

Nikkei Asia **Semiconductors**

Chinese chipmakers push to limit foreign suppliers

SMIC and CXMT seek local alternatives amid US pressure



Top Chinese chipmakers SMIC and CXMT are leading the charge to strip foreign suppliers from the nation's tech supply chain © EPA/Sopa Images/Reuters Connect

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China's top chipmakers are pushing hard to localise the supply of key semiconductor materials and chemicals to counter US export controls, sources with direct knowledge of these efforts told Nikkei Asia.

Semiconductor Manufacturing International Corporation, the country's top contract chipmaker, is asking its customers — chip developers who use its production services — to help it screen, verify and adopt local suppliers of wafers, chemicals, gases and other materials. The move has been picking up speed since last year.

Similarly, ChangXin Memory Technologies, China's leading maker of Dram chips, has started an aggressive campaign to vet local suppliers to replace foreign ones, citing national policies.

[SMIC](#) was added to Washington's entity list, a trade blacklist, in late 2020 and has since been exploring domestic supply alternatives to ensure continuity of production. SMIC declined to comment and CXMT did not respond to a request for comment

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The latest localisation drive goes beyond efforts to use more domestic chipmaking equipment, a segment that was directly hit by tighter US regulations, and extends to the supply of hundreds of chemicals, materials and gases, potentially pushing foreign suppliers out of the market.

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Chipmakers are generally hesitant to switch to new sources and chemical formulas because any changes could lower production yields, the share of usable chips produced from a given number of wafers. Washington is hoping allies such as Japan will impose more restrictions on [China](#)'s access to advanced materials.

Industry executives told Nikkei Asia that established chipmakers usually gave new chemical and materials makers two chances to submit samples for verification. But now, Chinese suppliers have almost unlimited chances, because chipmakers are so keen to reduce their reliance on foreign supplies, three people briefed on the matter said.

“There are subsidies not only for these materials and chemical makers. Chipmakers who use local suppliers can also get credits,” one of the people said. “The biggest change from the US constantly tightening export controls is there is a strong push to purge foreign suppliers if there are local alternatives.”

Chipmakers are maintaining ties with foreign chemical suppliers to avoid any sudden harm to production quality, another industry executive said. But the strong incentives are nevertheless giving a leg up to Chinese materials suppliers that previously had little chance to serve the semiconductor industry.

Wafer maker National Silicon Industry Group, for example, is a growing competitor to industry leaders Shin-Etsu Chemical, Sumco and GlobalWafers.

China is also increasing its domestic sourcing of key materials such as sputter targets, polishing pads, slurry and ultra-purity chemicals and gases, all crucial elements in chip manufacturing and all previously dominated by foreign suppliers such as QM

chip manufacturing and are previously dominated by foreign suppliers such as 3M, DuPont and Sumitomo Chemical.

Some little-known materials and chemical makers have emerged as so-called national champions.

China is pushing to radically localise its chip supply chain

Materials	Major Chinese players	Global market leaders
Wafers	National Silicon Industry Group	ShinEtsu, Sumco, Globalwafers
Chemical mechanical polishing pads	Hubei Dinglong Holdings	DuPont
Slurry	Anji Microelectronics	Fujimi, DuPont, Merck, Showa Denko
Wet chemicals	Jiangyin Jianghua Microelectronic Materials, Crystal Clear Electronic Material, Hubei Xingfa Chemicals Group, Denoir	BASF, Solvay, Honeywell, Entegris, Merck, Chang Chun, Sumitomo Chemical, Stella Chemifa, Morita Chemical
Sputter targets	Grikin Advanced Materials, Konfoong Materials International, Changsha Xinkang Advanced Materials	GfE, Materion, JX Nippon Mining & Metals, Honeywell, Plansee
Industrial and specialty gases	Guangdong Huate Gas, Jinhong Gas, Peric Special Gases, Guangzhou Guanggang Gases & Energy	Air Liquide, Air Products, Linde

Source: Nikkei Asia research

The push is being applied first to less advanced 55-nanometre and 40nm chip

production processes but will eventually move into 28nm and beyond, sources said.

The move comes as China pushes carmakers to sharply increase their use of domestic chips. Foreign chip companies in various parts of the supply chain have already been hit by China's localisation drive.

Many foreign providers of chip packaging and testing services have exited the Chinese market due to strong local competition. More than five such companies — ASE Tech Holding, Qorvo, Powertech, Western Digital and King Yuan Electronics — have sold majority stakes in their China operations since 2021. China's outsourcing sector for chipmaking packaging and testing services is already the second largest in the world after Taiwan's.

"It's cruel that once China manages to have local solutions, it immediately edges out foreign suppliers, especially now they take supply security into account," a chip packaging executive whose company sold its China plants told Nikkei Asia.

Clark Tseng, senior director of market intelligence at SEMI, a chip industry trade body, said Chinese suppliers had been offering lower to midrange chipmaking chemicals, materials and gases to domestic chipmakers for years, and that some suppliers were capable of serving global chipmakers in Asia. Given the latest push, he said, pressure on foreign players was likely to grow.

"Going forward, foreign chip chemical or material makers will be likely to need to either deepen their partnerships with local players to maintain their market share or focus more on higher-end products for the Chinese market," he said.

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