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Notice of Hafnium Production in Japan Advances toward Commercialization with sample supply by year-end 2026 and mass production on 2028

DAIICHI KIGENSO KAGAKU KOGYO CO., LTD. (Head office: Chuo-ku, Osaka; Representative Director, President and Executive Officer: Hiroshi Kokubu) has developed a process for producing hafnium in Japan

Hafnium (Hf, atomic number 72) is used in semiconductors for AI and data centers, as well as in aerospace applications, and demand is expected to grow. However, it occurs only in small quantities in zirconium ore and requires sophisticated separation technology. These technical challenges have limited commercial production in Japan.



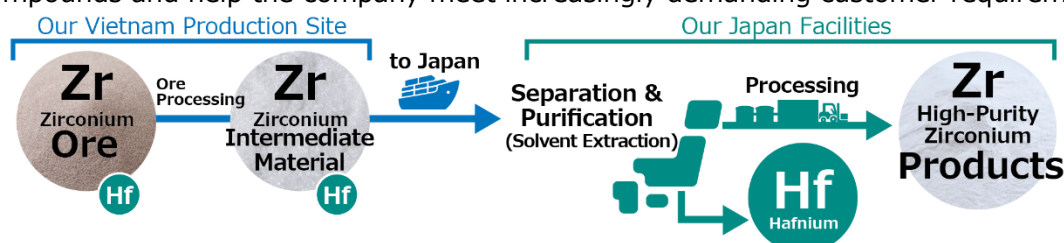
Hafnium compound

With technical cooperation from Emulsion Flow Technologies, Inc.*¹—our joint research partner—and following a phase of basic research, we have established domestic capabilities for hafnium production and sample prototyping. The company plans to begin supplying samples for semiconductor and other applications by the end of 2026. It will subsequently focus on scaling up the process, with mass production in Japan targeted for 2028.

<Hafnium-Zirconium Separation Process>

At its production site in Vietnam*², DAIICHI KIGENSO refines zirconium ore to produce an intermediate raw material referred to as the “zirconium intermediate” (the “intermediate”). The intermediate is then shipped to Japan and processed into finished zirconium compounds at the company’s domestic production facilities. The new process uses solvent extraction*³ to separate and refine in Japan the limited amount of hafnium contained in the intermediate.

Removing the Hafnium also increases the zirconium purity of the remaining material. The process is therefore expected to enhance the properties of DAIICHI KIGENSO’s core zirconium compounds and help the company meet increasingly demanding customer requirements.



<About Hafnium>

Hafnium (Hf, atomic number 72) is a rare metal valued for its electrical and optical properties, as well as its high resistance to heat and corrosion. It is used in advanced applications including semiconductors, aerospace, optical materials and nuclear energy. In recent years, hafnium has become increasingly important as a key raw material for high-k dielectric materials, which enable advanced semiconductors to deliver higher performance while consuming less power. Demand is expected to grow alongside the expansion of AI, data centers and next-generation communications.

Hafnium occurs naturally in zirconium ore, or zircon sand, at a concentration of approx. 1-2%. Because its properties are very similar to those of zirconium, separating and refining the two elements require advanced processing technology.

Note 1: Emulsion Flow Technologies Ltd. (Head office: Tokai-mura, Ibaraki Prefecture; Representative Director: Hiroshi Suzuki)
Website: <https://emulsion-flow.tech/>

Note 2: Production Site in Vietnam

Company: VIETNAM RARE ELEMENTS CHEMICAL JOINT STOCK COMPANY

Website: <https://vn.zr-dkk.com/ja/home-jp>

The facility produces intermediates for zirconium compounds using zirconium ore sourced in Vietnam.

Note 3: Solvent Extraction

Solvent extraction is a separation and purification technique in which a target component is selectively transferred from one liquid phase to another. It is widely used in the separation and purification of rare metals, including rare earths, as well as in resource recycling and the hydrometallurgical processing of non-ferrous metals.

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