

# **Graphene Nanoplatelets Market Forecasts to 2030 – Global Analysis By Type (Exfoliated Graphene Nanoplatelets, Edge-Functionalized Graphene Nanoplatelets, Non-Functionalized Graphene Nanoplatelets and Other Types), Form, Application, End User and By Geography**

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## **Abstracts**

According to Statistics MRC, the Global Graphene Nanoplatelets Market is accounted for \$49.01 billion in 2024 and is expected to reach \$148.73 billion by 2030 growing at a CAGR of 14.2% during the forecast period. Graphene Nanoplatelets are ultra-thin, platelet-shaped nanoparticles consisting of multiple layers of graphene. These structures have exceptional mechanical, thermal, electrical, and barrier properties, making them highly valuable in various applications. Due to their high surface area, superior conductivity, and excellent strength, they are used in composite materials, coatings, energy storage, sensors, and lubricants.

According to the Japan Electronics and Information Technology Association (JEITA), the effect of rising 5G measurement demand on electric measuring instruments, increased by 2% to USD 79 billion in 2022.

Market Dynamics:

Driver:

Increasing use in energy storage

GNPs improve conductivity, charge storage capacity, and cycling stability, which leads

to higher efficiency and longer lifespan in energy storage systems. Their ability to enhance the performance of lithium-ion batteries and supercapacitors makes them crucial for electric vehicles (EVs), renewable energy storage, and portable electronics. As the demand for sustainable and efficient energy storage solutions rises, GNPs become essential in meeting these needs, propelling market expansion in the energy sector.

Restraint:

#### Quality and standardization issues

Quality and standardization issues in graphene nanoplatelets arise due to variations in size, morphology, purity, and dispersion, which can significantly impact their performance in different applications. Lack of uniformity in GNPs can lead to inconsistent results, making it challenging to achieve desired outcomes in industries such as electronics, energy storage, and construction. These challenges hinder the widespread adoption and commercialization of GNPs, slowing down the overall market growth and limiting large-scale integration into various industries.

Opportunity:

#### Rising adoption in electronics

As electronics move toward smaller, lighter, and more efficient devices, GNPs provide enhanced performance in applications like flexible displays, sensors, batteries, and printed circuits. Their ability to improve thermal management, conductivity, and strength without adding weight makes them ideal for next-generation consumer electronics, wearable devices, and energy-efficient solutions. Additionally, GNPs enable advancements in transparent conductive films, which are critical for touchscreens and solar cells, further driving demand and innovation within the electronics sector.

Threat:

#### Competition from alternative nanomaterials

Alternative nanomaterials, such as carbon nanotubes (CNTs), graphene oxide, and carbon black, offer similar properties to graphene nanoplatelets (GNPs) in applications like energy storage, electronics, and composites. While these materials also exhibit high conductivity, strength, and flexibility, they sometimes present challenges in scalability or

cost. The competition from these alternatives hampers GNP market growth by offering cost-effective or more easily produced options, leading industries to opt for substitutes.

#### Covid-19 Impact:

The covid-19 pandemic disrupted the graphene nanoplatelets market by causing supply chain interruptions, reduced industrial production, and delayed research activities. The pandemic also accelerated interest in antimicrobial coatings and advanced materials for medical applications, benefiting GNP adoption. While initial financial constraints slowed investments, post-pandemic recovery, increased R&D funding, and the growing focus on sustainable technologies have contributed to market stabilization and renewed growth opportunities.

The energy storage segment is expected to be the largest during the forecast period

The energy storage segment is expected to account for the largest market share during the forecast period. GNPs play a crucial role in energy storage applications, particularly in batteries and supercapacitors. Their high electrical conductivity, large surface area, and excellent mechanical properties enhance charge storage, ion transport, and overall device performance. Their use in next-generation energy storage solutions, including solid-state batteries and flexible energy devices, is driving advancements in renewable energy and electric vehicle technologies.

The construction segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the construction segment is predicted to witness the highest growth rate. GNPs are increasingly used in construction to enhance the performance of materials like concrete, coatings, and composites. GNPs improve the mechanical properties of concrete, including strength, durability, and crack resistance, while also enhancing thermal and electrical conductivity. Additionally, GNPs help in developing lightweight, high-performance composites for construction, offering potential benefits for infrastructure projects, energy efficiency, and sustainable building materials.

#### Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to rising demand from industries such as electronics, automotive and aerospace. Countries like China, Japan, South Korea, and India are leading in GNP

production and application, driven by strong government support. The region's dominance in electric vehicles, advanced composites, and flexible electronics fuels market expansion. Additionally, increasing awareness of graphene's benefits and collaborations between research institutes and industries further propel growth, making Asia-Pacific a key hub for GNP innovation and commercialization.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR driven by increasing applications in aerospace, automotive, electronics, and energy storage. The U.S. leads the market with strong R&D investments, government support, and collaborations between research institutes and industries. Additionally, advancements in large-scale graphene production and the presence of key industry players drive market growth. The focus on sustainable technologies, along with expanding applications in medical and coatings sectors, further strengthens the GNP market in North America.

Key players in the market

Some of the key players in Graphene Nanoplatelets market include Applied Graphene Materials (AGM), Black Swan, Global Graphene Group, Graphene Laboratories Inc., NanoXplore Inc., CVD Equipment Corporation, ACS Materials, XG Sciences, Inc., Thomas Swan & Co. Ltd., Angstrom Materials Inc., Strem Chemicals Inc., Grafoid Inc., CealTech AS, Graphene Square Inc. and Graphene NanoChem plc.

Key Developments:

In July 2024, Black Swan expanded its GraphCore line with the introduction of GEM S27M, a 10% graphene nanoplatelet masterbatch in high-density polyethylene (HDPE). This product is specifically designed to enhance the mechanical properties of HDPE, making it ideal for packaging applications such as plastic bottles and garbage bags.

In March 2021, Applied Graphene Materials (AGM) made a significant advancement in the automotive sector by incorporating their GNPs into two newly-launched automotive products. This development marked an important step in the application of graphene in the automotive industry, offering a range of enhanced properties to vehicle components.

Types Covered:

Exfoliated Graphene Nanoplatelets

Edge-Functionalized Graphene Nanoplatelets

Non-Functionalized Graphene Nanoplatelets

Other Types

Forms Covered:

Powder

Dispersion

Films

Other Forms

Applications Covered:

Composites

Energy Storage

Conductive Inks

Coatings & Paints

Water Filtration

Electromagnetic Interference Shielding

Thermal Conductivity Enhancement

Other Applications

**End Users Covered:**

Electronics & Electrical

Automotive

Aerospace & Defense

Energy & Power

Healthcare

Consumer Goods

Construction

Other End Users

**Regions Covered:**

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

## Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2022, 2023, 2024, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

### Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

### Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

### Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

## Contents

### **1 EXECUTIVE SUMMARY**

### **2 PREFACE**

- 2.1 Abstract
- 2.2 Stake Holders
- 2.3 Research Scope
- 2.4 Research Methodology
  - 2.4.1 Data Mining
  - 2.4.2 Data Analysis
  - 2.4.3 Data Validation
  - 2.4.4 Research Approach
- 2.5 Research Sources
  - 2.5.1 Primary Research Sources
  - 2.5.2 Secondary Research Sources
  - 2.5.3 Assumptions

### **3 MARKET TREND ANALYSIS**

- 3.1 Introduction
- 3.2 Drivers
- 3.3 Restraints
- 3.4 Opportunities
- 3.5 Threats
- 3.6 Application Analysis
- 3.7 End User Analysis
- 3.8 Emerging Markets
- 3.9 Impact of Covid-19

### **4 PORTERS FIVE FORCE ANALYSIS**

- 4.1 Bargaining power of suppliers
- 4.2 Bargaining power of buyers
- 4.3 Threat of substitutes
- 4.4 Threat of new entrants
- 4.5 Competitive rivalry

## **5 GLOBAL GRAPHENE NANOPATELETS MARKET, BY TYPE**

- 5.1 Introduction
- 5.2 Exfoliated Graphene Nanoplatelets
- 5.3 Edge-Functionalized Graphene Nanoplatelets
- 5.4 Non-Functionalized Graphene Nanoplatelets
- 5.5 Other Types

## **6 GLOBAL GRAPHENE NANOPATELETS MARKET, BY FORM**

- 6.1 Introduction
- 6.2 Powder
- 6.3 Dispersion
- 6.4 Films
- 6.5 Other Forms

## **7 GLOBAL GRAPHENE NANOPATELETS MARKET, BY APPLICATION**

- 7.1 Introduction
- 7.2 Composites
- 7.3 Energy Storage
- 7.4 Conductive Inks
- 7.5 Coatings & Paints
- 7.6 Water Filtration
- 7.7 Electromagnetic Interference Shielding
- 7.8 Thermal Conductivity Enhancement
- 7.9 Other Applications

## **8 GLOBAL GRAPHENE NANOPATELETS MARKET, BY END USER**

- 8.1 Introduction
- 8.2 Electronics & Electrical
- 8.3 Automotive
- 8.4 Aerospace & Defense
- 8.5 Energy & Power
- 8.6 Healthcare
- 8.7 Consumer Goods
- 8.8 Construction
- 8.9 Other End Users

## **9 GLOBAL GRAPHENE NANOPATELETS MARKET, BY GEOGRAPHY**

9.1 Introduction

9.2 North America

9.2.1 US

9.2.2 Canada

9.2.3 Mexico

9.3 Europe

9.3.1 Germany

9.3.2 UK

9.3.3 Italy

9.3.4 France

9.3.5 Spain

9.3.9 Rest of Europe

9.4 Asia Pacific

9.4.1 Japan

9.4.2 China

9.4.3 India

9.4.4 Australia

9.4.5 New Zealand

9.4.9 South Korea

9.4.7 Rest of Asia Pacific

9.5 South America

9.5.1 Argentina

9.5.2 Brazil

9.5.3 Chile

9.5.4 Rest of South America

9.9 Middle East & Africa

9.9.1 Saudi Arabia

9.9.2 UAE

9.9.3 Qatar

9.9.4 South Africa

9.9.5 Rest of Middle East & Africa

## **10 KEY DEVELOPMENTS**

10.1 Agreements, Partnerships, Collaborations and Joint Ventures

10.2 Acquisitions & Mergers

- 10.3 New Product Launch
- 10.4 Expansions
- 10.5 Other Key Strategies

## **11 COMPANY PROFILING**

- 11.1 Applied Graphene Materials (AGM)
- 11.2 Black Swan
- 11.3 Global Graphene Group
- 11.4 Graphene Laboratories Inc.
- 11.5 NanoXplore Inc.
- 11.6 CVD Equipment Corporation
- 11.7 ACS Materials
- 11.8 XG Sciences, Inc.
- 11.9 Thomas Swan & Co. Ltd.
- 11.10 Angstrom Materials Inc.
- 11.11 Strem Chemicals Inc.
- 11.12 Grafoid Inc.
- 11.13 CealTech AS
- 11.14 Graphene Square Inc.
- 11.15 Graphene NanoChem plc

## List Of Tables

### LIST OF TABLES

- 1 Global Graphene Nanoplatelets Market Outlook, By Region (2022-2030) (\$MN)
- 2 Global Graphene Nanoplatelets Market Outlook, By Type (2022-2030) (\$MN)
- 3 Global Graphene Nanoplatelets Market Outlook, By Exfoliated Graphene Nanoplatelets (2022-2030) (\$MN)
- 4 Global Graphene Nanoplatelets Market Outlook, By Edge-Functionalized Graphene Nanoplatelets (2022-2030) (\$MN)
- 5 Global Graphene Nanoplatelets Market Outlook, By Non-Functionalized Graphene Nanoplatelets (2022-2030) (\$MN)
- 6 Global Graphene Nanoplatelets Market Outlook, By Other Types (2022-2030) (\$MN)
- 7 Global Graphene Nanoplatelets Market Outlook, By Form (2022-2030) (\$MN)
- 8 Global Graphene Nanoplatelets Market Outlook, By Powder (2022-2030) (\$MN)
- 9 Global Graphene Nanoplatelets Market Outlook, By Dispersion (2022-2030) (\$MN)
- 10 Global Graphene Nanoplatelets Market Outlook, By Films (2022-2030) (\$MN)
- 11 Global Graphene Nanoplatelets Market Outlook, By Other Forms (2022-2030) (\$MN)
- 12 Global Graphene Nanoplatelets Market Outlook, By Application (2022-2030) (\$MN)
- 13 Global Graphene Nanoplatelets Market Outlook, By Composites (2022-2030) (\$MN)
- 14 Global Graphene Nanoplatelets Market Outlook, By Energy Storage (2022-2030) (\$MN)
- 15 Global Graphene Nanoplatelets Market Outlook, By Conductive Inks (2022-2030) (\$MN)
- 16 Global Graphene Nanoplatelets Market Outlook, By Coatings & Paints (2022-2030) (\$MN)
- 17 Global Graphene Nanoplatelets Market Outlook, By Water Filtration (2022-2030) (\$MN)
- 18 Global Graphene Nanoplatelets Market Outlook, By Electromagnetic Interference Shielding (2022-2030) (\$MN)
- 19 Global Graphene Nanoplatelets Market Outlook, By Thermal Conductivity Enhancement (2022-2030) (\$MN)
- 20 Global Graphene Nanoplatelets Market Outlook, By Other Applications (2022-2030) (\$MN)
- 21 Global Graphene Nanoplatelets Market Outlook, By End User (2022-2030) (\$MN)
- 22 Global Graphene Nanoplatelets Market Outlook, By Electronics & Electrical (2022-2030) (\$MN)
- 23 Global Graphene Nanoplatelets Market Outlook, By Automotive (2022-2030) (\$MN)
- 24 Global Graphene Nanoplatelets Market Outlook, By Aerospace & Defense

(2022-2030) (\$MN)

25 Global Graphene Nanoplatelets Market Outlook, By Energy & Power (2022-2030) (\$MN)

26 Global Graphene Nanoplatelets Market Outlook, By Healthcare (2022-2030) (\$MN)

27 Global Graphene Nanoplatelets Market Outlook, By Consumer Goods (2022-2030) (\$MN)

28 Global Graphene Nanoplatelets Market Outlook, By Construction (2022-2030) (\$MN)

29 Global Graphene Nanoplatelets Market Outlook, By Other End Users (2022-2030) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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