Chemical Mechanical Planarization (CMP) Slurry - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Chemical Mechanical Planarization Slurry Market size is estimated at USD 6.53 billion in 2025, and is expected to reach USD 9.26 billion by 2030, at a CAGR of 7.23% during the forecast period (2025-2030).

Key Highlights
- The CMP market is expected to grow steadily during the forecast period due to technological advancements in fabrication and semiconductor processes to enhance the performance of semiconductor products. Manufacturers' increasing investment in semiconductor wafer fabrication materials for product innovation drives the market's growth.
- Chemical mechanical polishing or planarization (CMP) flattens rough surfaces and offers numerous benefits in semiconductor manufacturing. It enables manufacturers to achieve uniform flatness across the entire wafer in a single operation. CMP is versatile and capable of planarizing various materials, from metals to oxide films, often handling multiple materials simultaneously.
- CMP solutions play a vital role in achieving higher yields by ensuring uniform planarization and reducing defects on the wafer surface. Developing cost-effective CMP slurries also helps manufacturers optimize their production processes, significantly saving costs. CMP is utilized in optics, photonics, data storage, and medical devices. This expansion of CMP applications creates new market opportunities for CMP solutions manufacturers, further driving the market's growth.
- The stringent requirements of precise process control and defect reduction in various CMP processes affected device performance, yield, and challenges in high-volume manufacturing. Additionally, the complexity of polished materials drives the innovation of CMP consumables. The quality control of new consumables grows, impacting the process window and production line and lowering the manufacturing of CMP equipment and consumables worldwide.
- Post-pandemic, the demand for IC has surged due to increased automotive, consumer electronics, and healthcare sales. For instance, according to WSTS, the global IC market reached around USD 487 billion in revenue in 2024.

Chemical Mechanical Planarization (CMP) Slurry Market Trends

Integrated Circuits Occupied the Largest Market Share During the Forecast Period

- The increasing demand for electronic devices and the high functionalities required in them, in line with the growth of miniaturized electronic devices, are fueling the demand for highly dense embedded ICs and VLSIs in the market, which would create a growth opportunity for CMP devices and consumables. Chemical mechanical polishing (CMP) is a pivotal process in the semiconductor industry. It effectively eliminates surface materials by combining chemical reactions with mechanical forces, making the need for the CMP process instrumental in producing integrated circuits and memory disks.
- Additionally, the emergence of very large-scale integration (VLSI) involves embedding hundreds of thousands of transistors onto a single silicon semiconductor microchip. This process leads to heightened miniaturization, enhanced performance, and improved functionality. However, the challenge lies in fitting more components into a limited space, fueling a lesser margin of error. It raises the need to ensure the total removal of debris from mounting surfaces, supporting the importance of chemical mechanical polishing in IC manufacturing. It would help the market grow in line with the development of IC manufacturing worldwide.
- Countries such as the United States, Taiwan, Korea, and China, among others, are some of the major producers of semiconductor chips. They also contribute significantly to the market's growth in terms of consumption and investments. CMP has become a standard manufacturing process semiconductor manufacturers use to fabricate integrated circuits (IC). The growing adoption of various components in markets like IoT, automotive, and 5G is expected to drive the demand for CMP equipment over the forecast period.
- The market has been registering a significant development supported by the investment activities by the semiconductor manufacturer, government, and other international agencies to strengthen the semiconductor ecosystems worldwide by minimizing the dependency of limited countries for the semiconductor supply chain, which would fuel the demand for the CMP market due to the applications of polishing process in the manufacturing of ICs worldwide.
- For instance, in April 2024, Malaysia planned to build the most extensive integrated circuit design park in Southeast Asia to promote domestic semiconductor design, prototyping, and manufacturing. The Malaysian government would offer several incentives, including tax breaks, office space subsidies, and visa exemption fees, to attract tech companies and investors to the facility, supporting the IC manufacturing ecosystem in the country and creating a growth opportunity for the CMP market.
- The chemical component in the CMP process allows for the targeted removal of specific materials. Compared to purely mechanical polishing, CMP minimizes surface defects and enables the lithography steps to be applied in IC manufacturing, which shows the demand for CMP equipment and consumables in the market.
- The growing semiconductor sales globally over the years are expected to drive the demand for the CMP market. According to SIA, in January 2024, global semiconductor sales reached USD 47.63 billion, marking an increase of over USD 6 billion from the previous year's for the same month.

Asia-Pacific to Register Major Growth

- The Asia-Pacific region holds a significant number of global semiconductor manufacturing facilities, with major players like TSMC and Samsung Electronics. Taiwan is the leading country globally for foundries and plays a crucial role in the semiconductor value chain. Supported by government initiatives, the semiconductor industry in the region is experiencing significant growth, driving market expansion.
- The growing semiconductor sales across the APAC region over the years are expected to drive the demand for the CMP market. According to WSTS, the region's semiconductor sales are expected to significantly increase in 2024 and 2025. In 2023, the region reported a revenue of USD 289.99 billion in sales, which is expected to increase to USD 340.87 billion in 2024 and USD 382.96

billion in 2025. WSTS reports that a significant increase, such as 17.5% YoY growth in 2024 and 12.3% YoY in 2025, is expected due to the growing demand for integrated circuits, discrete and other semiconductors. Such developments are expected to drive the demand for the CMP market.
- Countries like South Korea are significantly driving the demand for CMP technology due to its extensive growth in the semiconductor business with the presence of significant companies like Samsung, SK Hynix, and others. The South Korean government unveiled its strategy in January 2024 to dedicate around USD 470 billion towards establishing the world's largest semiconductor cluster. This ambitious project is set to unfold over the next 23 years and will entail the construction of a substantial production complex in Gyeonggi Province in partnership with SK Hynix. With the growing investments by companies like SK Hynix, the demand for the CMP market is expected to rise.
- In March 2024, Dongjin Semichem initiated the provision of a chemical mechanical polishing (CMP) slurry to SK Hynix for the production of high bandwidth memory (HBM). This slurry plays a crucial role in the CMP process during wafer fabrication by smoothing out the surface. Specifically, oxide slurry is utilized to flatten insulating layers, while metal slurry is employed to flatten metal circuits. This agreement marks the end of Soulbrain's monopoly on the material for HBM production in South Korea. Such developments are expected to drive the market's growth in the coming years.
- Moreover, due to its extensive semiconductor manufacturing capabilities, the market is also expected to witness significant growth in the Chinese region. China stands as a major player in the semiconductor production market, boasting the presence of numerous fabs in the area. As reported by WSTS, semiconductor sales in China hit USD 14.76 billion in January 2024. This figure marks a notable rise from January 2023, when sales in China amounted to USD 11.66 billion. With the growing geopolitical tensions, such as the US-China war, the region is investing significantly in boosting its domestic production.

Chemical Mechanical Planarization (CMP) Slurry Industry Overview

The chemical mechanical planarization market is semi-consolidated with the presence of major players like Applied Materials Inc., Entegris Inc., Ebara Corporation, Lapmaster Wolters GmbH, and Dupont De Nemours Inc. Players in the market are adopting strategies such as partnerships and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

- May 2024: DuPont unveiled a strategic initiative to divide itself into three separate entities, each to be publicly traded. The plan entails executing tax-free separations of its Electronics and Water divisions, with the newly formed 'New DuPont' emerging as a diversified industrial player. Post separation, electronics, and water will operate as independent entities, poised to leverage enhanced focus and agility within their sectors. DuPont anticipates that all three companies will boast robust balance sheets, enticing financial standings, and promising growth prospects. The company aims to finalize these separations within the next 18 to 24 months.
- December 2023:- Entegris Inc. unveiled its Korea Technology Center at the Hanyang University ERICA campus in Ansan-si, Gyeonggi-do. The center, designed as a focal point, aims to streamline Entegris' diverse capabilities under one roof. This setup is strategically positioned to foster deeper collaboration with clients involved in technologies like advanced logic, DRAM, and 3D NAND semiconductors. Specifically, the center will serve as a knowledge hub for deposition, chemical mechanical planarization (CMP), and advanced wet etch processes. It will also house sophisticated analytical tools, bolstering Entegris' ability to cater to its Korean clientele.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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