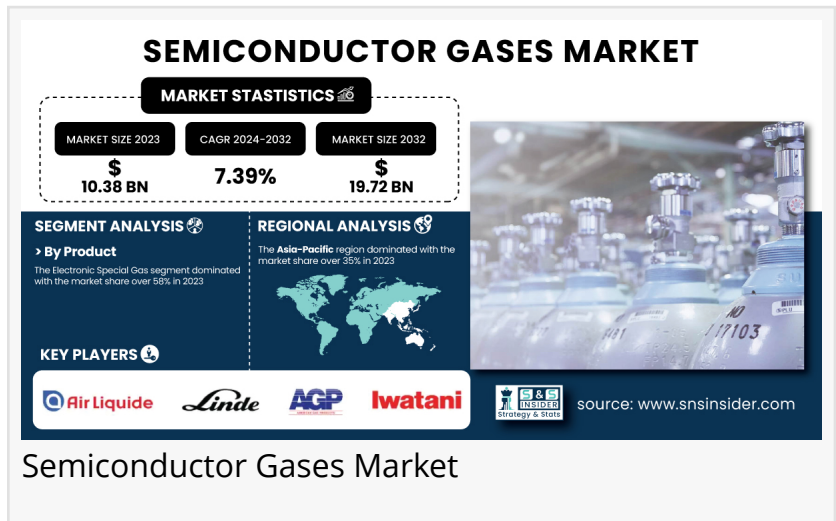


Semiconductor Gases Market to Reach USD 19.72 Billion by 2032, Driven by 7.39% CAGR | SNS Insider

Semiconductor Gases Market is propelled by growing semiconductor demand, advanced manufacturing technologies & sustainable gas solutions in modern electronics.

AUSTIN, TX, UNITED STATES, January 27, 2025 /EINPresswire.com/ -- The [Semiconductor Gases Market](#) size was valued at USD 10.38 Billion in 2023 and is expected to reach USD 19.72 Billion by 2032, growing at a CAGR of 7.39% over the forecast period 2024-2032.



The market growth is primarily driven by the expanding demand for semiconductors in various industries, advancements in semiconductor manufacturing technologies, and the growing adoption of semiconductor-based electronic devices.

Key Market Drivers

A major driver for the growth of the semiconductor gases market is the increasing global demand for semiconductors. Semiconductors are essential components in a wide range of industries, including consumer electronics, automotive, telecommunications, and healthcare. The rapid technological advancements in microelectronics and the increasing reliance on devices such as smartphones, tablets, and connected devices are fueling the demand for semiconductors. This surge in demand for semiconductors is subsequently driving the need for specialized gases used in semiconductor manufacturing processes.

Technological innovations in semiconductor fabrication processes, such as 5nm and 3nm nodes, are contributing significantly to market growth. As semiconductor chips become more advanced and miniaturized, the requirement for specialized gases like nitrogen trifluoride (NF₃), silane (SiH₄), and hydrogen chloride (HCl) has grown. These gases are crucial for various processes, including chemical vapor deposition (CVD), etching, and cleaning, which are integral to

manufacturing high-performance semiconductors.

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Key Players:

- Air Liquide S.A (Nitrogen, Oxygen, Hydrogen, Argon, Specialty gases)
- Linde Group (Nitrogen, Oxygen, Argon, Carbon Dioxide, Specialty gases)
- American Gas Products (High purity gases, specialty gases, gas mixtures)
- Iwatani Corporation (Hydrogen, Nitrogen, Argon, Carbon Dioxide)
- Gruppo SIAD (Oxygen, Nitrogen, Argon, Hydrogen, Special gases)
- Air Products Inc. (Nitrogen, Oxygen, Hydrogen, Specialty gases, CO2)
- Indiana Oxygen Inc. (Oxygen, Nitrogen, Argon, CO2)
- Sumitomo Seika Chemicals Company (Nitrogen, Oxygen, Hydrogen)
- SK Materials (Specialty gases, Nitrogen, Hydrogen, Fluorine)
- SHOWA DENKO K.K. (Fluorine, Hydrogen, Nitrogen, Oxygen, Rare gases)
- Messer Group (Oxygen, Nitrogen, Argon, Hydrogen, CO2)
- Gulf Cryo (Nitrogen, Oxygen, Argon, Carbon Dioxide, Specialty gases)
- Taiyo Nippon Sanso Corporation (Hydrogen, Nitrogen, Oxygen, Argon, Specialty gases)
- Praxair Inc. (Oxygen, Nitrogen, Hydrogen, Argon, Carbon Dioxide)
- Matheson Tri-Gas, Inc. (Oxygen, Nitrogen, Hydrogen, Specialty gases)
- Airgas Inc. (Oxygen, Nitrogen, Argon, Hydrogen, CO2)
- Air Water Inc. (Oxygen, Nitrogen, Hydrogen, Argon)
- Nippon Sanso Holdings Corporation (Nitrogen, Oxygen, Hydrogen, CO2, Special gases)
- Messer Group GmbH (Oxygen, Nitrogen, Hydrogen, Argon, Specialty gases)

Segmental Analysis

By Product

- Electronic Special Gas
- Electronic Bulk Gas

In 2023, Electronic Special Gas segment held over 58 % market share, as it is vital for semiconductor fabrication processes. These gases are specifically engineered for critical applications such as etch, deposition and doping key semiconductor device manufacturing processes. Etching uses a variety of special gases to remove material from semiconductor wafers in order to form complex patterns. Gases are deposited in deposition to form thin films, which are key for fabrication of integrated circuits. Doping is a process of adding impurities to semiconductors to change their electrical properties and special gases are essential for this. The electro-precise, ultra-ideal, and specifically controlled specifications of Electronic Special Gases make them irreplaceable for the healthy production of high-end semiconductor components.

By Application

- Memory
- Logic
- Others

In 2023, Logic accounted for more than 62% of the market share, owing to its broad applications in essential electronic components such as microprocessors, integrated circuits, and also logic devices. Logic chips are essential for running computational functions in smartphones, personal computers, consumer electronics, and other smart devices. Since the rapid development of technology is paving the way for the permanent demand for these chips due to the development of artificial intelligence, data centers, and 5G networks. Logic chips are critical in function of information processing, system control, and data transmission. The logic segment will continue to be the largest component of the Semiconductor Gases Market due to their need in various applications and the demanding trends for miniaturization and performance improvement.

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Regional Analysis

Asia-Pacific accounted for over 35% of the market share in 2023, primarily due to the concentration of semiconductor fabrication centers in countries such as China, Taiwan, South Korea, and Japan. Semiconductors, in particular, are where they lead while their semiconductor foundries are amongst the most sought after in the world. Most of the semiconductor production expanding in these countries requires smaller amounts of specialty gases, as they are necessary in many types of steps in any kind of fabrication process. Nitrogen and hydrogen gases along with inactive rare gases like xenon and krypton are important in the processes of etching, deposition, and cleaning in semiconductor processes. This demand is compounded by the increasing demand for advanced semiconductors across a variety of industries including consumer electronics, automotive, and telecommunications.

North America is estimated to be the fastest growing region owing to growing demand for semiconductor devices in telecommunication, automotive, consumer electronics and lighting sectors. Similar demand for semiconductor gases has arisen due to technological growth in these industries, thereby propelling the requirement of high-performance chips. Furthermore, government policy including the CHIPS Act is also driving growth supported by significant government investment to reinvigorate domestic semiconductor manufacturing. The law entices companies to construct or expand manufacturing plants in the U. S., speeding up the need for semiconductor gases even more. This is further supported by the continuous demand for new technology (5G, self-driving cars, and new era smart devices).

Recent Developments

- April 2024:Linde PLC announced the opening of a new semiconductor gases supply facility in Taiwan to cater to the growing demand for advanced semiconductor manufacturing. This move aims to strengthen the company's position in the rapidly expanding Asian market.
- March 2024:Air Products and Chemicals, Inc. expanded its gas production capacity in the U.S. to meet the increasing demand for specialty gases used in semiconductor production. The expansion is part of the company's strategy to support the growth of semiconductor manufacturing in North America.
- February 2024:Tokyo Gas Co., Ltd. launched a new hydrogen gas supply network specifically designed to support the semiconductor industry in Japan. This innovation is expected to meet the growing need for high-purity hydrogen in semiconductor manufacturing.

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Akash Anand

SNS Insider | Strategy and Stats

+1 415-230-0044

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