MILLION)

TABLE 74 PHASE CHANGE MATERIAL MARKET SIZE IN THE OTHER

APPLICATIONS, BY REGION, 2020–2026 (USD MILLION)

TABLE 75 PHASE CHANGE MATERIAL MARKET SIZE IN THE OTHER

APPLICATIONS, BY REGION, 2016–2019 (TON)

TABLE 76 PHASE CHANGE MATERIAL MARKET SIZE IN THE OTHER

APPLICATIONS, BY REGION, 2020–2026 (TON)

9 PHASE CHANGE MATERIAL MARKET, BY REGION

9.1 INTRODUCTION

FIGURE 52 NORTH AMERICA PROJECTED TO BE THE FASTEST-GROWING MARKET DURING THE FORECAST PERIOD

TABLE 77 PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2016–2019 (USD MILLION)

TABLE 78 PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2020–2026 (USD MILLION)

TABLE 79 PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2016–2019 (TON)

TABLE 80 PHASE CHANGE MATERIAL MARKET SIZE, BY REGION, 2020–2026 (TON)

9.2 EUROPE

FIGURE 53 EUROPEAN PHASE CHANGE MATERIAL MARKET SNAPSHOT: UK TO GROW AT THE HIGHEST CAGR FROM 2021 TO 2026

9.2.1 EUROPE PHASE CHANGE MATERIAL MARKET, BY TYPE

TABLE 81 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 82 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 83 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 84 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

9.2.2 EUROPE PHASE CHANGE MATERIAL MARKET, BY APPLICATION

TABLE 85 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 86 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 87 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 88 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.2.3 EUROPE PHASE CHANGE MATERIAL MARKET, BY COUNTRY

TABLE 89 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2016–2019 (USD MILLION)

TABLE 90 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2020–2026 (USD MILLION)

TABLE 91 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2016–2019 (TON)

TABLE 92 EUROPE: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2020–2026 (TON)

9.2.3.1 Germany

9.2.3.1.1 Energy Conservation Ordinance to drive the demand for phase change materials in Germany

TABLE 93 GERMANY: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 94 GERMANY: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 95 GERMANY: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 96 GERMANY: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 97 GERMANY: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 98 GERMANY: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 99 GERMANY: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 100 GERMANY: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.2.3.2 UK

9.2.3.2.1 Prevalence of cold temperature to drive the phase change material market

TABLE 101 UK: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 102 UK: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 103 UK: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 104 UK: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 105 UK: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 106 UK: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 107 UK: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 108 UK: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.2.3.3 France

9.2.3.3.1 Energy Efficiency Certificates expected to drive the market for phase change material in building & construction application

TABLE 109 FRANCE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 110 FRANCE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 111 FRANCE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 112 FRANCE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 113 FRANCE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 114 FRANCE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 115 FRANCE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 116 FRANCE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.2.3.4 The Netherlands

9.2.3.4.1 Stringent building codes in the country to drive demand for phase change materials

TABLE 117 THE NETHERLANDS: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 118 THE NETHERLANDS: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 119 THE NETHERLANDS: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 120 THE NETHERLANDS: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 121 THE NETHERLANDS: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 122 THE NETHERLANDS: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 123 THE NETHERLANDS: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 124 THE NETHERLANDS: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.3 NORTH AMERICA

FIGURE 54 NORTH AMERICAN PHASE CHANGE MATERIAL MARKET SNAPSHOT: US PROJECTED TO GROW AT A HIGH CAGR DURING THE FORECAST PERIOD

9.3.1 NORTH AMERICA PHASE CHANGE MATERIALS MARKET, BY TYPE

TABLE 125 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 126 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 127 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 128 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

9.3.2 NORTH AMERICA PHASE CHANGE MATERIALS MARKET, BY APPLICATION

TABLE 129 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 130 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 131 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY

APPLICATION, 2016–2019 (TON)

TABLE 132 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.3.3 NORTH AMERICA PHASE CHANGE MATERIALS MARKET, BY COUNTRY

TABLE 133 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2016–2019 (USD MILLION)

TABLE 134 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2020–2026 (USD MILLION)

TABLE 135 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2016–2019 (TON)

TABLE 136 NORTH AMERICA: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2020–2026 (TON)

9.3.3.1 US

9.3.3.1.1 The presence of major manufacturers and rising awareness regarding the use of phase change materials to drive demand in the US

TABLE 137 US: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 138 US: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 139 US: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 140 US: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 141 US: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 142 US: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 143 US: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 144 US: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.4 ASIA PACIFIC

FIGURE 55 ASIA PACIFIC PHASE CHANGE MATERIAL MARKET SNAPSHOT: CHINA PROJECTED TO WITNESS SIGNIFICANT GROWTH DURING THE FORECAST PERIOD

9.4.1 ASIA PACIFIC PHASE CHANGE MATERIALS MARKET, BY TYPE

TABLE 145 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 146 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE,

2020–2026 (USD MILLION)

TABLE 147 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 148 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

9.4.2 ASIA PACIFIC PHASE CHANGE MATERIALS MARKET, BY APPLICATION

TABLE 149 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 150 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 151 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 152 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.4.3 ASIA PACIFIC PHASE CHANGE MATERIALS MARKET, BY COUNTRY

TABLE 153 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2016–2019 (USD MILLION)

TABLE 154 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2020–2026 (USD MILLION)

TABLE 155 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2016–2019 (TON)

TABLE 156 ASIA PACIFIC: PHASE CHANGE MATERIAL MARKET SIZE, BY COUNTRY, 2020–2026 (TON)

9.4.3.1 China

9.4.3.1.1 Increase in awareness about phase change material to drive demand

TABLE 157 CHINA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 158 CHINA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 159 CHINA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 160 CHINA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 161 CHINA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 162 CHINA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 163 CHINA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 164 CHINA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.4.3.2 India

9.4.3.2.1 Rise in the demand for renewable energy offers a significant opportunity for the growth of the phase change material market

TABLE 165 INDIA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 166 INDIA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 167 INDIA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 168 INDIA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 169 INDIA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 170 INDIA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 171 INDIA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 172 INDIA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.4.3.3 Australia

9.4.3.3.1 Increase in renewable energy consumption and stringent building codes to drive the demand for phase change materials

TABLE 173 AUSTRALIA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 174 AUSTRALIA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 175 AUSTRALIA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 176 AUSTRALIA: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 177 AUSTRALIA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 178 AUSTRALIA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 179 AUSTRALIA: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 180 AUSTRALIA: PHASE CHANGE MATERIAL MARKET SIZE, BY

APPLICATION, 2020–2026 (TON)

9.4.3.4 Singapore

9.4.3.4.1 A highly developed healthcare sector in the country is expected to drive the demand for phase change materials

TABLE 181 SINGAPORE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 182 SINGAPORE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 183 SINGAPORE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 184 SINGAPORE: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

TABLE 185 SINGAPORE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 186 SINGAPORE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 187 SINGAPORE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 188 SINGAPORE: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (TON)

9.5 REST OF THE WORLD

9.5.1 REST OF THE WORLD PHASE CHANGE MATERIALS MARKET, BY TYPE

TABLE 189 REST OF THE WORLD: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (USD MILLION)

TABLE 190 REST OF THE WORLD: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (USD MILLION)

TABLE 191 REST OF THE WORLD: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2016–2019 (TON)

TABLE 192 REST OF THE WORLD: PHASE CHANGE MATERIAL MARKET SIZE, BY TYPE, 2020–2026 (TON)

9.5.2 REST OF THE WORLD PHASE CHANGE MATERIALS MARKET, BY APPLICATION

TABLE 193 REST OF THE WORLD: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (USD MILLION)

TABLE 194 REST OF THE WORLD: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 195 REST OF THE WORLD: PHASE CHANGE MATERIAL MARKET SIZE, BY APPLICATION, 2016–2019 (TON)

TABLE 196 REST OF THE WORLD: PHASE CHANGE MATERIAL MARKET SIZE, BY

APPLICATION, 2020–2026 (TON)

10 COMPETITIVE LANDSCAPE

10.1 INTRODUCTION

10.2 STRATEGIES ADOPTED BY KEY PLAYERS

10.2.1 OVERVIEW OF STRATEGIES ADOPTED BY KEY PHASE CHANGE MATERIAL MANUFACTURERS

10.3 MARKET SHARE ANALYSIS

10.3.1 RANKING OF KEY MARKET PLAYERS, 2020

FIGURE 56 RANKING OF TOP THREE PLAYERS IN THE PHASE CHANGE MATERIAL MARKET, 2020

10.3.2 MARKET SHARE OF KEY PLAYERS

TABLE 197 PHASE CHANGE MATERIAL MARKET: DEGREE OF COMPETITION

FIGURE 57 PURETEMP LLC IS THE LEADING PLAYER IN THE PHASE CHANGE MATERIAL MARKET IN 2020

10.3.2.1 PureTemp LLC

10.3.2.2 Climator Sweden AB

10.3.2.3 Croda International Plc.

10.3.3 REVENUE ANALYSIS OF TOP THREE PLAYERS

FIGURE 58 REVENUE ANALYSIS OF KEY COMPANIES IN THE PAST 5 YEARS

10.4 COMPANY PRODUCT FOOTPRINT ANALYSIS

FIGURE 59 PHASE CHANGE MATERIAL MARKET: COMPANY FOOTPRINT

TABLE 198 PHASE CHANGE MATERIAL MARKET: APPLICATION FOOTPRINT

TABLE 199 PHASE CHANGE MATERIAL MARKET: TYPE FOOTPRINT

TABLE 200 PHASE CHANGE MARKET: COMPANY REGION FOOTPRINT

10.5 COMPANY EVALUATION QUADRANT (TIER 1)

10.5.1 STARS

10.5.2 EMERGING LEADERS

10.5.3 PARTICIPANT

FIGURE 60 COMPANY EVALUATION QUADRANT FOR PHASE CHANGE MATERIAL MARKET (TIER 1)

10.6 START-UP/SMES EVALUATION QUADRANT

10.6.1 PROGRESSIVE COMPANIES

10.6.2 RESPONSIVE COMPANIES

10.6.3 STARTING BLOCKS

FIGURE 61 START-UP/SMES EVALUATION QUADRANT FOR PHASE CHANGE MATERIAL MARKET

10.7 COMPETITIVE SITUATION AND TRENDS

10.7.1 NEW PRODUCT LAUNCHES

TABLE 201 PHASE CHANGE MATERIAL MARKET: NEW PRODUCT LAUNCHES (2018- 2021)

10.7.2 DEALS

TABLE 202 PHASE CHANGE MATERIAL MARKET: DEALS (2018- 2021)

10.7.3 OTHER DEVELOPMENTS

TABLE 203 PHASE CHANGE MATERIAL MARKET: EXPANSIONS, INVESTMENTS, AND INNOVATIONS (2016-2021)

11 COMPANY PROFILES

(Business Overview, Products Offered, Recent Developments, and MnM View (Key strengths/Right to Win, Strategic Choices Made, and Weaknesses and Competitive Threats))*

11.1 MAJOR PLAYERS

11.1.1 PURETEMP LLC

TABLE 204 PURETEMP LLC: BUSINESS OVERVIEW

11.1.2 CLIMATOR SWEDEN AB

TABLE 205 CLIMATOR SWEDEN AB: COMPANY OVERVIEW

11.1.3 CRODA INTERNATIONAL PLC.

TABLE 206 CRODA INTERNATIONAL PLC.: COMPANY OVERVIEW

FIGURE 62 CRODA INTERNATIONAL PLC.: COMPANY SNAPSHOT

11.1.4 SASOL LIMITED

TABLE 207 SASOL LIMITED: COMPANY OVERVIEW

FIGURE 63 SASOL LIMITED: COMPANY SNAPSHOT

11.1.5 RUBITHERM TECHNOLOGIES GMBH

TABLE 208 RUBITHERM TECHNOLOGIES GMBH: COMPANY OVERVIEW

11.1.6 MICROTEK LABORATORIES INC.

TABLE 209 MICROTEK LABORATORIES INC.: COMPANY OVERVIEW

11.1.7 PLUSS ADVANCED TECHNOLOGIES PVT. LTD.

TABLE 210 PLUSS ADVANCED TECHNOLOGIES PVT. LTD: COMPANY OVERVIEW

11.1.8 DUPONT DE NEMOURS, INC.

TABLE 211 DUPONT DE NEMOURS, INC.: COMPANY OVERVIEW

FIGURE 64 DUPONT DE NEMOURS, INC.: COMPANY SNAPSHOT

11.1.9 HONEYWELL ELECTRONIC MATERIALS INC.

TABLE 212 HONEYWELL ELECTRONIC MATERIALS INC.: COMPANY OVERVIEW

FIGURE 65 HONEYWELL ELECTRONIC MATERIALS INC.: COMPANY SNAPSHOT

11.1.10 PHASE CHANGE ENERGY SOLUTIONS

TABLE 213 PHASE CHANGE ENERGY SOLUTIONS: COMPANY OVERVIEW

11.1.11 COLD CHAIN TECHNOLOGIES
TABLE 214 COLD CHAIN TECHNOLOGIES: COMPANY OVERVIEW
11.1.12 OUTLAST TECHNOLOGIES LLC
TABLE 215 OUTLAST TECHNOLOGIES LLC: COMPANY OVERVIEW
11.1.13 HENKEL AG & COMPANY KGAA
TABLE 216 HENKEL AG & COMPANY, KGAA: COMPANY OVERVIEW
FIGURE 66 HENKEL AG & COMPANY KGAA: COMPANY SNAPSHOT
11.1.14 PHASE CHANGE MATERIALS PRODUCTS LTD
TABLE 217 PHASE CHANGE MATERIALS PRODUCTS LTD.: COMPANY OVERVIEW
11.2 OTHER KEY MARKET PLAYERS
11.2.1 ADVANSA B.V.
TABLE 218 ADVANSA B.V.: BUSINESS OVERVIEW
11.2.2 AI TECHNOLOGY INC.
TABLE 219 AI TECHNOLOGY INC.: BUSINESS OVERVIEW
11.2.3 BEYOND INDUSTRIES (CHINA) LIMITED
TABLE 220 BEYOND INDUSTRIES (CHINA) LIMITED: BUSINESS OVERVIEW
11.2.4 BOYD CORPORATION
TABLE 221 BOYD CORPORATION: BUSINESS OVERVIEW
11.2.5 CIAT GROUP (CRISTOPIA ENERGY SYSTEMS)
TABLE 222 CIAT GROUP (CRISTOPIA ENERGY SYSTEMS): BUSINESS OVERVIEW
11.2.6 CRYOPAK INDUSTRIES INC.
TABLE 223 CRYOPAK INDUSTRIES INC: BUSINESS OVERVIEW
11.2.7 DATUM PHASE CHANGE LIMITED
TABLE 224 DATUM PHASE CHANGE LIMITED: BUSINESS OVERVIEW
11.2.8 GLOBAL-E-SYSTEMS EUROPE BV
TABLE 225 GLOBAL-E-SYSTEMS EUROPE BV: BUSINESS OVERVIEW
11.2.9 INSOLCORP INC.
TABLE 226 INSOLCORP INC: BUSINESS OVERVIEW
11.2.10 IOLITEC-IONIC LIQUIDS TECHNOLOGIES GMBH
TABLE 227 IOLITEC-IONIC LIQUIDS TECHNOLOGIES GMBH: BUSINESS OVERVIEW
11.2.11 KAPLAN ENERGY SAS
TABLE 228 KAPLAN ENERGY SAS: BUSINESS OVERVIEW
11.2.12 PARKER HANNIFIN CORP.
TABLE 229 PARKER HANNIFIN CORP.: BUSINESS OVERVIEW
11.2.13 SALCA BV
TABLE 230 SALCA BV: BUSINESS OVERVIEW
11.2.14 SHENZEN AOCHUAN TECHNOLOGY CO., LTD.
TABLE 231 SHENZEN AOCHUAN TECHNOLOGY CO. LTD.: BUSINESS OVERVIEW

OVERVIEW

11.2.15 SHIN-ETSU CHEMICAL CO., LTD

TABLE 232 SHIN-ETSU CHEMICAL CO., LTD: BUSINESS OVERVIEW

11.2.16 TEAPPCM

TABLE 233 TEAPPCM: BUSINESS OVERVIEW

11.2.17 ENCAPSYS LLC

TABLE 234 ENCAPSYS LLC: BUSINESS OVERVIEW

11.2.18 COOLCOMPOSITE INC.

TABLE 235 COOLCOMPOSITE INC.: BUSINESS OVERVIEW

*Details on Business Overview, Products Offered, Recent Developments, and MnM View (Key strengths/Right to Win, Strategic Choices Made, and Weaknesses and Competitive Threats) might not be captured in case of unlisted companies.

12 ADJACENT & RELATED MARKETS

12.1 INTRODUCTION

12.2 LIMITATION

12.3 THERMAL ENERGY STORAGE MARKET

12.3.1 MARKET DEFINITION

12.3.2 MARKET OVERVIEW

12.4 THERMAL ENERGY STORAGE MARKET, REGION

TABLE 236 THERMAL ENERGY STORAGE MARKET, CAPACITY, BY REGION, 2018–2025 (MWH)

TABLE 237 THERMAL ENERGY STORAGE MARKET, BY REGION, 2018–2025 (USD THOUSAND)

12.4.1 EUROPE

12.4.1.1 By country

TABLE 238 EUROPE THERMAL ENERGY STORAGE MARKET SIZE, BY COUNTRY, 2018–2025 (USD THOUSAND)

12.4.2 AMERICAS

12.4.2.1 By country

TABLE 239 AMERICAS: THERMAL ENERGY STORAGE MARKET SIZE, BY COUNTRY, 2018–2025 (USD THOUSAND)

12.4.3 MIDDLE EAST & AFRICA

12.4.3.1 By country

TABLE 240 MIDDLE EAST & AFRICA: THERMAL ENERGY STORAGE MARKET SIZE, BY COUNTRY, 2018–2025 (USD THOUSAND)

12.4.4 ASIA PACIFIC

12.4.4.1 By country

TABLE 241 ASIA PACIFIC: THERMAL ENERGY STORAGE MARKET SIZE, BY COUNTRY, 2018–2025 (USD THOUSAND)

13 APPENDIX

13.1 DISCUSSION GUIDE

13.2 KNOWLEDGE STORE: MARKETSANDMARKETS SUBSCRIPTION PORTAL

13.3 AVAILABLE CUSTOMIZATIONS

13.4 RELATED REPORTS

13.5 AUTHOR DETAILS

I would like to order

Product name: Phase Change Material Market by type (Inorganic, Organic), Application (Building & Construction, HVAC, Cold Chain & Packaging, Electronics, Textile) and Region (North America, Europe, APAC, Rest of World) - Global Forecasts to 2026

Product link: <https://marketpublishers.com/r/P4F8F2BA9DFEN.html>

Price: US\$ 4,950.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/P4F8F2BA9DFEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below

and fax the completed form to +44 20 7900 3970