

2022



2022 TECHCET's CMR™

QUARTZ

MATERIAL SEGMENT, FABRICATED PARTS,
BASE MATERIALS
FOR SEMI-CONDUCTOR APPLICATIONS

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RESEARCH METHODOLOGY

TEHCET employs subject matter experts having first-hand experience within the industries which they analyze. Most of TEHCET'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 TEHCET's proprietary, quantitative wafer forecast results in a viable long-term market forecast for a variety of process materials.

Readers Note: This report represents the interpretation and analysis of information generally available to the public or released by responsible agencies or individuals. Data was obtained from sources considered reliable. However, accuracy or completeness is not guaranteed.

ANALYST BIOGRAPHY



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2 SCOPE, PURPOSE AND METHODOLOGY

2.1 SCOPE

This report primarily covers the quartz materials market and supply-chain for the quartz material products, including quartz base materials and quartz components for wafer process tools used for semiconductor device manufacturing. The report contains data and analysis from TECHCET's data base and Sr. Analyst experience, as well as that developed from primary and secondary market research. For more information on TECHCET Critical materials Reports™ please go to <https://TECHCET.com>

Details on the supply-chain from high purity sand, base material manufacturers, and quartz fabricators are provided. Information on Quartz Crucibles has not been updated given limited demand for this information. However, historical information can be found in the Appendix in previous year's report and updated information can be provided as a separate study, upon request.

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 development managers, 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.

This report aims to provide an overview to the above scope quartz material and parts supply chain, serving the semiconductor industry. This information about this critical material is essential in the running of the semiconductor wafer fabs across the world. The goal is to annually track the state of the industry; the health of the supply and demand; to pinpoint any shortcomings or issues faced by the industry; and to provide a guidance for purchasing and industry quality improvement decisions. We hope to provide a dialog and feedback opportunities for related stakeholders to fine-tune and better manage the supply ups and downs.

2.3 METHODOLOGY

TEHCET 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.

We track micro-economic and macro-economic trends pertaining to the semiconductor industry and track overall industry trend and needs, equipment supply and demand situation, deduction towards the quartz material requirement, and supplier/fabricators situation one by one. From this vantage point, we check the suppliers/fabricators and the base material company information, and then the raw materials market information. Included in our work is an analysis of public information, website information, supplier interviews, supplier surveys, supplier peer-data cross-checking, and reference comparison. In addition, we conduct a material base usage calculation with respect to a demand and supply micro-economic analysis. We then conduct a forward and backward sweep of the forecast until data is in sync. In the meantime, for the data points that are missing, we use past historic, forward-looking data, and peer data so to extrapolate from three different levels of cross-checking. This provides us an estimation based on judgment from industry experience. In this year's report, we especially added industry situation reporting and analysis for exogenous factors affecting the

industry, which can be big percentage influence factors than normal trend parameter contributors. We added more discussions in Chapter 4 on many current situations faced by the industry.

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 2019 can be found at www.techcet.com and are listed in the table below:

Table 1: 2021 TECHCET Critical Material Reports

TEHCET CRITICAL MATERIALS REPORTS™
1. CMP Consumables (Slurry, Pads, Disks)
2. Equipment Components- Quartz
3. Gases + Xeon/Neon
4. Photoresist
5. Precursors –Dielectric Precursors
6. Precursors –Hi K / ALD CVD Metal Precursors
7. Silicon Wafers
8. Specialty Chems / Wet Chems
9. Equipment Components- Silicon, SiC, Ceramics
10. Metal Chemical
11. Targets
12. Equipment Components – Silicon 2020 version with 2021 forecast
13. Impact of Europe Chip Expansions on the Wet Chemicals Supply Chains 2022
14. Impact of US Chip Expansions on the Wet Chemicals Supply Chains 2021