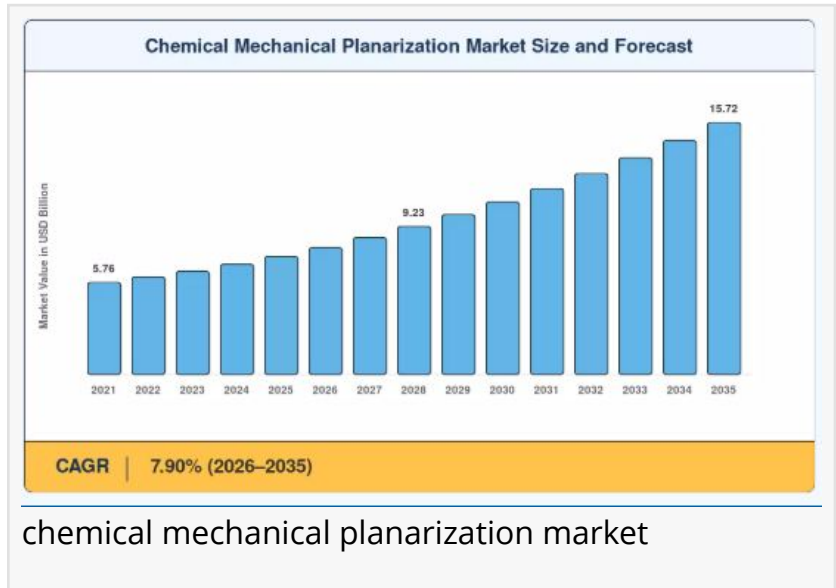


Chemical Mechanical Planarization Market Expected to Expand at 7.90% CAGR, Reaching USD 15.72 Billion by 2035

Chemical Mechanical Planarization Market Size, Share and Research Report By Surface Material (Silicon, Metal, Oxide, Nitride, Polymer), By Application

NEW YORK,, NY, UNITED STATES, July 1, 2026 /EINPresswire.com/ -- The Global [chemical mechanical planarization market](#) was estimated at USD 7.35 billion in 2025 and is projected to grow from USD 7.93 billion in 2026 to USD 15.72 billion by 2035, registering a CAGR of 7.90% during the forecast period.



Two major catalysts are accelerating this trajectory the relentless miniaturization of semiconductor device geometries toward sub-7nm nodes, which demands multiple precision CMP steps per wafer to achieve defect-free multilayer surfaces, and the explosive growth of AI-driven high-performance computing and 3D NAND memory architectures that require increasingly flat, clean bonding interfaces for advanced packaging and heterogeneous integration. With global 300mm fab equipment spending projected to reach USD 107 billion in 2025 and rising further through 2027, the consumables and tooling demand that underpins the CMP market has never been more structurally robust.

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The Chemical Mechanical Planarization Market is advancing as semiconductor manufacturers require high-precision wafer polishing for next-generation chip production.”

Market Research Future (MRFR)

Legacy CMP approaches focused on oxide and tungsten planarization are rapidly giving way to precision surface engineering platforms that integrate AI-driven process

parameter optimization, nanomaterial-dispersed slurry formulations, and real-time in-situ endpoint detection. As chipmakers stack logic with high-bandwidth memory and transition to

2.5D and 3D chiplet architectures, every added bonding interface requires flatter, cleaner surfaces with tighter within-wafer non-uniformity making CMP not merely a manufacturing step but a critical yield-determining process in next-generation semiconductor fabrication.

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□ How Significant Is the Chemical Mechanical Planarization Market's Growth?

The chemical mechanical planarization market has demonstrated consistent and robust expansion, rising from approximately USD 4.43 billion in 2024 to an estimated USD 4.72 billion in 2025, and is expected to nearly double over the next decade. This growth trajectory reflects the semiconductor industry's structural dependence on precision planarization — a process that cannot be substituted or bypassed as chip architectures grow more complex. The global semiconductor market is projected to reach approximately USD 600 billion in 2025, and CMP consumables demand tracks directly with wafer capacity and capital equipment outlays at leading foundries.

Surging investment in domestic semiconductor manufacturing capacity driven by the U.S. CHIPS and Science Act, the European Chips Act's EUR 43 billion authorization, and China's aggressive fab buildout programs is creating new demand nodes for CMP tools and consumables far beyond the traditional Asia-Pacific foundry complex. Each new advanced-packaging line and logic fab implies sustained CMP demand across slurries, polishing pads, conditioners, and endpoint detection systems. Silicon continues to dominate material type in the market, while the metal CMP segment is experiencing rapid growth driven by evolving copper and cobalt interconnect applications in leading-edge nodes.

□ What Does the Future Hold for the Chemical Mechanical Planarization Market?

Artificial intelligence and advanced materials innovation stand at the forefront of the CMP market's next growth phase. AI-driven process enhancement platforms are transforming CMP from an empirically tuned manufacturing step into a data-intelligent, closed-loop operation. [Machine learning](#) algorithms now predict endpoint timing based on real-time optical and friction signatures, reducing over-polish events, improving wafer-to-wafer uniformity, and dramatically cutting consumable waste. Nanomaterial-dispersed slurry formulations incorporating ceria, silica, and alumina abrasives precisely engineered for specific material removal selectivity are becoming standard features rather than premium offerings in advanced logic and memory fabs.

The growing emphasis on sustainable CMP is another defining force shaping the market's future. Regulators, customers, and corporate ESG mandates are compelling CMP consumable suppliers to develop environmentally friendly slurry formulations that reduce chemical waste, minimize water consumption in post-CMP cleaning, and lower the environmental burden of slurry

disposal. FUJIFILM Corporation's February 2025 announcement of approximately USD 26.75 million in investment to expand its Belgium CMP slurry production facility exemplifies how leading suppliers are responding to both capacity requirements and the drive toward cleaner manufacturing chemistry.

Disruptive next-generation techniques — including dry CMP and non-contact planarization — are also emerging on the technology horizon. While these remain pre-commercial, they represent strategic R&D bets by major vendors anticipating the limits of conventional wet-chemistry CMP as node scaling approaches atomic-level precision requirements beyond 2nm process technology.

□ Who Are the Key Players in the Chemical Mechanical Planarization Market?

The chemical mechanical planarization landscape is characterized by a mix of large semiconductor equipment conglomerates, specialty chemical and materials suppliers, and precision consumables manufacturers. Key participants shaping the competitive dynamics include:

□ Applied Materials, Inc. — the world's largest semiconductor equipment supplier, offering a comprehensive portfolio of CMP tools, slurry delivery systems, and endpoint detection platforms used at leading-edge foundries globally.

□ CMC Materials, Inc. (Entegris) — a leading supplier of CMP slurries and polishing pads, serving logic, memory, and foundry customers with precision-engineered consumables for advanced node fabrication.

□ DuPont de Nemours, Inc. — providing advanced CMP polishing pads recognized by Samsung Electronics for pioneering innovation enabling next-generation semiconductor, AI, 5G, and data center applications.

□ Fujimi Incorporated — a specialist abrasive and slurry manufacturer delivering precision CMP consumables for silicon, oxide, and metal planarization across a broad range of semiconductor device types.

□ Hitachi Chemical Co., Ltd. — offering CMP slurries and related materials with particular strength in memory device fabrication and advanced packaging applications.

□ Ebara Corporation — a leading manufacturer of CMP equipment systems, including single-wafer CMP tools optimized for high-throughput 300mm wafer processing at advanced logic and memory fabs.

□ Lam Research Corporation — integrating CMP capabilities within its broader etch, deposition, and wafer cleaning platform portfolio, enabling process-level optimization across interconnect

and dielectric planarization steps.

□BASF SE — supplying specialty chemical formulations for CMP slurry production, including abrasive dispersions and additive packages tailored for emerging material systems in advanced packaging and compound semiconductor applications.

Competition in the market is intensifying as vendors race to develop CMP solutions for sub-3nm process nodes, advanced packaging architectures including hybrid bonding and fan-out wafer-level packaging, and compound semiconductor substrates for power electronics and RF applications. Strategic acquisitions — most notably Entegris's acquisition of CMC Materials and deepened integration partnerships with leading foundries and IDMs are reshaping the competitive landscape.

□ What Are the Emerging Trends in the Chemical Mechanical Planarization Market?

Several transformational trends are redefining how the chemical mechanical planarization market evolves through 2035:

AI & Machine Learning Process Optimization: Real-time endpoint detection algorithms, predictive slurry consumption models, and closed-loop pad conditioning controls are being integrated into next-generation CMP tool platforms, enabling yield improvements of several percentage points per wafer lot at leading-edge nodes.

Advanced Packaging & Hybrid Bonding CMP: The fast adoption of chiplets and 2.5D/3D heterogeneous integration is creating demand for ultra-precise bonding surface planarization, where within-wafer non-uniformity targets have tightened from angstroms to sub-angstrom levels, driving new pad and slurry formulation requirements.

Sustainable & Green CMP Chemistry: Environmental regulations on slurry waste disposal and semiconductor cleanroom chemical handling are compelling suppliers toward biodegradable dispersants, reduced-metal-ion formulations, and closed-loop slurry recirculation systems to minimize per-wafer chemical consumption and effluent burden.

Localization of CMP Supply Chains: Government-driven semiconductor manufacturing reshoring in the United States, Europe, and Japan is creating new regional demand for locally sourced CMP consumables, prompting suppliers to establish or expand production facilities outside Asia to serve emerging domestic fab clusters.

New Material Systems & Substrate Diversity: Compound semiconductors including silicon carbide and gallium nitride for power electronics, as well as III-V materials for RF and photonic devices, require dedicated CMP chemistries with distinct removal rate and surface quality profiles, expanding the addressable market beyond traditional silicon-based applications.

Single-Wafer CMP System Adoption: The shift from batch to single-wafer CMP processing continues in advanced logic and memory fabs, driven by tighter process control requirements, improved defect density, and compatibility with cluster tool integration for seamless in-sequence wafer handling.

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<https://www.marketresearchfuture.com/reports/chemical-mechanical-planarization-market-29010>

□ How Is the Chemical Mechanical Planarization Market Segmented?

The chemical mechanical planarization market report provides a comprehensive segmentation framework:

By Equipment Type: Polishing & Grinding Equipment, Slurry Testing Equipment, Inline CMP Monitoring Systems, Laboratory CMP Equipment

By Component Type: Polishing Slurries, CMP Pads, Abrasives, Conditioners, Post-CMP Cleaning Chemicals

By Technology Node: ≤7nm, 7nm–10nm, 10nm–14nm, ≥22nm

By Substrate Type: Silicon, Silicon Carbide, Gallium Nitride, III-V Compound Semiconductors, Glass

By Application: Semiconductor Manufacturing, MEMS Devices, Photovoltaics, Optoelectronics, Microelectronics

By End-Use Industry: Logic Semiconductor, Memory, Foundry, Integrated Device Manufacturers (IDMs), Advanced Packaging

□ What Are the Regional Insights from the Chemical Mechanical Planarization Market?

North America - commands approximately 40% of the global chemical mechanical planarization market share, underpinned by the United States' dense concentration of semiconductor equipment companies, IDMs, and research institutions. The U.S. Department of Commerce's direct funding awards — including USD 6.6 billion to TSMC for Arizona fab expansion and USD 1.4 billion under the National Advanced Packaging Manufacturing Program — are creating substantial near-term demand for domestic CMP tools and consumables. The U.S. CMP market alone was valued at USD 1.79 billion in 2025 and is projected to reach USD 3.09 billion by 2035.

Asia-Pacific - represents the fastest-growing region, projected to register a CAGR of approximately 10.85% from 2026 to 2035. The region's dominance reflects the concentration of

global semiconductor manufacturing in Taiwan, South Korea, Japan, and China. TSMC, Samsung, SK Hynix, and a growing number of Chinese foundries collectively account for the majority of global advanced node wafer starts, making Asia-Pacific the primary consumption zone for CMP slurries, pads, and equipment. Government subsidies and national semiconductor strategies in all four economies are further accelerating fab capacity expansion and CMP tool procurement.

Europe - holds the third-largest market share, driven by Germany's precision engineering leadership, the European Chips Act's EUR 43 billion semiconductor investment framework, and a growing cluster of automotive-grade semiconductor fabs across Germany, the Netherlands, and France. FUJIFILM's Belgium CMP slurry facility expansion and Intel's Magdeburg fab investment are emblematic of the regional buildup that will sustain European CMP demand through the forecast period.

South America and the Middle East and Africa - represent emerging markets for CMP, primarily in the context of technology transfer initiatives, photovoltaic device manufacturing, and the development of regional electronics assembly ecosystems. While these geographies account for a small share of current CMP consumption, they represent long-term growth opportunities as semiconductor supply chain diversification accelerates globally.

□□□ Industry Analysis Reports by Market Research Future:

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