Chemical Mechanical Polishing - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 131 pages | Mordor Intelligence

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Report description:

The Chemical Mechanical Polishing Market size is estimated at USD 6.09 billion in 2024, and is expected to reach USD 8.63 billion by 2029, growing at a CAGR of 7.23% during the forecast period (2024-2029).

Chemical Mechanical Polishing is an important process technology step in the semiconductor wafer fabrication process. In this process action, the top surface of the wafer is polished or planarized to produce a perfectly flat surface that is necessary to make more durable and more powerful semiconductor materials with the help of chemical slurry & mechanical movements. Traditional polishing is becoming old, and venders are anticipating one-stop solutions that could slice, probe, and polish in a separate assembly line, instead of using various machines that occupy a lot of land space and need high budget installation and heavy maintenance. Although such solutions are less common in the market currently, they are anticipated to be the next generation of polishing systems, over the forecast period.

Key Highlights
-Growing performance requirements of electronic devices are creating the need for smaller and more robust semiconductors and electronic devices which, in turn, is driving the demand for newer fabrication materials and techniques, including CMP. An increase in the demand for electronic products has pushed the electronic packaging industry and customer expectations have raised regarding the features of new electronic devices.
-The other determinants driving the growth of the CMP market during the forecast period are the growing need of CMP for wafer planarization, high demand for consumer electronic products, and increasing use of micro-electro-mechanical systems (MEMS). In addition to that, with an expanding number of end-use applications such as IC manufacturing, micro-electro-mechanical systems (MEMS), optics, compound semiconductors, and computer hard drive manufacturing, the demand for chemical mechanical planarization or polishing is expected to expand.

Chemical Mechanical Polishing Market Trends

CMP Consumable Spending is Expected to Increase over the Forecast Period

- As the semiconductor industry has driven the limits of miniaturization such that new and distinct materials will require to be integrated into more complex structures to resume further scaling. With an increment in the total number of materials that must be integrated into advanced device structures, the complexity of materials interactions grows rapidly and CMP materials are no distinct. Extraordinary uniformity and low defectivity are critical to any production-worthy CMP process, and those critical parameters are fundamentally controlled by the mechanical and structural properties of the CMP pad.
- CMP consumable plays a critical role in the production of advanced semiconductor devices, helping to enable the manufacture of smaller, faster and more complex devices for its customers. For example, Cabot Microelectronics Corporation is a leading provider of performance materials for pipeline operators and the industrial wood preservation industry playing a critical role in the production of advanced semiconductor devices. Key CMP upstream material like abrasive plays a more critical role to achieve better polishing performance while controlling defects. New development to move to high purity colloidal type abrasives are taking place in both silica and ceria segments.
- CMP consumables are expected to have a strong industry growth outlook over the next several years. For 22nm and 14nm, the industry needs to have extremely tight control over the slurries and pad quality to control defects. With no agglomerations and angular particles, in advanced slurries, the morphology of the slurry particles will be critical. Selectivity requirements will prove challenging to slurries as selectivity is increased and pads are tuned as a key point of the overall process control. In addition, new applications in both memory and logic will continue to drive the opportunities for CMP consumables going forward.

Asia-Pacific to Witness Fastest Growth

- Asia-Pacific is the most comprehensive market of chemical mechanical planarization with Taiwan, Japan, and China are some of the principal markets in Asia-Pacific. The market dominance of Asia-Pacific is owing to the growing outsourcing of semiconductor IC fabrication, such as MEMS and NEMS in the region.
- Asia-Pacific contributes a wide range of opportunities to the market's growth, compared to the rest parts of the world. The market in the region witnessed huge demand from the Outsourced Semiconductor Assembly and Test (OSAT), owing to progressing consolidation in the fab market.
- Several market players are strengthening to withstand the ongoing wave of vertical integration. In countries like China, the government policies that encourage the semiconductor industry are increasingly generating opportunities for the development of the semiconductor materials industry, which is, in turn, supporting the growth of the market.
- For example, the policy framework issued by the State Council of the People's Republic of China pointed to make advanced semiconductor manufacturing solutions, a technology-priority across the semiconductor industry.

Chemical Mechanical Polishing Industry Overview

The chemical mechanical polishing market is moderately competitive and consists of several major players. The market has gained a competitive edge over the past two decades. In terms of market share, few of the major players currently dominate the market. Many of the companies in the market are increasing their market presence by securing new contracts by tapping new markets.

- November 2018 - Cabot Microelectronics Corporation announced that it has completed its previously announced acquisition ofKMG Chemicals, Inc. As a result of the acquisition, KMG has become a wholly-owned subsidiary of Cabot Microelectronics.
- November 2018 -Applied Ventures, LLC, the venture capital arm ofApplied Materials, Inc., announced a new co-investment initiative withEmpire State Development(ESD), New York State's economic development organization, aimed at accelerating innovation in Upstate New York. The goal of the initiative is to invest in promising Upstate New York startups across a broad range of established and emerging industries including semiconductors, artificial intelligence, advanced optics, autonomous vehicles, life sciences, clean energy and more..

Additional Benefits:

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

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