

Semiconductor Gases Market to Reach USD 18.08 Billion by 2031 Driven by Rapid Change in Technology and Digitalization

"Semiconductor Gases Market: Trends, Key Players, and Growth Prospects Shaping the Future of Technology Manufacturing"

TEXES, AUSTIN, UNITED STATES, June 14, 2024 /EINPresswire.com/ -- The SNS Insider report estimates the [Semiconductor Gases Market](#) size at USD 10.26 billion in 2023, with a projected CAGR of 7.3% to reach USD 18.08 billion by 2031.



The global market experiences significant momentum due to the widespread adoption of IoT devices, leading to a surge in demand for semiconductor components. This growth is further fueled by the rapid expansion of the electronics manufacturing sector, especially in emerging markets. Government enforcement of stringent quality and safety standards to uphold manufacturing integrity amplifies market dynamics.

Moreover, ongoing research and development endeavors focus on integrating cutting-edge materials like gallium nitride (GaN) and silicon carbide (SiC), fostering a favorable market environment. Additionally, there's a notable shift towards smaller nanoscale semiconductor structures and the emergence of 3D chip packaging, driving demand for specialized semiconductor gases tailored to these evolving trends. Factors such as the adoption of energy-efficient plasma etching and deposition techniques, a heightened emphasis on sustainable practices, and the proliferation of cloud computing and data centers further contribute to market growth.

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Some of the Key Players Included are:

- Air Liquide S.A.

- Linde Group.
- American Gas Products
- Iwatani Corporation
- Gruppo SIAD
- Air Products Inc
- Indiana Oxygen Inc
- Sumitomo Seika Chemicals Company, Ltd
- SK Materials
- SHOWA DENKO K.K
- and other

Segment Analysis

The Semiconductor Gases Market is bifurcated into two key segments based on product types: Electronic Special Gas and Electronic Bulk Gas.

In 2023, the Electronic Special Gas segment emerged as the predominant force in this market. Gases like nitrogen fluoride are specifically formulated to meet the exacting requirements of the electronic manufacturing sector, highlighting the specialized nature of these gases. With the semiconductor industry increasingly focused on producing state-of-the-art chips with dimensions below 5 micrometers, there's an anticipated surge in demand for gases and chemicals capable of delivering precise outcomes. These specialized gases, vital for advanced semiconductor fabrication, are categorized as electronic special gases. This growing necessity for high-density, advanced semiconductor chips is expected to drive the demand for electronic special gases even further.

By Product

- Electronic Bulk Gas
- Electronic Special Gas

By Application

- Logic
- Memory
- Others

Competitive Insights

In the semiconductor gas market, companies are actively involved in research and development endeavors aimed at innovating their product offerings. Merck & Co., Inc. has joined forces with Micron Technology Inc. to develop low global warming potential (GWP) gas solutions tailored for semiconductor manufacturing, thereby addressing environmental concerns. Key players in the semiconductor gases market are strategically investing and collaborating to better serve their customers.

For instance, in May 2022, Air Products, a US-based chemical industry firm, made a substantial investment of around \$400 million to commission two new air separation units for a

semiconductor manufacturer in Asia. This investment is intended to supply ultra-pure nitrogen, oxygen, argon, and hydrogen to support the expansion of the customer's wafer fab, underscoring the significance of strategic partnerships in meeting the burgeoning demands of the semiconductor industry.

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Recent Developments

June 2023: Air Products released their "Sustainability in Action" report, emphasizing clean hydrogen's role in the energy transition and showcasing their projects.

March 2023: Electronic Fluorocarbons began joint research with the University of Nebraska-Lincoln on low-GWP fluorocarbons for semiconductor processing.

May 2023: Iwatani Corporation of America and Suburban Propane partners collaborated to promote low-carbon energy solutions like propane blended with renewable dimethyl ether and explore hydrogen infrastructure investments in the US.

July 2022: SK Materials and Showa Denko sign an MOU to produce special gases for semiconductor chip manufacturing, planning factories in the United States to meet the rising semiconductor demand.

May 2022: Air Products San Fu Co. Ltd. unveils two new air separation units to supply ultra-high purity industrial gases to a major Asian semiconductor manufacturer.

Impact of Russia-Ukraine War on Semiconductor Gases Market

The conflict between Russia and Ukraine has injected considerable instability into global markets, including the semiconductor gases sector. Given the pivotal roles both countries play in the production and distribution of semiconductor materials, there are concerns regarding potential disruptions in the supply of essential gases and chemicals vital for semiconductor manufacturing. These disruptions, compounded by geopolitical tensions and imposed sanctions, may lead to price fluctuations and supply shortages. Such uncertainties could compel semiconductor industry players to reevaluate their supply chain strategies and explore diversification options to mitigate risks and ensure operational stability.

Regional Analysis

In 2023, the Asia Pacific region held a significant market share, a trend expected to persist due to heightened demand from its burgeoning semiconductor manufacturing industry. With the bulk of global consumption centered in Asia Pacific, nations like Taiwan lead as major consumers, fueled by their robust semiconductor manufacturing sector. Taiwan, a frontrunner in semiconductor chip production, continues substantial investments to expand its manufacturing capacity. Similarly, countries like China, South Korea, and Japan are poised to enhance their semiconductor production capacities to meet escalating demand, consequently driving up the need for semiconductor gases.

Example: China's Chip Ambitions

China persists in bolstering its domestic chip manufacturing prowess. In March 2024, it unveiled a new government-backed investment fund totaling \$50 billion, dedicated solely to the semiconductor industry [referencing news on China's semiconductor investment fund]. This significant financial commitment is expected to drive up the demand for semiconductor gases in China.

Key Takeaways:

- The global semiconductor gases market is anticipated for significant growth fueled by rising demand for electronics
- Strategic partnerships, collaborations, investments, product launches and developments between companies are crucial for securing parts, components, and expertise.
- The surge in demand within the electric vehicle sector has propelled the semiconductor industry.
- The Asia Pacific region will likely maintain its dominance due to rapid urbanization and digitization in emerging countries like India and China have spurred significant transformations.

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