

Graphene Investment and Pricing Report 2017

<https://marketpublishers.com/r/G425AC11B3DEN.html>

Date: August 2017

Pages: 212

Price: US\$ 665.00 (Single User License)

ID: G425AC11B3DEN

Abstracts

Graphene is the most widely studied and developed 2D nanomaterial its discovery can be considered as a defining point in the research and development of stable, truly 2D material systems.

Graphene exhibits a unique combination of mechanical, thermal, electronic and optical properties that provide opportunities for new innovation in flexible displays, transistors, photosensors, RFID tags, solar cells, secondary batteries, fuel cells, supercapacitors, conductive inks, EMI shielding, heat insulation, anti-oxidation and LEDs across multiple industries including consumer electronics, automotive, aerospace, medicine, energy, 3D printing, polymer composites, wireless technology, filtration and coatings.

The global market for graphene continues to grow with weekly product, technology and production developments, public and private investments and start-ups. There are now over 200 companies either producing graphene or developing applications, with as many multi-nationals conducting R&D on these materials.

However, relatively few graphene products have reached the market yet, and until recently those that have mainly incorporate graphene additives to enhance toughness, conductivity and flexibility. This report seeks to identify investment opportunities for graphene and looks at current commercial and planned activity, most promising applications by market and pricing for graphene materials. This paints a complete picture of the current graphene landscape, from producer capacities & pricing to end products, now and in the future.

This 212 page report examines:

Advantages and shortcomings of graphene as a technology component.

Pricing landscape for graphene, by types and producers.

Production capacity by graphene producer.

Provides a map of the current competitive landscape by market.

Investments in graphene over the past 12 months.

Market impediments for graphene by target market.

Profiles all the major players in graphene production.

Profiles all the major application developers including current and intended products.

Contents

1 RESEARCH METHODOLOGY

- 1.1 Investment analysis
- 1.2 Market impediment analysis

2 EXECUTIVE SUMMARY.

- 2.1.1 Products.
- 2.1.2 Production in 2017.
- 2.1.3 Graphene investments 2016-2017.
- 2.1.4 Market outlook

3 TYPES OF COMMERCIALY AVAILABLE GRAPHENE.

- 3.1 Properties

4 COMMERCIAL GRAPHENE PRODUCTION

- 4.1 Large area graphene films production.
- 4.2 Graphene oxide flakes and graphene nanoplatelets production
- 4.3 Production methods
 - 4.3.1 Production directly from natural graphite ore
 - 4.3.2 Alternative starting materials
 - 4.3.3 Quality.
- 4.4 Synthesis and production by types of graphene
 - 4.4.1 Graphene nanoplatelets (GNPs).
 - 4.4.2 Graphene nanoribbons
 - 4.4.3 Large-area graphene films
 - 4.4.4 Graphene oxide (GO)
- 4.5 Pros and cons of graphene production methods.
- 4.6 Production methods by producer and products offered

5 GRAPHENE MARKET STRUCTURE AND ROUTES TO COMMERCIALIZATION.

6 CURRENT PRODUCTION VOLUMES IN METRIC TONS.

- 6.1 Global demand 2010-2017

7 GRAPHENE PRICING

- 7.1 Pristine Graphene Flakes pricing.
- 7.2 Few-Layer Graphene pricing
- 7.3 Graphene Nanoplatelets pricing
- 7.4 Reduced Graphene Oxide pricing
- 7.5 Graphene Quantum Dots pricing.
- 7.6 Graphene Oxide Nanosheets pricing
- 7.7 Multilayer Graphene (MLG) pricing
- 7.8 Mass production of lower grade graphene materials
- 7.9 High grade graphene difficult to mass produce.
- 7.10 Bulk supply.
- 7.11 Commoditisation

8 GLOBAL GRAPHENE PRODUCERS AND PRODUCTION CAPACITIES, CURRENT AND PLANNED.

9 COMMERCIAL OPPORTUNITIES IN GRAPHENE

- 9.1 Short-term growth
- 9.2 Medium-term growth.
- 9.3 Adhesives.
 - 9.3.1 Applications.
 - 9.3.2 Current and planned commercial activity
 - 9.3.3 Graphene investment potential.
 - 9.3.4 Market impediments
- 9.4 Aerospace.
 - 9.4.1 Applications.
 - 9.4.2 Current and planned commercial activity
 - 9.4.3 Graphene investment potential.
 - 9.4.4 Market impediments
- 9.5 Automotive
 - 9.5.1 Applications.
 - 9.5.2 Current and planned commercial activity
 - 9.5.3 Graphene investment potential.
 - 9.5.4 Market impediments
- 9.6 Coatings.
 - 9.6.1 Applications.

- 9.6.2 Current and planned commercial activity
- 9.6.3 Graphene investment potential.
- 9.6.4 Market impediments
- 9.7 Composites
 - 9.7.1 Applications.
 - 9.7.2 Current and planned commercial activity
 - 9.7.3 Graphene investment potential.
 - 9.7.4 Market impediments
- 9.8 Conductive inks.
 - 9.8.1 Applications.
 - 9.8.2 Current and planned commercial activity
 - 9.8.3 Graphene investment potential
 - 9.8.4 Market impediments
- 9.9 Electronics.
 - 9.9.1 Applications
 - 9.9.2 Current and planned commercial activity
 - 9.9.3 Graphene investment potential
 - 9.9.4 Market impediments
- 9.10 Energy
 - 9.10.1 Applications
 - 9.10.2 Current and planned commercial activity.
 - 9.10.3 Graphene investment potential
 - 9.10.4 Market impediments.
- 9.11 Filtration.
 - 9.11.1 Applications
 - 9.11.2 Current and planned commercial activity.
 - 9.11.3 Graphene investment potential
 - 9.11.4 Market impediments.
- 9.12 Life science and healthcare
 - 9.12.1 Applications
 - 9.12.2 Current and planned commercial activity.
 - 9.12.3 Graphene investment potential
 - 9.12.4 Market impediments.
- 9.13 Lighting
 - 9.13.1 Applications
 - 9.13.2 Current and planned commercial activity.
 - 9.13.3 Graphene investment potential
 - 9.13.4 Market impediments.
- 9.14 Lubricants

- 9.14.1 Applications
- 9.14.2 Current and planned commercial activity.
- 9.14.3 Graphene investment potential
- 9.14.4 Market impediments.
- 9.15 Oil and gas
 - 9.15.1 Applications
 - 9.15.2 Current and planned commercial activity.
 - 9.15.3 Graphene investment potential
 - 9.15.4 Market impediments.
- 9.16 Rubber and tires.
 - 9.16.1 Applications
 - 9.16.2 Current and planned commercial activity.
 - 9.16.3 Graphene investment potential
 - 9.16.4 Market impediments.
- 9.17 Sensors.
 - 9.17.1 Applications
 - 9.17.2 Current and planned commercial activity.
 - 9.17.3 Graphene investment potential
 - 9.17.4 Market impediments.
- 9.18 Textiles
 - 9.18.1 Applications
 - 9.18.2 Current and planned commercial activity.
 - 9.18.3 Graphene investment potential
 - 9.18.4 Market impediments.
- 9.19 3D printing
 - 9.19.1 Applications
 - 9.19.2 Current and planned commercial activity.
 - 9.19.3 Graphene investment potential
 - 9.19.4 Market impediments.

10 GRAPHENE PRODUCERS.

- 10.1 Types of graphene produced, by producer.
- 10.2 Key players.
 - 10.2.1 Asia-Pacific.
 - 10.2.1.1 Australia.
 - 10.2.2 North America
 - 10.2.3 Europe
- 10.3 Markets targeted, by producer.

11 GRAPHENE PRODUCT DEVELOPERS AND END USERS.

11.1 Industrial collaborations and licensing

11.2 Markets targeted, by product developers and end users

12 REFERENCES

List Of Tables

LIST OF TABLES

- Table 1: Consumer products incorporating graphene.
- Table 2: Graphene investments and financial agreements 2017
- Table 3: Market opportunity assessment matrix for graphene applications
- Table 4: Properties of graphene and competing materials
- Table 5: Large area graphene films-Markets, applications and current global market
- Table 6: Graphene oxide flakes/graphene nanoplatelets-Markets, applications and current global market
- Table 7: Main production methods for graphene
- Table 8: Pros and cons of graphene synthesis/production methods
- Table 9: Graphene production methods, by producer.
- Table 10: Graphene market structure.
- Table 11: Global demand for graphene, 2010-2017 in tons/year. Base year for projections is 2016.
- Table 12: Types of graphene and prices
- Table 13: Pristine graphene flakes pricing by producer.
- Table 14: Few-layer graphene pricing by producer
- Table 15: Graphene nanoplatelets pricing by producer.
- Table 16: Reduced graphene oxide pricing, by producer.
- Table 17: Graphene quantum dots pricing by producer
- Table 18: Graphene oxide nanosheets pricing by producer
- Table 19: Multi-layer graphene pricing by producer.
- Table 20: Production capacities of graphene producers, current and planned, metric tons
- Table 21: Graphene target markets-Applications and potential addressable market size
- Table 22: Applications of adhesives, by market
- Table 23: Companies developing graphene-based products in adhesives.
- Table 24: Market summary and revenues for graphene in the adhesives market.
- Table 25: Investment opportunity assessment for graphene in adhesives
- Table 26: Market impediments for graphene in the adhesives market
- Table 27: Applications of graphene in the aerospace market
- Table 28: Companies developing graphene-based products in aerospace
- Table 29: Market summary and revenues for graphene in the aerospace market.
- Table 30: Investment opportunity assessment for graphene in aerospace.
- Table 31: Market impediments for graphene in aerospace.
- Table 32: Applications of graphene in the automotive market

- Table 33: Companies developing graphene-based products in the automotive industry.
- Table 34: Market summary and revenues for graphene in the automotive market
- Table 35: Investment opportunity assessment for graphene in the automotive industry
- Table 36: Market impediments for graphene in automotive
- Table 37: Applications of graphene in coatings
- Table 38: Companies developing graphene-based products in the coatings industry
- Table 39: Market summary and revenues for graphene in the coatings market.
- Table 40: Investment opportunity assessment for graphene in the coatings market
- Table 41: Market impediments for graphene in coatings
- Table 42: Applications of graphene in composites
- Table 43: Companies developing graphene-based products in composites
- Table 44: Market summary and revenues for graphene in the composites market
- Table 45: Potential addressable market for graphene in composites.
- Table 46: Investment opportunity assessment for graphene in the composites market
- Table 47: Market impediments for graphene in composites
- Table 48: Companies developing graphene-based products in conductive inks.
- Table 49: Opportunities for graphene in printed electronics
- Table 50: Potential addressable market for graphene in conductive inks.
- Table 51: Market opportunity assessment for graphene in conductive inks
- Table 52: Market impediments for graphene in conductive inks
- Table 53: Applications of graphene in electronics
- Table 54: Companies developing graphene-based products in electronics.
- Table 55: Market summary and revenues for graphene in electronics
- Table 56: Investment opportunity assessment for graphene in electronics.
- Table 57: Market impediments for graphene in electronics.
- Table 58: Applications of graphene in energy storage and generation
- Table 59: Companies developing graphene-based products in energy.
- Table 60: Market summary and revenues for graphene in energy.
- Table 61: Potential addressable market for thin film, flexible and printed batteries
- Table 62: Potential addressable market for photovoltaics
- Table 63: Investment opportunity assessment for graphene in the energy market
- Table 64: Market impediments for graphene in energy
- Table 65: Applications of graphene in filtration.
- Table 66: Companies developing graphene-based products in filtration
- Table 67: Market summary and revenues for graphene in filtration
- Table 68: Investment opportunity assessment for graphene in the filtration market.
- Table 69: Market impediments for graphene in filtration
- Table 70: Applications of graphene in life sciences and healthcare
- Table 71: Companies developing graphene-based products in life sciences and

healthcare

Table 72: Market summary and revenues for graphene in life sciences and healthcare

Table 73: Potential addressable market for graphene in biomedical & healthcare markets

Table 74: Market opportunity assessment for graphene in biomedical & healthcare markets

Table 75: Market impediments for graphene in the biomedical and healthcare market.

Table 76: Applications of graphene in lighting

Table 77: Companies developing graphene-based products in lighting.

Table 78: Market summary and revenues for graphene in lighting

Table 79: Investment opportunity assessment for graphene in the lighting market

Table 80: Market impediments for graphene in lighting

Table 81: Applications of graphene in the lubricants market

Table 82: Companies developing graphene-based products in lubricants

Table 83: Market summary and revenues for graphene in the lubricants market

Table 84: Investment opportunity assessment for graphene in the lubricants market.

Table 85: Market impediments for graphene in lubricants

Table 86: Applications of graphene in the oil and gas market

Table 87: Companies developing graphene-based products in oil and gas

Table 88: Market summary and revenues for graphene in the oil and gas market.

Table 89: Investment opportunity assessment for graphene in the oil and gas market

Table 90: Market impediments for graphene in oil and gas.

Table 91: Applications of graphene in rubber and tires

Table 92: Companies developing graphene-based products in rubber and tires.

Table 93: Market summary and revenues for graphene in the rubber and tires market.

Table 94: Investment opportunity assessment for graphene in the rubber and tires market

Table 95: Market impediments for graphene in rubber and tires.

Table 96: Applications of graphene in sensors.

Table 97: Companies developing graphene-based products in sensors

Table 98: Market size for graphene in sensors.

Table 99: Market opportunity assessment for graphene in the filtration market

Table 100: Market impediments for graphene in sensors.

Table 101: Applications of graphene in textiles

Table 102: Companies developing graphene-based products in textiles

Table 103: Market summary and revenues for graphene in the textiles market

Table 104: Global market for smart clothing and apparel, 2014-2021, units and revenues (US\$).

Table 105: Market opportunity assessment for graphene in textiles.

Table 106: Market impediments for graphene in textiles

Table 107: Applications of graphene in 3D printing

Table 108: Companies developing graphene-based products in the 3D printing industry

Table 109: Market summary and revenues for graphene in the 3D printing market.

Table 110: Investment opportunity assessment for graphene in the 3D printing market

Table 111: Market impediments for graphene in 3D printing

Table 112: Graphene producers and types produced matrix.

Table 113: Graphene producers target market matrix.

Table 114: Graphene industrial collaborations, licence agreements and target markets

Table 115: Graphene product developers and end users target market matrix

List Of Figures

LIST OF FIGURES

Figure 1: Global market for graphene 2010-2027 in tons/year.

Figure 2: Graphene production capacity, current and planned

Figure 3: Graphene and its descendants: top right: graphene; top left: graphite = stacked graphene; bottom right: nanotube=rolled graphene; bottom left: fullerene=wrapped graphene.

Figure 4: Graphene synthesis methods.

Figure 5: TEM micrographs of: A) HR-CNFs; B) GANF® HR-CNF, it can be observed its high graphitic structure; C) Unravalled ribbon from the HR-CNF; D) Detail of the ribbon; E) Scheme of the structure of the HR-CNFs; F) Large single graphene oxide sheets derived from GANF.

Figure 6: Graphene nanoribbons grown on germanium

Figure 7: Schematic of typical commercialization route for graphene producer

Figure 8: Global demand for graphene 2010-2017 in tons/year

Figure 9: Demand for graphene, by market, 2015.

Figure 10: Demand for graphene, by market, 2027

Figure 11: Graphene epoxy adhesive.

Figure 12: Investment opportunity for graphene in adhesives

Figure 13: Investment opportunity assessment for graphene in aerospace

Figure 14: Investment opportunity assessment for graphene in the automotive sector.

Figure 15: Investment opportunity for graphene in the coatings market

Figure 16: Investment opportunity for graphene in the composites market

Figure 17: Graphene printed antenna.

Figure 18: BGT Materials graphene ink product

Figure 19: Vorbeck Materials Vor-ink™ conductive electronics printed through flexographic techniques

Figure 20: Potential addressable market for graphene in the conductive ink market

Figure 21: Moxi flexible film developed for smartphone application

Figure 22: Galapad Settler smartphone.

Figure 23: Flexible graphene touchscreen.

Figure 24: Potential addressable market for graphene in electronics

Figure 25: Potential addressable market for graphene in the flexible electronics, wearables, conductive films and displays market.

Figure 26: Potential addressable market for graphene in the transistors and integrated circuits market.

Figure 27: The SkelStart Engine Start Module 2.0 based on the graphene-based

SkelCap ultracapacitors

Figure 28: H600 concept car

Figure 29: Anion concept car.

Figure 30: Graphene anti-smog mask.

Figure 31: Graphene-based E-skin patch.

Figure 32: Potential addressable market for graphene-enabled applications in the biomedical and healthcare market

Figure 33: Directa-Plus Grafysorber.

Figure 34: Antistatic graphene tire.

Figure 35: Potential addressable market for graphene in the sensors market

Figure 36: 15-inch single-layer graphene sheet being prepared in the Chongqing Institute of Green and Intelligent Technology, Chinese Academy of Sciences

I would like to order

Product name: Graphene Investment and Pricing Report 2017

Product link: <https://marketpublishers.com/r/G425AC11B3DEN.html>

Price: US\$ 665.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G425AC11B3DEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970