

SUMMER
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2020 TECHCET's CRITICAL MATERIALS REPORT™ CVD, ALD & Hi-k METAL PRECURSORS FOR SEMICONDUCTOR APPLICATIONS

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2 SCOPE, PURPOSE, AND METHODOLOGY

2.1 SCOPE

This report provides market and technical trend information on organic and inorganic gases, liquid and solid precursors addressing CVD, ALD, and SOD techniques. For the last 20 years, there have been a huge number of research papers and patents published regarding ALD and CVD precursors specifically for the semiconductor industry. The report covers in detail the long research and development path for new precursors; and the processes to pass EHS and regulatory hurdles for these materials to enter into high volume manufacturing (HVM).

The focus is for the leading-edge front end of the line, and insulating interconnect materials, including sacrificial layers, low-k dielectrics, hard masks, mandrel, and etch stop layers. These process areas are of interest because of the high growth potential associated with leading-edge logic <45 nm, 28 nm to 10/7 nm nodes, and the future 5 & 3 nm nodes, as well as advanced DRAM and 3DNAND volatile and non-volatile memories. New memory technologies like STT-MRAM, Resistive RAM, Ferroelectric RAM, and FETs and Cross Point Memory will emerge in the coming 5 years. Today the recent NAND transition to 3DNAND and continued vertical scaling will drive growth for metal and dielectric precursors.

2.2 PURPOSE

This Critical Materials Report (CMR™) provides focused information for supply-chain managers, process integration, and R&D directors, as well as business and financial analysts. The report covers information about key suppliers, issues/trends in the material supply chain, estimates on supplier market share, and forecast for the material segments.

2.3 METHODOLOGY

TECHCET employs subject matter experts having first-hand experience within the industries which they analyze. Most of TECHCET's analysts have over 25 years of direct and relevant experience in their field. Our analysts survey the commercial and technical staff of IC manufacturers and their suppliers and conduct extensive research of literature and commerce statistics to ascertain the current and future market environment and global supply risks. Combining this data with TECHCET's proprietary, quantitative wafer forecast results in a viable long-term market forecast for a variety of process materials.

2.4 OVERVIEW OF OTHER TECHCET CMR™ REPORTS

TEHCET produces electronic material supply chain reports each year as one of its functions for the Critical Materials Council. Reports to be published in 2020 can be found at www.techcet.com and are listed in the table below:

Table 1: TECHCET's Critical Materials Reports™

TEHCET Critical Materials Reports™
1. CMP Consumables (Slurry, Pads, Disks)
2. ALD/CVD Precursors (Metals & Dielectrics)
3. Equipment Components- Quartz
4. Equipment Components- Silicon, SiC, Ceramics
5. Gases- Electronic Specialty, Bulk, & Rare
6. Rare Earth Market
7. Photoresist, Ancillary, & Extensions
8. Silicon Wafers
9. Sputter Targets
10. Metal Chemicals
11. Wet Chemical
12. Roadmaps & Device Technology

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