

Next-Generation Lithography Materials Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Material (Photoresist, Ancillary Materials, Others), By Application (Automotive, Consumer Electronics, IT & Telecommunications, Others), By Region and Competition, 2019-2029F

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Abstracts

Global Next-Generation Lithography Materials Market was valued at USD 90.24 million in 2023 and is anticipated to project robust growth in the forecast period with a CAGR of 4.25% through 2029. Next-generation lithography materials are indispensable in crafting cutting-edge semiconductor devices, crucial for various sectors like consumer electronics, automotive, and telecommunications. The demand surge is fueled by rapid technological advancements, with industries such as consumer electronics, automotive, and telecommunications leading the charge for increasingly sophisticated semiconductors.

In consumer electronics, the quest for smaller, faster, and more energy-efficient devices is relentless. Next-generation lithography materials are pivotal in meeting these demands by enabling the production of smaller, more power-efficient semiconductors.

In the automotive sector, the proliferation of electric vehicles and autonomous driving necessitates advanced semiconductor devices to power complex systems for efficient and safe operation. Next-generation lithography materials, renowned for their precision and reliability, are instrumental in advancing automotive technologies.

In telecommunications, the pursuit of faster and more reliable networks drives the

demand for advanced semiconductors. Next-generation lithography materials facilitate the production of high-performance chips capable of managing the escalating data traffic from technologies like 5G, ensuring telecommunications networks meet the demand for faster and more efficient connectivity.

Key Market Drivers

Growing Demand of Next-Generation Lithography Materials in Automotive Industry

Next-generation lithography materials are pivotal in crafting advanced semiconductor devices, particularly as the automotive sector rapidly transitions to electric and autonomous vehicles. This shift has propelled a sharp increase in demand for high-performance chips, essential for various automotive applications such as Advanced Driver-Assistance Systems (ADAS), infotainment systems, power management systems, and electric vehicle powertrains.

The growing electrification and digitalization of vehicles have surged semiconductor demand. Next-generation lithography, by enabling the fabrication of smaller yet more potent chips, has emerged as a critical solution to fulfill the automotive industry's expanding requisites. The capacity to produce diminutive chips with enhanced performance facilitates seamless integration into diverse automotive systems, enhancing efficiency and effectiveness.

The advent of autonomous vehicles has further heightened this demand. These vehicles heavily rely on advanced semiconductors for pivotal functions like sensor processing, decision-making, and vehicle-to-vehicle communication. The sophisticated functionalities of these semiconductors are imperative for ensuring the safe and dependable operation of autonomous vehicles.

The ongoing semiconductor shortage in the automotive sector has underscored the urgent necessity for efficient and high-volume semiconductor manufacturing. This scarcity has intensified the demand for next-generation lithography materials as manufacturers seek remedies to bolster chip production and alleviate supply chain constraints.

Growing Demand of Next-Generation Lithography Materials in Electronic Industry

Advanced lithography materials, like cutting-edge photoresists and nanopatterning techniques, are instrumental in the manufacture of state-of-the-art semiconductor

devices. These materials not only facilitate the production of miniature electronic components but also enable the creation of intricate circuit patterns with heightened precision and resolution. Such precision is paramount for the functionality of a wide array of electronic devices, spanning from smartphones and laptops to household appliances and wearable technology.

The electronics sector is currently experiencing unprecedented growth, driven by continuous technological advancements and the escalating consumer appetite for innovative products. There is a simultaneous surge in demand for next-gen lithography materials. This demand is further fueled by the emergence of transformative technologies like artificial intelligence (AI), Internet of Things (IoT), and 5G connectivity. These pioneering technologies necessitate high-performance chips, achievable only through the advanced capabilities offered by next-gen lithography materials.

The ongoing trend towards device miniaturization in the electronics industry is another significant driver for the demand for next-gen lithography materials. As devices shrink in size, there arises an increasing need for smaller yet more potent chips capable of fitting into ever-shrinking form factors. Next-generation lithography materials, with their precision and scalability, are pivotal in meeting this demand, enabling the development of cutting-edge electronic devices that push the boundaries of technological innovation.

Key Market Challenges

Complexities Associated with Materials Performance and Reliability

Next-generation lithography materials serve as the cornerstone of manufacturing advanced semiconductor devices. As these devices continue to shrink in size while enhancing their power, ensuring the effectiveness and dependability of these materials becomes an increasingly intricate and captivating endeavor.

The performance of next-gen lithography materials is pivotal in the production process. These materials must showcase exceptional traits, including high resolution, sensitivity, and etch resistance, to craft intricate designs on semiconductors. The complex patterns and structures formed by these materials are fundamental to the functionality and efficiency of modern electronic devices.

The reliability of these materials is paramount. They must consistently yield top-tier results to guarantee the proper operation of the semiconductor devices they're integrated into. Any inconsistency or malfunction could result in defects in the final

product, impacting not only its overall performance but also its longevity and dependability. Manufacturers devote substantial time and resources to develop and assess these materials to meet the industry's ever-growing demands.

The challenge lies in the inherent complexity of these materials and their production process. Crafting next-gen lithography materials involves precise chemical reactions and physical processes that demand meticulous control to achieve optimal performance and reliability. Researchers and engineers tirelessly explore innovative fabrication techniques and refine existing methodologies to attain the desired properties and performance of these materials.

As the demand for smaller and more potent devices rises, the lithography process becomes increasingly intricate. This necessitates manufacturers to continually innovate and adjust their techniques to keep pace with these evolving demands, further adding to the complexity. Advanced technologies like extreme ultraviolet (EUV) lithography are being explored to surmount the limitations of traditional methods and enable the creation of even smaller and more intricate features on semiconductor devices.

Key Market Trends

Transition to Advanced Nodes

Advanced nodes, also referred to as advanced process technology, are pivotal in semiconductor manufacturing. These nodes facilitate the creation of smaller and more efficient semiconductors, contributing to the ongoing drive for enhanced performance, reduced power consumption, and lowered cost per function of integrated circuits. With the semiconductor industry evolving rapidly, the transition to advanced nodes has become essential to meet the escalating demand for high-performance chips.

This transition to advanced nodes not only impacts the semiconductor manufacturing process but also directly influences the need for next-generation lithography materials. As chip manufacturers embrace these advanced technology nodes, they encounter the challenge of resolving increasingly finer features on their designs. This necessitates the utilization of next-generation lithography materials capable of facilitating the production of intricate and compact designs.

By capitalizing on advanced nodes and embracing state-of-the-art lithography techniques, the semiconductor industry is poised to continue pushing the boundaries of innovation. This enables the development of faster, smaller, and more potent chips,

driving forward our increasingly interconnected and technology-centric world.

Segmental Insights

Material Insights

Based on the category of material, the photoresist emerged as the fastest growing player in the global market for next-generation lithography materials in 2023. The growing global demand for electronic devices across a variety of industries, spanning from consumer electronics to telecommunications, underscores the critical importance of semiconductors and, consequently, photoresist materials. These materials play a pivotal role in the intricate process of manufacturing electronic components, facilitating the precise formation of circuit patterns on semiconductor substrates.

As industries increasingly transition to digitalization and adopt emerging technologies like AI and automation, the reliance on semiconductors and photoresist materials is set to intensify. These materials serve as the foundational elements of the digital infrastructure that drives our contemporary economy, enabling essential functions ranging from data processing and storage to the operation of machine learning algorithms and autonomous systems.

Application Insights

The consumer electronics segment is projected to experience rapid growth during the forecast period. As technology advances rapidly, there's a rising demand for more powerful and compact devices. This progress drives the adoption of highly advanced semiconductors, made feasible by next-generation lithography materials. Positioned at the forefront of innovation, these materials enable the production of semiconductors that surpass the evolving needs of today's digital world.

Regional Insights

Asia Pacific emerged as the dominant player in the Global Next-Generation Lithography Materials Market in 2023, holding the largest market share in terms of value. The Asia Pacific region maintains its leadership position in the global semiconductor market, driven by the robust presence of key players in countries such as Taiwan, South Korea, and China. These nations have solidified their status as major contributors to the semiconductor industry, stimulating the demand for next-generation lithography materials. Leveraging their advanced manufacturing capabilities and technological

prosess, they spearhead innovation within this sector.

The Asia Pacific region serves as a significant market for consumer electronics, propelled by its sizable population and increasing disposable income. This surge in demand for semiconductors, and consequently for next-generation lithography materials, is fueled by consumers' embrace of the latest gadgets and technologies.

Recognizing the pivotal role of the semiconductor industry, governments across the Asia Pacific region actively promote the advancement of cutting-edge technologies. They provide financial incentives and implement supportive policies to foster innovation and enhance competitiveness within the semiconductor sector. This proactive stance encourages research and development initiatives, fosters collaboration among industry stakeholders, and facilitates the adoption of state-of-the-art technologies, ensuring sustained growth and leadership in the semiconductor market for the region.

by 2025-2026. The agreement was formalized in Tokyo during Semicon Japan 2023.

Key Market Players

Tokyo Ohka Kogyo Co., Ltd.

JSR Corporation

DuPont de Nemours, Inc.

Shin-Etsu Chemical Co., Ltd

Fujifilm Corporation

Sumitomo Chemical Co., Ltd.

Allresist GmbH

micro resist technology GmbH

DJ MicroLaminates, Inc.

Report Scope:

In this report, the Global Next-Generation Lithography Materials Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Next-Generation Lithography Materials Market, By Material:

- o Photoresist
- o Ancillary Materials
- o Others

Next-Generation Lithography Materials Market, By Application:

- o Automotive
- o Consumer Electronics
- o IT & Telecommunications
- o Others

Next-Generation Lithography Materials Market, By Region:

- o North America
 - ? United States
 - ? Canada
 - ? Mexico
- o Europe

? France

? United Kingdom

? Italy

? Germany

? Spain

o Asia Pacific

? China

? India

? Japan

? Australia

? South Korea

o South America

? Brazil

? Argentina

? Colombia

o Middle East & Africa

? South Africa

? Saudi Arabia

? UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Next-Generation Lithography Materials Market.

Available Customizations:

Global Next-Generation Lithography 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 NEXT-GENERATION LITHOGRAPHY MATERIALS MARKET

5. GLOBAL NEXT-GENERATION LITHOGRAPHY MATERIALS MARKET OUTLOOK

- 5.1. Market Size & Forecast
 - 5.1.1. By Value
- 5.2. Market Share & Forecast
 - 5.2.1. By Material (Photoresist, Ancillary Materials, Others)
 - 5.2.2. By Application (Automotive, Consumer Electronics, IT & Telecommunications, Others)

- 5.2.3. By Region
- 5.2.4. By Company (2023)
- 5.3. Market Map

6. ASIA PACIFIC NEXT-GENERATION LITHOGRAPHY MATERIALS MARKET OUTLOOK

- 6.1. Market Size & Forecast
 - 6.1.1. By Value
- 6.2. Market Share & Forecast
 - 6.2.1. By Material
 - 6.2.2. By Application
 - 6.2.3. By Country
- 6.3. Asia Pacific: Country Analysis
 - 6.3.1. China Next-Generation Lithography 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 Material
 - 6.3.1.2.2. By Application
 - 6.3.2. India Next-Generation Lithography 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 Material
 - 6.3.2.2.2. By Application
 - 6.3.3. Australia Next-Generation Lithography 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 Material
 - 6.3.3.2.2. By Application
 - 6.3.4. Japan Next-Generation Lithography 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 Material
 - 6.3.4.2.2. By Application
 - 6.3.5. South Korea Next-Generation Lithography 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 Material
 - 6.3.5.2.2. By Application

7. EUROPE NEXT-GENERATION LITHOGRAPHY MATERIALS MARKET OUTLOOK

- 7.1. Market Size & Forecast
 - 7.1.1. By Value
- 7.2. Market Share & Forecast
 - 7.2.1. By Material
 - 7.2.2. By Application
 - 7.2.3. By Country
- 7.3. Europe: Country Analysis
 - 7.3.1. France Next-Generation Lithography 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 Material
 - 7.3.1.2.2. By Application
 - 7.3.2. Germany Next-Generation Lithography 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 Material
 - 7.3.2.2.2. By Application
 - 7.3.3. Spain Next-Generation Lithography 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 Material
 - 7.3.3.2.2. By Application
 - 7.3.4. Italy Next-Generation Lithography 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 Material
 - 7.3.4.2.2. By Application

7.3.5. United Kingdom Next-Generation Lithography 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 Material

7.3.5.2.2. By Application

8. NORTH AMERICA NEXT-GENERATION LITHOGRAPHY MATERIALS MARKET OUTLOOK

8.1. Market Size & Forecast

8.1.1. By Value

8.2. Market Share & Forecast

8.2.1. By Material

8.2.2. By Application

8.2.3. By Country

8.3. North America: Country Analysis

8.3.1. United States Next-Generation Lithography 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 Material

8.3.1.2.2. By Application

8.3.2. Mexico Next-Generation Lithography 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 Material

8.3.2.2.2. By Application

8.3.3. Canada Next-Generation Lithography 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 Material

8.3.3.2.2. By Application

9. SOUTH AMERICA NEXT-GENERATION LITHOGRAPHY MATERIALS MARKET OUTLOOK

- 9.1. Market Size & Forecast
 - 9.1.1. By Value
- 9.2. Market Share & Forecast
 - 9.2.1. By Material
 - 9.2.2. By Application
 - 9.2.3. By Country
- 9.3. South America: Country Analysis
 - 9.3.1. Brazil Next-Generation Lithography 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 Material
 - 9.3.1.2.2. By Application
 - 9.3.2. Argentina Next-Generation Lithography 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 Material
 - 9.3.2.2.2. By Application
 - 9.3.3. Colombia Next-Generation Lithography 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 Material
 - 9.3.3.2.2. By Application

10. MIDDLE EAST AND AFRICA NEXT-GENERATION LITHOGRAPHY MATERIALS MARKET OUTLOOK

- 10.1. Market Size & Forecast
 - 10.1.1. By Value
- 10.2. Market Share & Forecast
 - 10.2.1. By Material
 - 10.2.2. By Application
 - 10.2.3. By Country
- 10.3. MEA: Country Analysis
 - 10.3.1. South Africa Next-Generation Lithography 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 Material
 - 10.3.1.2.2. By Application
- 10.3.2. Saudi Arabia Next-Generation Lithography 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 Material
 - 10.3.2.2.2. By Application
- 10.3.3. UAE Next-Generation Lithography 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 Material
 - 10.3.3.2.2. By Application

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 NEXT-GENERATION LITHOGRAPHY 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. Tokyo Ohka Kogyo Co., Ltd.

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. JSR Corporation

16.3. DuPont de Nemours, Inc.

16.4. Shin-Etsu Chemical Co., Ltd

16.5. Fujifilm Corporation.

16.6. Sumitomo Chemical Co., Ltd.

16.7. Allresist GmbH

16.8. micro resist technology GmbH

16.9. DJ MicroLaminates, Inc.

16.10. Merck KGaA

17. STRATEGIC RECOMMENDATIONS

18. ABOUT US & DISCLAIMER

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