

Polyamide Resin Composites in Electrical and Electronics Market Report: Trends, Forecast and Competitive Analysis to 2030

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Abstracts

2 – 3 business days after placing order

Polyamide Resin Composites in Electrical and Electronics Trends and Forecast

The future of the global polyamide resin composites in the electrical and electronics market looks promising with opportunities in the circuit breaker, terminal block, housing, switch enclosure, and bobbin markets. The global polyamide resin composites in electrical and electronics market is expected to grow with a CAGR of 3.6% from 2024 to 2030. The major drivers for this market are the expansion of the consumer electronics and automotive electronics sectors, the growing demand for lightweight and high-performance materials in electronics, and the rising adoption of EVs and renewable energy sources.

Lucintel forecasts that, within the resin type category, polyamide6 is expected to witness the highest growth over the forecast period.

Within the application category, circuit breakers are expected to witness the highest growth.

In terms of regions, APAC is expected to witness the highest growth over the forecast period.

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Emerging Trends in the Polyamide Resin Composites in Electrical and Electronics Market

The polyamide resins based composites in the electrical and electronics market is a developing market with some trends that most of the time emphasize the improvement in the material properties, sustainability, and broadening of the field of application. These changes are set towards enhancing the functionality of electronic devices hence providing lightweight, efficient, and greener products.

Growth of Usage Bio-Based Polyamides: Adoption of bio-based polyamides is one of the trends that is a notable shift towards any company that intends to lessen the environmental impact of their products. Polyplet D-polyamide obtained from bio-based resources within the Kappa range is set to gain wider adoption within electronic housings and connectors, cable insulation, etc. This green chemistry innovation not only decreases dependence on fossil resources but also can deliver the performance of traditional scientists polyamide which allows the engineers to consider it as one of the possible solutions for the green challenges in this industry.

Attention for Lightweight and Miniaturized Components: As these electronic devices continue to become increasingly compact, a strong need for tough materials that do not add on weight is on the rise. Due to the increasing use of polyamide resins-based composites, consumers have been able to substitute the use of heavier metal components in phones, computers, and other wearables. These composites make it possible to have lightweight constructions that have high strength to weight to optimize the performance of electronic components without compromising on their mechanical properties.

Advancement of Composites able to Resist High Temperature and Flame: Technology based on but not limited to electronic devices is bound to become increasingly complicated and smaller in the future making it ever more essential to use high temperature resistant and flame retardant materials. Polyamide composites with improved thermal and flame resistance with the advancement of materials research are also now used in the manufacturing of critical electronic structures including but not limited to circuit boards, connectors, and power modules. This trend is especially evident in automotive electronics where safety and performance are the key.



Recycling and Circular Economy: The new trend towards sustainability is initiating the development of new recycling methods to recycle polyamide resins based composites. The concept of circular economy is gaining traction among endeavors with the use of recycled polyamides within the product range. This has the effect of decreasing the amount of waste at the same time as lowering the costs of production. Advanced recycling technologies for low-cost polyamides are being developed so that companies will be able to adhere to strict environmental policies and regulations as well as maintain the performance characteristics of electronic components in the designed devices.

Smart and Flexible Electronics: There has been an increased use of polyamide composites in the manufacture of smart and flexible electronic devices. As the enhance in wearables, flexible displays, and foldable electronics go up polyamide resins based composites are used with the intention of strength and lightweight materials. Such composites have assisted in developing electronic products that are much lighter and conformable but with high toughness. This includes advanced materials and devices for wearable tech, which has a pressing need for such medium to high-performance materials.

In electrical and electronics application areas, as trends continue to influence the market for polyamide resin-based composites, there is progress concerning sustainable advancements, miniaturization, performance, and flexibility. With the increase in requirements for performance and lightweight eco-friendly materials growing, the utilization of polyamide composites in consumer electronics is bound to be on the increase.

Recent Developments in the Polyamide Resin Composites in Electrical and Electronics Market

The developments of polyamide resin-based composites for the electrical and electronics market have been targeting materials enhancement, sustainability, and new applications. These developments are aimed at enhancing the performance and cost-effectiveness of various electronic solutions while reducing their environmental impacts.

Enhanced Flame Retardant Polyamide Composites: In several applications in the electronics industry, the growing concern about fire hazards has created a demand for polymers that can withstand combustion, leading to flame retarding polyamide composites. These materials are being used in next-generation



electrical devices like power modules, connectors, and circuit boards. The flame retardants added to polyamide composites do not compromise the safety and strength of polyamide composites. These improvements are of high concern for automotive electronics and critical electronic systems applications.

Recycling polyamide and its use in electronic components: The adoption of recycled polyamides in electronic parts is becoming an acceptable practice since there is a growing demand for sustainable solutions from consumers and manufacturers alike. This trend is driven by the need to curtail waste disposal costs and the overall cost of materials. The application of recycled polyamides in the production of plastic enclosures and electrical connectors, among other components, is in most cases at par with virgin materials while dumping and resource use are reduced.

Bio-Based Polyamide Acceptance Growing: There has been an increasing shift towards the use of bio-based polyamides in the electronics industry as manufacturers have their priorities less on the product's end use. An even wider scope has been reached by the bio-based polyamides as parts of the cable insulations, housings, and connectors among other electronics components. These materials are made from natural resources and perform the same tasks as the polyamides helping manufacturers meet their targets on sustainability without affecting product characteristics.

Modern Trends in Injection Molding: Concerning injection molding technologies, developments are being made so that polyamide composites with varied shapes and better properties can be manufactured. It brow kneads mother touch and cortex shelves Hageman recently more often called technologies polymer Premark wires, primary circuit boards, or housings. Modern injection molding techniques, because of their improved accuracy and speed of operation, are assisting companies in satisfying the rising need for performance or a value-formoney approach to electronic components.

Growing Interest in Flexible Electronics: Stronger and more durable polyamide composites have been a result of growth in the use of polyamide composites for flexible and even more innovative electronics. High strength and ability to deform make these polyimide composites suitable for use in flexible displays, foldable smartphones, smartwatches, and other electronic gadgets.



A new trend is emerging in the manufacturing of electrical products based on polyamide resins and incorporating polyamide resin composites. These materials are being welcomed for inclusion due to the improved flame resistance, the green agenda, and the evolution of manufacturing processes.

Strategic Growth Opportunities for Polyamide Resin Composites in Electrical and Electronics Market

The polyamide resin-based composites in the electrical and electronics market have numerous areas for expansion, driven by advancements in material properties, manufacturing techniques, and areas of application. These opportunities are especially prominent in the development of more sophisticated, effective, and eco-friendly electronic products.

Wearable Electronics: Wearable electronic gadgets are witnessing a growing trend, as consumers require lightweight, high-strength, flexible materials. Smartwatches, fitness trackers, and health monitoring devices use polyamide composites that balance performance, comfort, and portability. This industry is expected to grow further as more consumers seek complex and highly functional wearable gadgets, thereby increasing the demand for polyamide composites in this sector.

Electric Vehicles (EVs): Due to the booming electric vehicle trend, polyamide composites are being utilized in critical electronic structural parts, such as battery casings, connectors, and control module housings. These materials excel due to their high thermal resistance and excellent electrical insulation. As the EV market expands, polyamide composites will continue to play a key role in enhancing the functionality, efficiency, and safety of these vehicles.

Smart Appliances: Smart appliances like washing machines, refrigerators, and air conditioners are in high demand among households. This creates a corresponding demand for polyamide composites. These materials are useful for component casings, electrical connectors, and heat-resistant parts in smart appliances. Their durability, lightweight nature, and resistance to wear and heat make them ideal for high-performance components in this growing market.

Advanced Consumer Electronics: To meet the requirements of advanced consumer electronic devices, such as laptops, smartphones, and gaming consoles, polyamide composites are increasingly being adopted. These



composites provide strength, thermal resistance, flexibility, and durability for use in connectors, circuit boards, and internal housings. As consumer electronics evolve, polyamide composites will be essential for creating thinner, lighter devices that consume less energy.

Renewable Energy Systems: Polyamide composites are being used more frequently in renewable energy systems, such as wind and solar power, where electrical parts must perform under extreme environmental conditions. Due to their excellent properties, including strength, durability, heat resistance, and corrosion resistance, these composites are ideal for key components in renewable energy systems. As the world shifts from fossil fuels to renewable energy, polyamide composites will become critical in improving the efficiency and durability of these energy systems.

The market for polyamide resin-based composites in the electrical and electronics sector offers numerous strategic growth opportunities. With applications in wearables, EVs, smart appliances, consumer electronics, and renewable energy systems, these materials are expected to experience high demand, driven by the ongoing quest for high performance and sustainability.

Polyamide Resin Composites in Electrical and Electronics Market Driver and Challenges

The market for polyamide resins-based composites in the electrical and electronics market is driven by several technological, economic, and regulatory factors, which help grow the market while also posing some challenges.

The factors responsible for driving the polyamide resin composites in the electrical and electronics market include:

Growing Need for Lighter and Stronger Materials: There is a demand for polyamide composites due to the market trend for electronic devices to become smaller and lighter. These materials have high tensile strength, can withstand loads, do not biodegrade easily, and are heat resistant, making them suitable for use in components such as connectors and housings.

Technological Developments in Manufacturing Techniques: Emerging manufacturing technologies, especially injection molding and 3D printing, are



improving the production of polyamide resins-based composites. The production of electronic components with such features makes manufacturing easier since it allows for more concise and intricately shaped designs.

Sustainability and Development of Eco-Friendly Products: There is an increasing need for bio-based or recycled polyamides in electronics due to growing consumer interest in sustainable electronics. These materials satisfy environmental objectives while maintaining necessary performance standards for higher-quality electronic devices.

Rise of the Consumer Electronics and Wearables Market: The growing demand for advanced consumer electronics and wearable devices calls for materials that are lightweight yet have considerable strength. Polyamide composites are ideal for this application.

Growth of Electric Vehicles and Smart Appliances: With the rise of the electric vehicle market and smart appliances, there is an increasing need for strong, lightweight, and heat-resistant materials that would improve the performance of electronic parts in such systems.

Challenges in the polyamide resin composites in the electrical and electronics market are:

Production Cost Challenge: Even though polyamide composites have excellent properties, they are expensive to manufacture, especially the bio-based or reinforced ones, which cost more than standard materials. This is a challenge in low-cost applications.

High Difficulty of Processing Materials: There are many challenges in processing polyamide composites, which require advanced technology, a high level of expertise, and special equipment. The production process can pose challenges for manufacturers in scaling up production while maintaining quality and performance.

Supply Chain Disruptions: Polyamide thermoplastic resins, especially those with fiber-reinforced compositions, are dependent on regular feedstock supply. Supply chain challenges, such as geopolitical tensions or natural calamities, can lead to the unavailability or increased cost of essential components needed to



make polyamide composites.

The market for polyamide resins-based composites in electrical and electronics remains favorable, with unlimited growth potential driven by the need for high-performance materials in electronics, wearables, and automotive applications. On the other hand, concerns about production costs, material processing, and supply chain balance need to be addressed to keep up with the challenges.

List of Polyamide Resin Composites Companies in Electrical and Electronics Market

Companies in the market compete on the basis of product quality offered. Major players in this market focus on expanding their manufacturing facilities, R&D investments, infrastructural development, and leverage integration opportunities across the value chain. Through these strategies polyamide resin composites companies in electrical and electronics market cater increasing demand, ensure competitive effectiveness, develop innovative products & technologies, reduce production costs, and expand their customer base. Some of the polyamide resin composites companies in electrical and electronics market profiled in this report include-

BASF DSM DuPont LANXESS

Solvay

Polyamide Resin Composites in Electrical and Electronics by Segment

The study includes a forecast for the global polyamide resin composites in electrical and electronics by resin type, application, and region.

Polyamide Resin Composites in Electrical and Electronics Market by Resin Type [Analysis by Value from 2018 to 2030]:



Polyamide6

Polyamide66

Polyamide46

Others

Polyamide Resin Composites in Electrical and Electronics Market by Application [Analysis by Value from 2018 to 2030]:

Circuit Breaker

Terminal Block

Housing

Switch Enclosure

Bobbins

Others

Polyamide Resin Composites in Electrical and Electronics Market by Region [Analysis by Value from 2018 to 2030]:

North America

Europe

Asia Pacific

The Rest of the World

Country Wise Outlook for the Polyamide Resin Composites in Electrical and Electronics Market

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Polyamide resin-based composites are increasingly being applied in the fields of electronics and electrical engineering. For instance, they are used in connectors, cables, housings, and other components. However, due to the increasing trend for lightweight and portable consumer electronics, such as laptops and cellular phones, manufacturers in the U.S., China, Germany, India, and Japan are actively developing polyamide composites to enhance product performance while simultaneously minimizing overall weight and increasing sustainability. These developments align with global trends toward increased efficiency, reduced weight, and green manufacturing practices.

United States: In the U.S., polyamide additive composites are increasingly used in the electrical and electronics industries due to the demand for lightweight materials with good mechanical properties and heat resistance. There is a trend among American industries to substitute polyamide composites for connectors, housings, and circuit boards due to their relatively high level of mechanical resistance. The incorporation of sustainable and bio-based polyamide materials is also gaining momentum, addressing environmental concerns. Additionally, efforts are being made to advance processing methods, including injection molding and extrusion, to meet the requirements of modern electronics and expand the application range of polyamide composites in high-performance sectors.

China: China has emerged as one of the largest consumers and producers of polyamide resin-based composites in the electrical and electronics industry. With the rapid growth of its electronics manufacturing sector, the country is adopting these composites for wire insulation, electrical connectors, and mobile phone housings. Notably, Chinese manufacturers are also seeking to incorporate more recycled and bio-based polyamides in their products to comply with increasing environmental regulations. Furthermore, China is improving its capabilities to manufacture advanced polyamide composites to enhance its competitiveness in the international electronic components market.

Germany: Germany has played a major role in the development and use of polyamide resin-based composites in electronics and electrical engineering. German companies are highly innovative, using polyamide composites in highperformance component connectors, circuit boards, and housings for electronic devices. A significant effort is being devoted to sustainability, with the use of biobased and recycled polyamides by companies in Germany. The country is also



working to improve processing methods for polyamide composite materials to enhance their thermal and electrical properties, which are critical in electronic systems with high-reliability requirements.

India: The growth of electrical and electronics applications for polyamide resin composites in India is driven by the expansion of the electronic manufacturing sector. Polyamide composites are used as wire insulators, connectors, and other electrical components that offer heat resistance and conductivity. The Indian market is seeing a shift toward more sustainable options, as manufacturers are looking to incorporate bio-based polyamides due to global environmental trends. Furthermore, Indian companies are investing in R&D to make polyamide composites stronger, more durable, and more efficient to meet the high-performance requirements of both local and international markets.

Japan: Polyamide resin-based composites have already found widespread use in electrical and electronics applications in Japan. Japanese manufacturers of both equipment and components use polyamide composites in connectors, insulating materials, mobile phones, and other precision parts. Japan has also embraced bio-based polyamides due to its commitment to environmental sustainability. Additionally, Japan has adopted advanced processing methods, including injection molding and 3D printing, to enhance the efficacy of polyamide composites. These innovations further position Japan as a leader in the production of advanced electronic materials and high-end technology.

Features of the Global Polyamide Resin Composites in Electrical and Electronics Market

Market Size Estimates: Polyamide resin composites in electrical and electronics market size estimation in terms of value (\$B).

Trend and Forecast Analysis: Market trends (2018 to 2023) and forecast (2024 to 2030) by various segments and regions.

Segmentation Analysis: Polyamide resin composites in electrical and electronics market size by resin type, application, and region in terms of value (\$B).

Regional Analysis: Polyamide resin composites in electrical and electronics market breakdown by North America, Europe, Asia Pacific, and Rest of the World.



Growth Opportunities: Analysis of growth opportunities in different resin types, applications, and regions for the polyamide resin composites in electrical and electronics market.

Strategic Analysis: This includes M&A, new product development, and competitive landscape of the polyamide resin composites in electrical and electronics market.

Analysis of competitive intensity of the industry based on Porter's Five Forces model.

If you are looking to expand your business in this or adjacent markets, then contact us. We have done hundreds of strategic consulting projects in market entry, opportunity screening, due diligence, supply chain analysis, M & A, and more.

This report answers following 11 key questions:

Q.1. What are some of the most promising, high-growth opportunities for the polyamide resin composites in electrical and electronics market by resin type (polyamide6, polyamide66, polyamide46, and others), application (circuit breaker, terminal block, housing, switch enclosure, bobbins, and others), and region (North America, Europe, Asia Pacific, and the Rest of the World)?

Q.2. Which segments will grow at a faster pace and why?

Q.3. Which region will grow at a faster pace and why?

Q.4. What are the key factors affecting market dynamics? What are the key challenges and business risks in this market?

Q.5. What are the business risks and competitive threats in this market?

Q.6. What are the emerging trends in this market and the reasons behind them?

Q.7. What are some of the changing demands of customers in the market?

Q.8. What are the new developments in the market? Which companies are leading these developments?

Q.9. Who are the major players in this market? What strategic initiatives are key players

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pursuing for business growth?

Q.10. What are some of the competing products in this market and how big of a threat do they pose for loss of market share by material or product substitution?

Q.11. What M&A activity has occurred in the last 5 years and what has its impact been on the industry?



Contents

1. EXECUTIVE SUMMARY

2. GLOBAL POLYAMIDE RESIN COMPOSITES IN ELECTRICAL AND ELECTRONICS MARKET : MARKET DYNAMICS

- 2.1: Introduction, Background, and Classifications
- 2.2: Supply Chain
- 2.3: Industry Drivers and Challenges

3. MARKET TRENDS AND FORECAST ANALYSIS FROM 2018 TO 2030

3.1. Macroeconomic Trends (2018-2023) and Forecast (2024-2030)

3.2. Global Polyamide Resin Composites in Electrical and Electronics Market Trends (2018-2023) and Forecast (2024-2030)

3.3: Global Polyamide Resin Composites in Electrical and Electronics Market by Resin Type

- 3.3.1: Polyamide6
- 3.3.2: Polyamide66
- 3.3.3: Polyamide46
- 3.3.4: Others

3.4: Global Polyamide Resin Composites in Electrical and Electronics Market by

Application

- 3.4.1: Circuit Breaker
- 3.4.2: Terminal Block
- 3.4.3: Housing
- 3.4.4: Switch Enclosure
- 3.4.5: Bobbins
- 3.4.6: Others

4. MARKET TRENDS AND FORECAST ANALYSIS BY REGION FROM 2018 TO 2030

4.1: Global Polyamide Resin Composites in Electrical and Electronics Market by Region

4.2: North American Polyamide Resin Composites in Electrical and Electronics Market

4.2.1: North American Market by Resin Type: Polyamide6, Polyamide66,

Polyamide46, and Others

4.2.2: North American Market by Application: Circuit Breaker, Terminal Block, Housing,



Switch Enclosure, Bobbins, and Others

4.3: European Polyamide Resin Composites in Electrical and Electronics Market

4.3.1: European Market by Resin Type: Polyamide6, Polyamide66, Polyamide46, and Others

4.3.2: European Market by Application: Circuit Breaker, Terminal Block, Housing, Switch Enclosure, Bobbins, and Others

4.4: APAC Polyamide Resin Composites in Electrical and Electronics Market

4.4.1: APAC Market by Resin Type: Polyamide6, Polyamide66, Polyamide46, and Others

4.4.2: APAC Market by Application: Circuit Breaker, Terminal Block, Housing, Switch Enclosure, Bobbins, and Others

4.5: ROW Polyamide Resin Composites in Electrical and Electronics Market

4.5.1: ROW Market by Resin Type: Polyamide6, Polyamide66, Polyamide46, and Others

4.5.2: ROW Market by Application: Circuit Breaker, Terminal Block, Housing, Switch Enclosure, Bobbins, and Others

5. COMPETITOR ANALYSIS

5.1: Product Portfolio Analysis

- 5.2: Operational Integration
- 5.3: Porter's Five Forces Analysis

6. GROWTH OPPORTUNITIES AND STRATEGIC ANALYSIS

6.1: Growth Opportunity Analysis

6.1.1: Growth Opportunities for the Global Polyamide Resin Composites in Electrical and Electronics Market by Resin Type

6.1.2: Growth Opportunities for the Global Polyamide Resin Composites in Electrical and Electronics Market by Application

6.1.3: Growth Opportunities for the Global Polyamide Resin Composites in Electrical and Electronics Market by Region

6.2: Emerging Trends of Global Polyamide Resin Composites in Electrical and Electronics Market

6.3: Strategic Analysis

6.3.1: New Product Development

6.3.2: Capacity Expansion of the Global Polyamide Resin Composites in Electrical and Electronics Market

6.3.3: Mergers, Acquisitions, and Joint Ventures of Global Polyamide Resin



Composites in Electrical and Electronics Market 6.3.4: Certification and Licensing

7. COMPANY PROFILES OF LEADING PLAYERS

- 7.1: BASF
- 7.2: DSM
- 7.3: DuPont
- 7.4: LANXESS
- 7.5: Solvay



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