

Global Graphene-enhanced Phase Change Thermal Interface Materials 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 Graphene-enhanced Phase Change Thermal Interface Materials market size was valued at US\$ 63.79 million in 2025 and is forecast to a readjusted size of US\$ 210 million by 2032 with a CAGR of 17.4% during review period.

Graphene-enhanced phase change composite thermal interface materials are high-performance solid products composed of phase-change polymers, wax-based or thermoplastic resin matrices reinforced with graphene, graphene nanoplatelets, or carbon-based hybrid fillers. They are supplied as solid pads, films, coated layers, or dispensable/printable formulations, fabricated via high-temperature annealing, hot pressing, and precision composite processes. Key specifications include through-plane thermal conductivity, phase-change temperature, softening flow, and surface wetting, enabling the material to fill microscopic gaps between chips, power modules, heat sinks, and package substrates to achieve low interfacial thermal resistance, efficient heat spreading, and uniform thermal management. Primary applications cover AI processors, CPUs/GPUs, servers, high-power semiconductors, and electric vehicle power electronics. In 2025, the average gross margin of the global graphene-enhanced phase change composite thermal interface materials industry was approximately 32%-45%. The mainstream price range for industrial-grade finished products was around 150-800 USD/Kg, while high-end customized specifications could reach 1,000-1,500 USD/Kg.

The graphene-enhanced phase change composite thermal interface materials sector is an emerging growth segment, driven by rapid demand from AI processors, servers, and electric vehicle power electronics for efficient heat dissipation in high-power-density electronic devices. The upstream relies on high-purity graphene and carbon-based

composite fabrication, the midstream focuses on phase-change and thermal interface composite manufacturing, and the downstream applications encompass high-performance computing, power semiconductors, and EV control modules. The industry is characterized by high technological barriers, long certification cycles, and strong market stickiness, ensuring high added value. From the supply perspective, European and North American companies hold mature advantages in high-performance composite and phase-change material manufacturing, while Chinese domestic enterprises are quickly advancing, leveraging graphene R&D and cost-effective processing to build competitiveness. The global market exhibits a multipolar structure, with core companies occupying the high-end segment and smaller or regional enterprises supplying customized solutions for diverse applications. Mergers, capacity expansions, and new product launches continue to drive technological iteration and supply chain optimization. Future development will focus on enhancing thermal conductivity, reducing interfacial thermal resistance, and expanding customized applications, while improving longevity, thermal stability, and consistent heat dissipation performance. As AI, high-performance servers, and electric vehicles expand, graphene-enhanced phase change TIMs are expected to enter broader production and applications, with downstream demand driving the adoption of high-end products. The industry will steadily move toward higher value, technology-intensive development.

This report is a detailed and comprehensive analysis for global Graphene-enhanced Phase Change Thermal Interface Materials 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 Graphene-enhanced Phase Change Thermal Interface Materials market size and forecasts, in consumption value (\$ Million), sales quantity (kg), and average selling prices (US\$/kg), 2021-2032

Global Graphene-enhanced Phase Change Thermal Interface Materials market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (kg), and average selling prices (US\$/kg), 2021-2032

Global Graphene-enhanced Phase Change Thermal Interface Materials market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (kg), and average selling prices (US\$/kg), 2021-2032

Global Graphene-enhanced Phase Change Thermal Interface Materials market shares of main players, shipments in revenue (\$ Million), sales quantity (kg), 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 Graphene-enhanced Phase Change Thermal Interface Materials

- 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 Graphene-enhanced Phase Change Thermal Interface Materials 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 Honeywell International Inc, Henkel AG & Co. KGaA, Parker Hannifin Corporation, Laird Performance Materials, Boyd Corporation, Allied Material Technology Corp., AOK Technologies, Shenzhen HFC Shielding Products Co., Ltd., Smart High-Tech AB, Shenzhen FRD Science & Technology Co., Ltd., etc.

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

Market Segmentation

Graphene-enhanced Phase Change Thermal Interface Materials 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

Phase Change Thermal Pad

Phase Change Thermal Film

Coated Phase Change Material

Dispensable Phase Change Material

Others

Market segment by Phase Change Temperature

Low-temperature Phase Change Type ($<45^{\circ}\text{C}$)

Medium-temperature Phase Change Type ($45^{\circ}\text{--}65^{\circ}\text{C}$)

High-temperature Phase Change Type ($>65^{\circ}\text{C}$)

Others

Market segment by Thermal Conductivity Grade

Standard Conductivity Type ($<5\text{ W/m}\cdot\text{K}$)

High Conductivity Type ($5\text{--}10\text{ W/m}\cdot\text{K}$)

Ultra-high Conductivity Type ($>10\text{ W/m}\cdot\text{K}$)

Others

Market segment by Application

Semiconductor and Electronics

Automotive and New Energy Vehicles

Data Center and Cloud Computing

Industrial Equipment

Others

Major players covered

Honeywell International Inc

Henkel AG & Co. KGaA

Parker Hannifin Corporation

Laird Performance Materials

Boyd Corporation

Allied Material Technology Corp.

AOK Technologies

Shenzhen HFC Shielding Products Co., Ltd.

Smart High-Tech AB

Shenzhen FRD Science & Technology Co., Ltd.

Jones Tech PLC

Shenzhen Darbond Technology Co., Ltd. / Yantai Darbond Technology Co., Ltd.

Shenzhen Qingyan Haolong New Energy Technology Co., Ltd.

Phase Change Energy Storage (Beijing) Technology Co., Ltd.

Shenzhen Beichuan Lihe Technology Co., Ltd.

Sheen Electronical Technology Co., Ltd.

Tanyuan Technology Co., Ltd.

Shin-Etsu Chemical Co., Ltd.

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 Graphene-enhanced Phase Change Thermal Interface Materials product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Graphene-enhanced Phase Change Thermal Interface Materials, with price, sales quantity, revenue, and global market share of Graphene-enhanced Phase Change Thermal Interface Materials from 2021 to 2026.

Chapter 3, the Graphene-enhanced Phase Change Thermal Interface Materials competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Graphene-enhanced Phase Change Thermal Interface Materials 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 Graphene-enhanced Phase Change Thermal Interface Materials 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 Graphene-enhanced Phase Change Thermal Interface Materials.

Chapter 14 and 15, to describe Graphene-enhanced Phase Change Thermal Interface Materials sales channel, distributors, customers, research findings and conclusion.

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