

# 2D Materials Beyond Graphene Market Size, Share & Trends Analysis Report By End Use (Aerospace & Defense, Automotive), By Material (TMDs, h-BN, MXenes), By Region, And Segment Forecasts, 2025 - 2033

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## Abstracts

The global 2D materials beyond graphene market size was estimated at USD 2.96 billion in 2024 and is projected to reach USD 3.93 billion by 2033, growing at a CAGR of 3.2% from 2025 to 2033, driven by increasing research and development activities aimed at discovering advanced materials with superior electrical, optical, and mechanical properties. Materials such as molybdenum disulfide (MoS<sub>2</sub>), hexagonal boron nitride (h-BN), and transition metal dichalcogenides (TMDs) are being widely explored for their potential in next-generation electronics, flexible displays, and photonic devices.

The growing demand for miniaturized and energy-efficient components in consumer electronics has further accelerated the exploration and adoption of these materials. Governments and private organizations increasingly fund nanotechnology research, contributing significantly to market expansion. The energy and storage sector represents another strong market growth avenue. These materials exhibit exceptional surface area, mechanical strength, and electrical conductivity, making them suitable for batteries, supercapacitors, and fuel cells. The rising focus on clean and renewable energy solutions has driven the adoption of advanced materials that enhance storage devices' energy density and charge-discharge efficiency. Moreover, the ability of these materials to act as efficient catalysts in hydrogen evolution reactions is boosting their demand in sustainable energy generation. Ongoing research into their electrochemical properties continues to expand potential end uses across the green energy ecosystem.

In addition, the market is benefiting from the expanding scope of end uses in the biomedical and sensing sectors. 2D materials beyond graphene possess excellent biocompatibility, high surface reactivity, and tunable optical properties, which make them promising candidates for biosensing, drug delivery, and imaging technologies. Their use in detecting highly sensitive environmental pollutants and biological molecules is gaining traction in healthcare and environmental monitoring. The convergence of nanotechnology, material science, and biotechnology creates new opportunities to commercialize these materials. As industrial players move from laboratory-scale experiments to scalable production, the market is poised for significant long-term growth.

### Global 2D Materials Beyond Graphene Market Report Segmentation

This report forecasts revenue growth at the global, regional, and country levels and provides an analysis of the latest industry trends in each of the sub-segments from 2021 to 2033. For this study, Grand View Research has segmented the global 2D materials beyond graphene market report based on end use, material, and region:

#### End Use Outlook (Revenue, USD Million, 2021 - 2033)

Electronics & Electrical

Energy & Power

Aerospace & Defense

Automotive

Others

#### Material Outlook (Revenue, USD Million, 2021 - 2033)

Transition Metal Dichalcogenides (TMDs)

Hexagonal Boron Nitride (h-BN)

MXenes

Others

## Regional Outlook (Revenue, USD Million, 2021 - 2033)

### North America

U.S.

Canada

Mexico

### Europe

Germany

UK

France

Italy

Spain

### Asia Pacific

China

India

Japan

### Central & South America

### Middle East & Africa

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