

Developing Products for the Semiconductor Industry

Various products developed by Shin-Etsu are indispensable to semiconductor materials and their production processes.

The Shin-Etsu Group is a global leader in developing sophisticated technologies for the semiconductor industry. Throughout the semiconductor production process, Shin-Etsu technologies support greater integration and production efficiency.

Silica and Silicon Metal

Simcoa Operations Pty. Ltd. of Australia has long-standing silica mining rights and produces silicon metal, a main raw material for semiconductor silicon, silicone and synthetic quartz. It provides key support to Shin-Etsu by ensuring a stable, long-term supply of high-quality silicon metal.



Silica



Silicon Metal

Silicon Carbide Products

The silicon carbide products of Shinano Electric Refining Co., Ltd., greatly contribute to improving precise processing of silicon wafers through their use as sawing materials and abrasives.



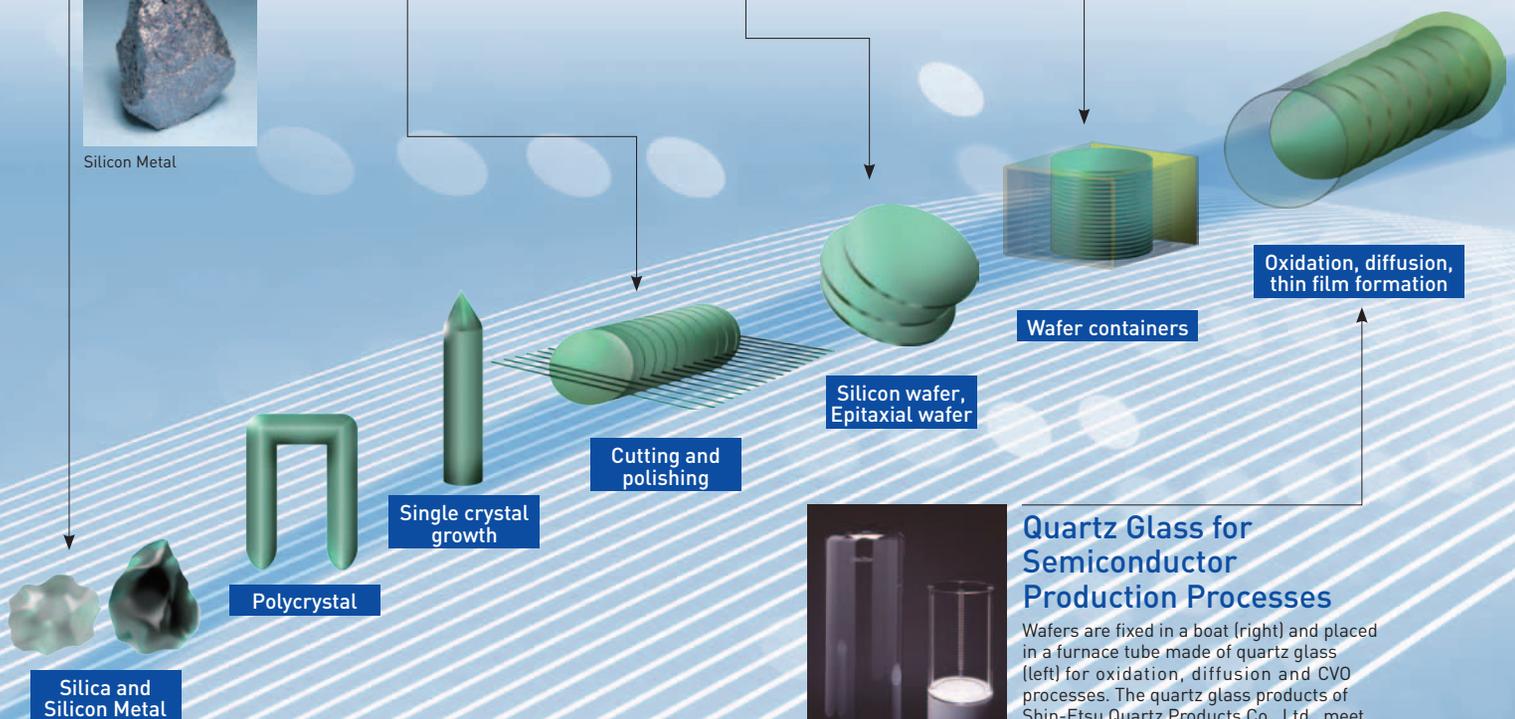
Silicon Wafers

Shin-Etsu was first to globally mass produce 300mm silicon wafers in 2001. Shin-Etsu Handotai Co., Ltd., established defect-free technology for single crystals and high-flatness processing technology for silicon wafers, gaining strong customer trust for its commercial production capabilities and quality technologies.



Wafer Containers

Group company Shin-Etsu Polymer Co., Ltd., has an excellent track record in front opening shipping boxes (FOSB) and front opening unified boxes (FOUP).

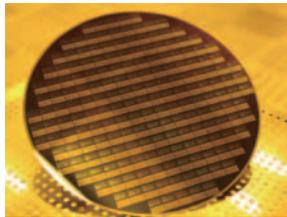


Quartz Glass for Semiconductor Production Processes

Wafers are fixed in a boat (right) and placed in a furnace tube made of quartz glass (left) for oxidation, diffusion and CVD processes. The quartz glass products of Shin-Etsu Quartz Products Co., Ltd., meet customers' needs for high-temperature processes.

Photoresists

Shin-Etsu developed the first photoresist for use with the short wavelength excimer laser in 1996, and has become the leading manufacturer in this field. Sales have also begun for trilayer materials used in post-45nm generation refined processes.



Photomask Blanks

Photomask blanks are photomask materials used for etching circuit patterns on silicon wafers. In fiscal 2009, Shin-Etsu began commercial production of cutting-edge photomask blanks, which are indispensable to the refining of semiconductors.

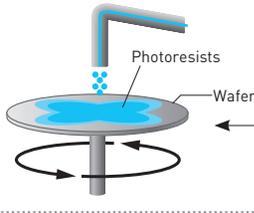


Synthetic Quartz Photomask Substrates for LSIs

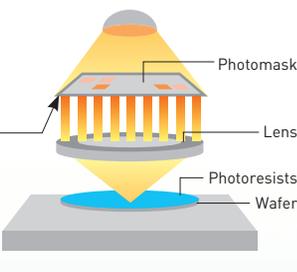
Used to transfer circuit patterns to semiconductor wafers, these photomask substrates have earned a reputation among customers for outstanding quality and consistency of supply. In recent years, these substrates are also being used as raw materials for photomask blanks.



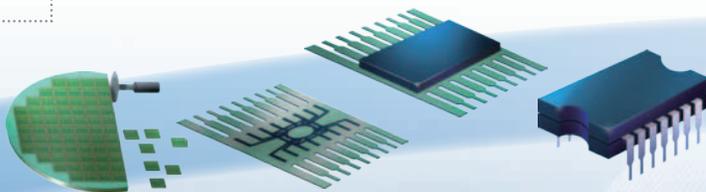
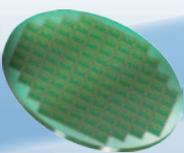
Resist coating



Exposure



Pattern formation



Dicing

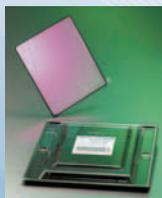
Assembly

Plastic molding

Device

Pellicles

Shin-Etsu supplies high-quality pellicles for ArF and KrF excimer laser lithography. These products have high light-resistance and good transmission uniformity. In addition, Shin-Etsu has succeeded in the development of super large-size pellicles for the production of liquid crystal display (LCD) panels.



Epoxy Molding Compounds

Shin-Etsu's epoxy molding compounds provide excellent reliability and moldability due to the utilization of Shin-Etsu's own silicone low-stress technology, special filler technology and unique flame retardation technology, or "green compound technique."



Silicone-based Thermal Interface Materials

Shin-Etsu offers various silicone-based thermal interface materials. These thermally conductive materials fill gaps between heat-generating units like CPUs and heat sinks.

