

Chemical Mechanical Planarization (Cmp) Slurry Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The chemical mechanical planarization (CMP) slurry market is expected to register a CAGR of 6.4% during the forecast period. The growing technological advancements in fabrication and semiconductor processes, mainly to enhance the performance of the semiconductor, are expected to drive the worldwide market for chemical mechanical planarization (CMP) slurry over the forecast period. Manufacturers' increasing investment in semiconductor wafer fabrication materials for product innovation also drives the market's growth.

Key Highlights

Japan, China, Korea, Singapore, and the United States are significant semiconductor chip makers, contributing considerably to the market expansion in terms of consumption and investment. CMP has evolved into a standardized manufacturing method utilized by semiconductor firms to manufacture integrated circuits (IC) and memory disks. As a result, increasing usage of these components in areas such as IoT, automotive, and 5G may drive the demand for CMP slurries during the forecast period.

CMP has played a significant role in minimizing transistors, and other interconnect devices for building a new generation of chips. The increase in adoption of transistors and continuous industrial development, down to the 5nm node from the 14nm node, also offers massive opportunities for market vendors.

The COVID-19 outbreak caused economic havoc in small, medium, and large-scale companies worldwide. The virus also impacted demand for smart devices owing to national lockdowns, which substantially affected the production and supply chain of these devices. Furthermore, with the resumption of production of these gadgets and the lowering of virus propagation, an exponential surge in demand for electronic devices is predicted to open up numerous market opportunities for the CMP slurry on a global scale.

Asian countries, particularly China, play a vital role in market expansion. China is also establishing a homegrown chip program to utilize local semiconductors in 70% of its products by 2025, up from 16%. Even though the recent COVID-19 outbreak may impact

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the industry's supply chain due to longer-term investment in the sector, the industry is anticipated to recover fast.

Chemical Mechanical Planarization Slurry Market Trends

Memory Occupies a Significant Share in the Market

Due to the increasing popularity of smartphones with large storage requirements, flash memory has been a significant driving factor. Emerging technologies like non-volatile memory, which provides faster and longer-lasting performance than regular NAND, are anticipated to drive memory growth. With such improvements, the CMP process may prove to be vital in driving the CMP slurry market's growth.

With the growing adoption of PCs and smartphones, NAND flash consumption is dramatically increasing, much of which is attributable to the increase in average smartphone capacity. This factor is anticipated to boost the demand for CMP slurry. For instance, according to GSMA, as of 2021, North America had the highest smartphone adoption rate, at 82%, which may increase to 85% by the end of 2022. The increasing adoption of smartphones may drive the CMP slurry market. As NAND technology evolved from 2D to 3D, additional CMP stages were introduced, such as channel poly CMP and staircase CMP. The purpose of channel poly CMP is to polish many materials simultaneously, such as SiN, oxide, and poly-Si. As a result, individual material rate tunability is required to match the final topographical requirement, thus boosting the demand for CMP slurry.

Flash memory storage has become a key component in smartphones for consumers whose need for storage continues to grow as content creation increases and for OEMs in terms of bill of materials (BoM) cost. The NAND flash demand has been increasing exponentially, primarily driven by the growth of the average capacity of smartphones. The rising popularity of 5G-enabled smartphones is projected to drive the market's growth through 2022.

Taiwan is Expected to Emerge as a Major Region in the Market

The country's expanding semiconductor manufacturing is primarily driving the usage of CMP slurry. The Taiwanese government is taking solid steps to cut China from the supply chain entirely. In January 2022, Taiwan announced an investment of USD 200 million to produce microchips. An investment of USD 1 billion was also launched to focus on projects between Lithuanian and Taiwanese companies.

Taiwan-based TSMC, the world's largest contract chipmaker with more than 50% share in the global market, also significantly creates demand for CMP slurries. Due to 5G and the automotive industry, the growing advancements in the telecom industry are fuelling the company's product demand, hence developing the scope for the market vendors.

For instance, Huawei purchases Taiwanese equipment for 5G infrastructure. The company's 5G base stations are mostly provided with TSMC semiconductors. TSMC is also a consumer of Cabot Microelectronics, one of the significant vendors in the market. However, the company is facing difficulties due to China's ambition to become more self-sufficient in semiconductor production amid its trade battle with the United States. The US government is also pushing numerous Taiwanese firms to reduce semiconductor shipments to China or Huawei.

Taiwan is investing in 5G with its strategy for a 5G rollout. As the semiconductor manufacturing industry is primarily driving the effort, it is expected to meet the expectations of its IC design customers for various digital signal processors for 5G and its high-frequency radio modem circuits. This trend is anticipated to boost the market's growth.

Chemical Mechanical Planarization Slurry Market Competitor Analysis

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The chemical mechanical planarization (CMP) slurry market is relatively consolidated, with top players accounting for more than 50% of the market share. The market vendors are adopting collaboration strategies and product advancements to drive development in the market. Some recent market developments include.

December 2021 - Entegris agreed to acquire CMC Materials for USD 6.5 billion to become a leader in electronic materials. CMC Materials is a significant provider of innovative materials, particularly in the semiconductor sector. The acquisition of CMC Materials' leading CMP portfolio may broaden Entegris' solution set, providing a comprehensive electronic materials offering. The complementary nature of the company's technological platforms may allow Entegris to bring a wider range of innovative and high-value solutions to market at a faster pace.

October 2021 - BASF and Entegris signed an agreement for the sale of BASF's Precision Microchemicals business to Entegris for USD 90 million. By the end of 2021, the transaction included technologies, intellectual property, and trademarks. The Precision Microchemicals business is part of the Surface Treatment business unit of BASF's Coatings division, which also includes cleaning chemistries and CMP slurries employed in the machining and surface conditioning of electronic materials.

Additional Benefits:

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

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