

Black Phosphorus Market by Form (Crystal, Powder), Application (Electronic Devices, Energy Storage, Sensors), and Region (North America, Asia Pacific, Europe, South America, Middle East & Africa) - Global Forecast to 2027

<https://marketpublishers.com/r/B040F747029FEN.html>

Date: October 2022

Pages: 148

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

ID: B040F747029FEN

Abstracts

The black phosphorus market is estimated to grow to USD 83 million by 2027 from USD 13 million in 2022, at a CAGR of 43.1%. Critical industries such as oil & gas, chemical, mining, and power use gas sensors to detect and monitor the presence of combustible and toxic gases. A large number of gases, such as carbon monoxide, carbon dioxide, ammonia, hydrogen sulfide, and hydrocarbons, are released into the air by these critical industries. Excess emissions of these gases in the air can adversely affect human health. Moreover, there are some explosive gases such as methane, propane, and butane that might be released by these critical industries, thereby leading to the risk of fire accidents. All these factors are expected to drive the demand for black phosphorus in sensors application.

“Crystal black phosphorus is projected to be the fastest-growing during the forecast period.”

Crystal black phosphorus is projected to be the fastest-growing segment in terms of both value and volume during the forecast period. Most of the black phosphorus produced in the wet process is used to produce fertilizers. Black phosphorus is available in two types: crystal black phosphorus and powder black phosphorus. The structure of black phosphorus in crystal form can be changed with pressure according to its need.

“Electronic devices segment held the largest share, in terms of both value and volume, in 2021”

Black phosphorus is a layered semiconductor, which has great potential in optical and electronic devices. The electronic devices segment held the largest share, in terms of both value and volume, in 2021. Due to its high mobility, in-plane anisotropy, and direct band gap, black phosphorus is considered an excellent choice for next-generation electronic devices. The market for optoelectronic components is growing due to the extensive use of infrared components such as infrared LEDs, photodiodes, and phototransistors in consumer electronics and automobiles.

“North America was the largest black phosphorus market, in terms of value, in 2021”

North America is the largest black phosphorus market globally. North America is one of the most technologically advanced markets for optoelectronic components owing to the presence of prominent system suppliers, large semiconductor companies, and LED, laser, and sensor manufacturers in the region. The high standard of living and the competitiveness of military & aerospace, industrial, and medical original equipment manufacturers (OEMs) make this region a flourishing market for optoelectronic components, which is projected to drive the demand for black phosphorus during the forecast period.

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 ACS Material LLC (US), 2D Semiconductors (US), Nanochemazone (Canada), American Elements LLC (US), Merck (Germany), HQ Graphene (Netherlands), Hunan Azeal Materials Co. Ltd. (China), Ossila Ltd. (UK), Stanford Advanced Materials (US) and Manchester Nanomaterials (UK) among others.

Research Coverage

This report segments the market for black phosphorus is based on form, 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 black phosphorus.

Reasons to Buy this Report

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 black phosphorus market; high-growth regions; and market drivers, restraints, and opportunities.

The report provides insights on the following pointers:

Market Penetration: Comprehensive information on black phosphorus offered by top players in the global market

Market Development: Comprehensive information about lucrative emerging markets — the report analyzes the markets for black phosphorus across regions

Market Diversification: Exhaustive information about new products, untapped regions, and recent developments in the global black phosphorus market

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

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*Details on Business overview, Products offered, Recent Developments, MNM view might not be captured in case of unlisted companies.

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