

Freedonia Focus Reports  
World Collection



# World Graphene

April 2016



## Highlights

### World Overview and Forecasts

Demand by Product | Demand by Market | Production by Method

### Regional Trends and Forecasts

Regional Demand Overview | Americas | Western Europe | Asia/Pacific | Other Regions

### Industry Structure

Industry Composition and Characteristics | Additional Companies Cited

### Resources

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## ABOUT THIS REPORT

### Scope & Method

This report forecasts total world demand in 2020 for graphene by product, market, and major world region in US dollars at the manufacturers' level. Product segments include:

- graphene nanoplatelets
- graphene film
- graphene oxide
- other products such as single-layer graphene materials, graphene quantum dots, and 3D graphene foams.

Graphene products are defined as having a thickness of 10 or fewer graphene sheets; materials with more than 10 sheets are classified as graphite flakes and are excluded from the scope of this report.

Reported markets encompass:

- composites
- academic research
- energy
- electronics
- biomedical
- other markets such as water treatment, environmental cleanup systems, and lubricants.

Major world regions include the Americas, Western Europe, Asia/Pacific, and all other regions. Demand by product segment and market segment is also forecast for each major world region.

To illustrate historical trends world, product, market, and regional demand (including product segments and market segments) are provided for 2010 and 2015. Finally, world production is segmented by method and provided for 2010, 2015, and 2020.

This report quantifies trends in terms of compound annual growth rates (CAGRs), which, by definition, employ in their calculation only the first and last datapoints over a period. The CAGR is used to describe forecast growth, defined as the trend beginning in the base year and ending in the forecast year. Forecasts are developed via the identification and analysis of pertinent statistical relationships and other historical trends and events, as well as their expected impact over the forecast period. Readers are encouraged to consider historical volatility when assessing particular annual values along the forecast trend, including in the forecast year. Unless otherwise indicated, historical demand and production values are expressed in US dollars at the prevailing

rate of exchange with local currencies. Forecasts to 2020, however, assume a fixed 2015 exchange rate.

Other various topics, including profiles of pertinent leading suppliers, are covered in this report. A full outline of report items by page is available in the [Table of Contents](#).

## Sources

*World Graphene* (FW65067) is based on [a comprehensive industry study](#) published by The Freedonia Group in April 2016. Reported findings represent the synthesis and analysis of data from various primary, secondary, macroeconomic, and demographic sources including:

- firms participating in the industry, and their suppliers and customers
- government/public agencies
- national, regional, and international non-governmental organizations
- trade associations and their publications
- the business and trade press
- indicator forecasts by The Freedonia Group
- the findings of other industry studies by The Freedonia Group.

Specific sources and additional resources are listed in the [Resources](#) section of this publication for reference and to facilitate further research.

## Industry Codes

The topic of this report is related to the following industry codes:

NAICS/SCIAN 2007		SIC	
North American Industry Classification System		Standard Industry Codes	
212399	All Other Nonmetallic Mineral Mining	1499	Miscellaneous Nonmetallic Minerals, Except Fuels
327125	Nonclay Refractory Mfg		
327992	Ground or Treated Mineral and Earth Mfg	3295	Minerals and Earths, Ground or Otherwise Treated
335991	Carbon and Graphite Product Mfg	3297	Nonclay Refractories
		3624	Carbon and Graphite Products

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## RESOURCES

### The Freedonia Group

*3402 World Graphene*, April 2016

[www.freedoniagroup.com](http://www.freedoniagroup.com)

[see study contents](#)

#### Related Industry Studies

*3354 Drug Delivery Products*, December 2015

[see study contents](#)

*3350 World Battery Materials*, December 2015

[see study contents](#)

*3326 World Thermoplastic Elastomers*, November 2015

[see study contents](#)

*3338 Active & Intelligent Packaging*, October 2015

[see study contents](#)

*3317 Paint & Coatings*, August 2015

[see study contents](#)

*3309 World Batteries*, August 2015

[see study contents](#)

#### Related Focus Reports

*Activated Carbon: United States*

[see report contents](#)

*Batteries: United States*

[see report contents](#)

*Drug Delivery Products: United States*

[see report contents](#)

*Energy: United States*

[see report contents](#)

*World Battery Materials*

[see report contents](#)

*World Graphite*

[see report contents](#)

#### Freedonia Custom Research

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### Trade Publications

*Chemistry World* (UK)

[www.rsc.org/chemistryworld/](http://www.rsc.org/chemistryworld/)

*Composites Manufacturing* (USA)

<http://compositesmanufacturingmagazine.com>

*Graphene-Info* (Israel)

[www.graphene-info.com](http://www.graphene-info.com)

*Materials Today* (UK)

[www.materialstoday.com](http://www.materialstoday.com)

*Nanoscale* (UK)

<http://pubs.rsc.org/en/journals/journalissues/nr>

*Nature Materials* (UK)

[www.nature.com/nmat/](http://www.nature.com/nmat/)

*Nature Nanotechnology* (UK)

[www.nature.com/nnano/](http://www.nature.com/nnano/)

### Agencies & Associations

European Carbon and Graphite Association

[www.ecga.net](http://www.ecga.net)

Eurostat

<http://ec.europa.eu/eurostat>

The Graphene Council

[www.thegraphenecouncil.org](http://www.thegraphenecouncil.org)

International Monetary Fund

[www.imf.org](http://www.imf.org)

National Graphene Institute

[www.graphene.manchester.ac.uk](http://www.graphene.manchester.ac.uk)

New Energy and Industrial Technology Development Organization

[www.nedo.go.jp](http://www.nedo.go.jp)

Royal Society of Chemistry

[www.rsc.org](http://www.rsc.org)

World Bank

[www.worldbank.org](http://www.worldbank.org)

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