

# **Printed Electronic Materials Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Technology (Inkjet Printing, Screen Printing, Gravure Printing, Flexographic Printing, Others), By End User (Automotive and Transportation, Consumer Electronics, Aerospace and Defense, Retail and Packaging, Healthcare, Others), By Region and Competition, 2019-2029F**

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## **Abstracts**

Global Printed Electronic Materials Market was valued at USD 3.68 billion in 2023 and is anticipated to project robust growth in the forecast period with a CAGR of 4.21% through 2029. Several key trends are shaping the global printed electronic materials market. One significant trend is the rising demand for flexible and stretchable electronics, particularly in wearable devices, smart packaging, and medical applications. Printed electronic materials offer the flexibility and adaptability required to integrate electronics into unconventional shapes and substrates, driving innovation in product design and functionality.

The increasing adoption of Internet of Things (IoT) devices and smart sensors across various industries is fueling demand for printed electronic materials. These materials enable the development of low-cost, lightweight, and energy-efficient sensors for applications such as environmental monitoring, healthcare, agriculture, and industrial automation, driving market growth. The growing emphasis on sustainability and environmental conservation is driving the demand for eco-friendly and recyclable printed electronic materials. Manufacturers are exploring alternative materials and manufacturing processes that reduce environmental impact while maintaining

performance and functionality, aligning with global sustainability goals and regulations.

The global printed electronic materials market is experiencing dynamic growth and evolving trends, driven by technological advancements, increasing demand for flexible electronics, and growing applications across diverse industries. As manufacturers continue to innovate and develop new materials and applications, the market is poised for continued expansion, offering immense opportunities for growth and development in the global electronics industry.

## Key Market Drivers

### Growing Demand of Printed Electronic Materials in Automotive Industry

Printed electronic materials are playing a crucial role in enhancing vehicle interiors, offering innovative solutions for instrument panels, center consoles, and infotainment systems. Flexible and lightweight printed electronic displays, touch sensors, and lighting elements are replacing traditional bulky components, allowing for sleeker and more ergonomic designs while improving user experience.

The integration of smart features into vehicle interiors is a key driver of the growing demand for printed electronic materials in the automotive industry. Printed electronic sensors and switches enable touch-sensitive controls, proximity sensing, and gesture recognition, enhancing convenience and safety for drivers and passengers. The printed electronic components facilitate the integration of advanced driver assistance systems (ADAS) and connectivity features, such as in-vehicle communication systems and vehicle-to-everything (V2X) technology.

Printed electronic materials are also driving advancements in vehicle safety systems, contributing to the development of next-generation safety features. Printed sensors for airbag deployment, seat occupancy detection, and tire pressure monitoring enhance the effectiveness of passive and active safety systems, improving overall vehicle safety and occupant protection. Furthermore, printed electronic materials enable the integration of advanced driver monitoring systems (DMS) and occupant detection technologies, enhancing driver awareness and reducing the risk of accidents.

The automotive industry's growing focus on sustainability is driving demand for eco-friendly and recyclable materials, including printed electronic materials. Manufacturers are exploring alternative materials and manufacturing processes that minimize

environmental impact while maintaining performance and functionality. Printed electronic materials offer the advantage of reduced material waste, energy consumption, and carbon emissions compared to traditional manufacturing methods, aligning with the automotive industry's sustainability goals.

### Growing Demand of Printed Electronic Materials in Packaging Industry

Smart packaging, enabled by printed electronic materials, integrates electronic components such as sensors, displays, and antennas into traditional packaging formats. These components are printed directly onto flexible substrates using advanced printing techniques, allowing for the creation of interactive, intelligent, and connected packaging solutions. Smart packaging offers a wide range of functionalities, including real-time product tracking, temperature monitoring, tamper-evident features, interactive displays, and personalized consumer experiences.

The incorporation of printed electronic materials into packaging enables manufacturers to enhance product functionality and improve consumer engagement. Smart packaging solutions can provide consumers with valuable information about product authenticity, freshness, and usage instructions. Interactive packaging with embedded displays or NFC (Near Field Communication) tags allows consumers to access additional product information, promotions, or recipes using their smartphones, enhancing their overall experience and brand loyalty.

Printed electronic materials offer significant sustainability advantages over traditional electronic components. By utilizing lightweight, flexible substrates and environmentally friendly inks, printed electronic materials reduce material waste, energy consumption, and carbon footprint compared to conventional electronic manufacturing processes. Additionally, smart packaging solutions can help minimize food waste by providing real-time monitoring of product freshness and expiration dates, contributing to a more sustainable supply chain.

### Key Market Challenges

#### Limited Material Selection

The printed electronic materials market is constrained by the limited availability of materials suitable for printing processes such as inkjet, screen printing, and roll-to-roll deposition. Traditional electronic materials such as silicon and metals are not easily adaptable to printing techniques due to their rigid nature and high processing

temperatures, limiting their application in printed electronics. The performance requirements of printed electronic materials, such as conductivity, flexibility, and compatibility with substrates, pose additional challenges in material selection. Finding materials that meet these criteria while also being cost-effective and environmentally sustainable is a significant hurdle for manufacturers in the printed electronic materials market.

The limited material selection poses several challenges for the growth of the global printed electronic materials market. Firstly, it restricts the range of applications and functionalities that can be achieved with printed electronics. This limits innovation and hinders the development of new products and solutions in industries such as consumer electronics, automotive, healthcare, and smart packaging.

Moreover, the limited material selection affects the scalability and commercial viability of printed electronic materials. Manufacturers face challenges in sourcing materials in large quantities and at competitive prices, leading to higher production costs and limited economies of scale. This makes it difficult for printed electronic materials to compete with traditional electronic materials in terms of cost-effectiveness and performance.

## Key Market Trends

### Increasing Adoption of Flexible Electronics

The consumer electronics industry is witnessing a significant shift towards the adoption of flexible electronics in various products, including smartphones, tablets, e-readers, and wearable devices. Flexible displays, touch sensors, and printed batteries enable the development of thinner, lighter, and more durable devices with curved or flexible form factors. This trend is driven by consumer demand for innovative and immersive user experiences, as well as the need for portable and ergonomic electronic devices.

Wearable technology, including fitness trackers, smartwatches, and health monitoring devices, relies heavily on flexible electronics to provide users with real-time data and actionable insights. Flexible sensors, batteries, and circuits enable the development of comfortable and unobtrusive wearable devices that seamlessly integrate into everyday life. This trend is driven by the growing emphasis on health and wellness, as well as the demand for personalized and connected devices.

The increasing adoption of flexible electronics is driven by their numerous advantages

over traditional rigid electronic components. Flexible electronics offer lightweight, thin, and bendable form factors, making them ideal for applications where space and weight constraints are critical. They also offer improved durability, reliability, and shock resistance compared to rigid electronics. Also, flexible electronics enable the development of conformal and stretchable devices that can be integrated into clothing, accessories, and even the human body.

## Segmental Insights

### Technology Insights

Based on the category of technology, the screen printing segment emerged as the dominant player in the global market for printed electronic materials in 2023. Screen printing is a versatile and flexible printing technique that can be used to deposit a wide range of materials, including conductive inks, dielectric materials, and insulating layers. This flexibility allows for the printing of complex patterns, shapes, and designs on various substrates, making it suitable for a diverse range of printed electronic applications.

Screen printing is a cost-effective printing method, particularly for large-scale production runs. The relatively low cost of screen printing equipment and materials, combined with high throughput and efficiency, makes it an attractive option for manufacturers seeking to produce printed electronic devices in bulk at competitive prices. Screen printing offers high resolution and precision, enabling the deposition of fine lines, patterns, and features with accuracy and consistency. This level of precision is crucial for printed electronic applications that require tight tolerances and precise alignment of conductive traces and components.

### Regional Insights

Asia Pacific emerged as the dominant region in the Global Printed Electronic Materials Market in 2023, holding the largest market share in terms of value. Asia-Pacific has emerged as a manufacturing hub for printed electronic materials due to its well-established infrastructure, advanced manufacturing capabilities, and lower production costs compared to other regions. Countries like China, Japan, South Korea, and Taiwan have robust electronics manufacturing sectors with access to skilled labor, state-of-the-art facilities, and a network of suppliers, contributing to the region's dominance in the market.

The Asia Pacific region is home to some of the world's largest electronics markets, including China, Japan, South Korea, and Taiwan. These countries have witnessed rapid growth in consumer electronics, automotive electronics, wearable devices, and smart appliances, driving demand for printed electronic materials such as conductive inks, substrates, and dielectric materials.

Asia Pacific countries have invested significantly in research and development (R&D) to advance printed electronic materials and technologies. Leading academic institutions, research organizations, and government agencies collaborate with industry players to develop innovative materials, manufacturing processes, and applications, fostering a culture of innovation and driving market growth.

### Key Market Players

Henkel AG & Co. KGaA

NAGASE & CO., LTD.

E Ink Holdings Inc.

DuPont de Nemours, Inc.

BASF SE

Molex, LLC

Teikoku Printing Ink Mfg. Co., Ltd.

ACI Materials, Inc.

Kayaku Advanced Materials, Inc.

Dycotec Materials Ltd.

### Report Scope:

In this report, the Global Printed Electronic Materials Market has been segmented into the following categories, in addition to the industry trends which have

als%li%been detailed below:

#### Printed Electronic Materials Market, By Technology:

Inkjet Printing

Screen Printing

Gravure Printing

Flexographic Printing

Others

#### Printed Electronic Materials Market, By End User:

Automotive and Transportation

Consumer Electronics

Aerospace and Defense

Retail and Packaging

Healthcare

Others

#### Printed Electronic Materials Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE



## Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Printed Electronic Materials Market.

## Available Customizations:

Global Printed Electronic Materials Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

## Company Information

Detailed analysis and profiling of additional market players (up to five).

## Contents

### **1. PRODUCT OVERVIEW**

- 1.1. Market Definition
- 1.2. Scope of the Market
  - 1.2.1. Markets Covered
  - 1.2.2. Years Considered for Study
  - 1.2.3. Key Market Segmentations

### **2. RESEARCH METHODOLOGY**

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Key Industry Partners
- 2.4. Major Association and Secondary Sources
- 2.5. Forecasting Methodology
- 2.6. Data Triangulation & Validation
- 2.7. Assumptions and Limitations

### **3. EXECUTIVE SUMMARY**

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, Trends

### **4. IMPACT OF COVID-19 ON GLOBAL PRINTED ELECTRONIC MATERIALS MARKET**

### **5. GLOBAL PRINTED ELECTRONIC MATERIALS MARKET OUTLOOK**

- 5.1. Market Size & Forecast
  - 5.1.1. By Value
- 5.2. Market Share & Forecast
  - 5.2.1. By Technology (Inkjet Printing, Screen Printing, Gravure Printing, Flexographic Printing, Others)

5.2.2. By End User (Automotive and Transportation, Consumer Electronics, Aerospace and Defense, Retail and Packaging, Healthcare, Others)

5.2.3. By Region

5.2.4. By Company (2023)

5.3. Market Map

## **6. ASIA PACIFIC PRINTED ELECTRONIC MATERIALS MARKET OUTLOOK**

6.1. Market Size & Forecast

6.1.1. By Value

6.2. Market Share & Forecast

6.2.1. By Technology

6.2.2. By End User

6.2.3. By Country

6.3. Asia Pacific: Country Analysis

6.3.1. China Printed Electronic Materials Market Outlook

6.3.1.1. Market Size & Forecast

6.3.1.1.1. By Value

6.3.1.2. Market Share & Forecast

6.3.1.2.1. By Technology

6.3.1.2.2. By End User

6.3.2. India Printed Electronic Materials Market Outlook

6.3.2.1. Market Size & Forecast

6.3.2.1.1. By Value

6.3.2.2. Market Share & Forecast

6.3.2.2.1. By Technology

6.3.2.2.2. By End User

6.3.3. Australia Printed Electronic Materials Market Outlook

6.3.3.1. Market Size & Forecast

6.3.3.1.1. By Value

6.3.3.2. Market Share & Forecast

6.3.3.2.1. By Technology

6.3.3.2.2. By End User

6.3.4. Japan Printed Electronic Materials Market Outlook

6.3.4.1. Market Size & Forecast

6.3.4.1.1. By Value

6.3.4.2. Market Share & Forecast

6.3.4.2.1. By Technology

6.3.4.2.2. By End User

### 6.3.5. South Korea Printed Electronic Materials Market Outlook

#### 6.3.5.1. Market Size & Forecast

##### 6.3.5.1.1. By Value

#### 6.3.5.2. Market Share & Forecast

##### 6.3.5.2.1. By Technology

##### 6.3.5.2.2. By End User

## 7. EUROPE PRINTED ELECTRONIC MATERIALS MARKET OUTLOOK

### 7.1. Market Size & Forecast

#### 7.1.1. By Value

### 7.2. Market Share & Forecast

#### 7.2.1. By Technology

#### 7.2.2. By End User

#### 7.2.3. By Country

### 7.3. Europe: Country Analysis

#### 7.3.1. France Printed Electronic Materials Market Outlook

##### 7.3.1.1. Market Size & Forecast

###### 7.3.1.1.1. By Value

##### 7.3.1.2. Market Share & Forecast

###### 7.3.1.2.1. By Technology

###### 7.3.1.2.2. By End User

#### 7.3.2. Germany Printed Electronic Materials Market Outlook

##### 7.3.2.1. Market Size & Forecast

###### 7.3.2.1.1. By Value

##### 7.3.2.2. Market Share & Forecast

###### 7.3.2.2.1. By Technology

###### 7.3.2.2.2. By End User

#### 7.3.3. Spain Printed Electronic Materials Market Outlook

##### 7.3.3.1. Market Size & Forecast

###### 7.3.3.1.1. By Value

##### 7.3.3.2. Market Share & Forecast

###### 7.3.3.2.1. By Technology

###### 7.3.3.2.2. By End User

#### 7.3.4. Italy Printed Electronic Materials Market Outlook

##### 7.3.4.1. Market Size & Forecast

###### 7.3.4.1.1. By Value

##### 7.3.4.2. Market Share & Forecast

###### 7.3.4.2.1. By Technology

- 7.3.4.2.2. By End User
- 7.3.5. United Kingdom Printed Electronic Materials Market Outlook
  - 7.3.5.1. Market Size & Forecast
    - 7.3.5.1.1. By Value
  - 7.3.5.2. Market Share & Forecast
    - 7.3.5.2.1. By Technology
    - 7.3.5.2.2. By End User

## **8. NORTH AMERICA PRINTED ELECTRONIC MATERIALS MARKET OUTLOOK**

- 8.1. Market Size & Forecast
  - 8.1.1. By Value
- 8.2. Market Share & Forecast
  - 8.2.1. By Technology
  - 8.2.2. By End User
  - 8.2.3. By Country
- 8.3. North America: Country Analysis
  - 8.3.1. United States Printed Electronic Materials Market Outlook
    - 8.3.1.1. Market Size & Forecast
      - 8.3.1.1.1. By Value
    - 8.3.1.2. Market Share & Forecast
      - 8.3.1.2.1. By Technology
      - 8.3.1.2.2. By End User
  - 8.3.2. Mexico Printed Electronic Materials Market Outlook
    - 8.3.2.1. Market Size & Forecast
      - 8.3.2.1.1. By Value
    - 8.3.2.2. Market Share & Forecast
      - 8.3.2.2.1. By Technology
      - 8.3.2.2.2. By End User
  - 8.3.3. Canada Printed Electronic Materials Market Outlook
    - 8.3.3.1. Market Size & Forecast
      - 8.3.3.1.1. By Value
    - 8.3.3.2. Market Share & Forecast
      - 8.3.3.2.1. By Technology
      - 8.3.3.2.2. By End User

## **9. SOUTH AMERICA PRINTED ELECTRONIC MATERIALS MARKET OUTLOOK**

- 9.1. Market Size & Forecast

- 9.1.1. By Value
- 9.2. Market Share & Forecast
  - 9.2.1. By Technology
  - 9.2.2. By End User
  - 9.2.3. By Country
- 9.3. South America: Country Analysis
  - 9.3.1. Brazil Printed Electronic Materials Market Outlook
    - 9.3.1.1. Market Size & Forecast
      - 9.3.1.1.1. By Value
    - 9.3.1.2. Market Share & Forecast
      - 9.3.1.2.1. By Technology
      - 9.3.1.2.2. By End User
  - 9.3.2. Argentina Printed Electronic Materials Market Outlook
    - 9.3.2.1. Market Size & Forecast
      - 9.3.2.1.1. By Value
    - 9.3.2.2. Market Share & Forecast
      - 9.3.2.2.1. By Technology
      - 9.3.2.2.2. By End User
  - 9.3.3. Colombia Printed Electronic Materials Market Outlook
    - 9.3.3.1. Market Size & Forecast
      - 9.3.3.1.1. By Value
    - 9.3.3.2. Market Share & Forecast
      - 9.3.3.2.1. By Technology
      - 9.3.3.2.2. By End User

## **10. MIDDLE EAST AND AFRICA PRINTED ELECTRONIC MATERIALS MARKET OUTLOOK**

- 10.1. Market Size & Forecast
  - 10.1.1. By Value
- 10.2. Market Share & Forecast
  - 10.2.1. By Technology
  - 10.2.2. By End User
  - 10.2.3. By Country
- 10.3. MEA: Country Analysis
  - 10.3.1. South Africa Printed Electronic Materials Market Outlook
    - 10.3.1.1. Market Size & Forecast
      - 10.3.1.1.1. By Value
    - 10.3.1.2. Market Share & Forecast

- 10.3.1.2.1. By Technology
- 10.3.1.2.2. By End User
- 10.3.2. Saudi Arabia Printed Electronic Materials Market Outlook
  - 10.3.2.1. Market Size & Forecast
    - 10.3.2.1.1. By Value
  - 10.3.2.2. Market Share & Forecast
    - 10.3.2.2.1. By Technology
    - 10.3.2.2.2. By End User
- 10.3.3. UAE Printed Electronic Materials Market Outlook
  - 10.3.3.1. Market Size & Forecast
    - 10.3.3.1.1. By Value
  - 10.3.3.2. Market Share & Forecast
    - 10.3.3.2.1. By Technology
    - 10.3.3.2.2. By End User

## **11. MARKET DYNAMICS**

- 11.1. Drivers
- 11.2. Challenges

## **12. MARKET TRENDS & DEVELOPMENTS**

- 12.1. Recent Developments
- 12.2. Product Launches
- 12.3. Mergers & Acquisitions

## **13. GLOBAL PRINTED ELECTRONIC MATERIALS MARKET: SWOT ANALYSIS**

## **14. PORTER'S FIVE FORCES ANALYSIS**

- 14.1. Competition in the Industry
- 14.2. Potential of New Entrants
- 14.3. Power of Suppliers
- 14.4. Power of Customers
- 14.5. Threat of Substitute Product

## **15. PESTLE ANALYSIS**

## **16. COMPETITIVE LANDSCAPE**

- 16.1. Henkel AG & Co. KGaA
  - 16.1.1. Business Overview
  - 16.1.2. Company Snapshot
  - 16.1.3. Products & Services
  - 16.1.4. Financials (As Reported)
  - 16.1.5. Recent Developments
- 16.2. NAGASE & CO., LTD.
- 16.3. E Ink Holdings Inc.
- 16.4. DuPont de Nemours, Inc.
- 16.5. BASF SE
- 16.6. Molex, LLC
- 16.7. Teikoku Printing Ink Mfg. Co., Ltd.
- 16.8. ACI Materials, Inc.
- 16.9. Kayaku Advanced Materials, Inc.
- 16.10. Dycotec Materials Ltd.

## **17. STRATEGIC RECOMMENDATIONS**

## **18. ABOUT US & DISCLAIMER**



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