

Electronics Deposition Gases Global Market Insights 2025, Analysis and Forecast to 2030, by Market Participants, Regions, Technology, Application

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Abstracts

Electronics Deposition Gases Market Summary

Introduction

Electronics deposition gases are critical for depositing thin films in semiconductors, photovoltaic cells, and flat panel displays, enabling the formation of transistors, insulators, and conductive layers. These gases, including silane, ammonia, and tungsten hexafluoride, are selected for their purity and compatibility with processes like chemical vapor deposition (CVD) and atomic layer deposition (ALD). The market is propelled by the semiconductor industry's growth, driven by AI, HPC, and consumer electronics, alongside photovoltaic advancements for renewable energy and display innovations for AR/VR devices. The industry demands high-purity gases to meet shrinking geometries, with environmental regulations pushing for low-impact formulations.

The global Electronics Deposition Gases Market is projected to reach USD 1.2-2.2 billion by 2025, with a CAGR of 6.0%-9.2% from 2025 to 2030, reflecting strong demand across electronics and clean energy.

Market Size and Growth Forecast

The deposition gases market is expected to achieve a valuation of USD 1.2-2.2 billion by 2025, with a CAGR of 6.0%-9.2% through 2030. Growth is fueled by the semiconductor market's projected rise to over USD 1 trillion by 2030 and photovoltaic installations reaching 540 GW by 2028. Demand for ALD-compatible gases for sub-3nm

nodes and sustainable formulations drives expansion, though supply chain bottlenecks and regulatory costs pose challenges. Continuous innovation in gas purity and delivery systems supports market resilience.

Regional Analysis

The market is strongest in regions with advanced electronics and renewable energy sectors.

Asia Pacific: Growth is 7.0%-10.0%. South Korea, China, and Japan lead due to chip and display production. Trends focus on domestic supply chains and high-purity gases. Asia Pacific are home to industry giants in semiconductors (e.g., TSMC, Samsung, SK Hynix), PV module production (e.g., LONGi, JA Solar), and display panels (e.g., BOE, LG Display).

North America: Growth ranges from 5.5%-8.5%. North America led by the United States, is experiencing renewed interest in domestic chip production driven by national security concerns and initiatives like the CHIPS and Science Act.

Europe: Growth is 4.5%-7.5%. Germany and France support deposition for semiconductors and renewables, emphasizing low-GWP solutions.

Rest of the World: Growth is 4.0%-6.5%. India and Southeast Asia emerge as hubs, with trends toward cost-competitive gases.

Application Analysis

Deposition gases serve semiconductors, photovoltaic cells, and flat panel displays.

Semiconductors: Growth is 6.5%-9.5%. Gases enable precise film deposition for advanced chips, with trends toward ALD for 2nm nodes.

Photovoltaic Cells: Growth ranges from 5.5%-8.5%. Gases support efficient solar cell layers, driven by clean energy goals.

Flat Panel Displays: Growth is 5.0%-8.0%. Gases facilitate high-quality OLED

and LCD films, spurred by immersive displays.

Key Market Players

Linde: Supplies deposition gases globally, focusing on purity and sustainability.

Air Liquide: Provides tailored gases for CVD and ALD processes.

SK Materials: A South Korean firm specializing in electronics gases.

KANTO DENKA KOGYO: Japanese supplier for semiconductor applications.

Merck KGaA: German firm offering high-purity gases for advanced nodes.

Porter's Five Forces Analysis

Threat of New Entrants: Low. High technical barriers and capital costs limit entry.

Bargaining Power of Suppliers: Moderate. Specialized raw materials create dependency, balanced by buyer contracts.

Bargaining Power of Buyers: Moderate to High. Large chipmakers demand quality, but supplier consolidation strengthens producers.

Threat of Substitutes: Low. Deposition gases are unmatched for precision thin-film processes.

Industry Rivalry: High. Intense competition drives R&D and capacity growth.

Market Opportunities and Challenges

Opportunities

Semiconductor demand for AI and 5G chips fuels gas consumption.

Photovoltaic growth supports scalable deposition solutions.

Sustainable gas innovations align with environmental regulations.

Challenges

Raw material shortages disrupt supply chains.

High R&D costs for eco-friendly gases strain profitability.

Regulatory compliance increases operational complexity.

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