



June 8, 2023

**Notice Regarding Development of Powder Melting and Spheroidizing Technology  
Using Hydrogen-Pure Oxygen Combustion  
Reducing CO<sub>2</sub> Emissions in the Spherical Particle Manufacturing Process to Zero**

Taiyo Nippon Sanso Corporation (“TNSC”, President Kenji Nagata), a Japanese industrial gas company in Nippon Sanso Holdings Group, has developed an inorganic powder melting and spheroidizing technology that can contribute to the achievement of carbon neutrality in the semiconductor materials manufacturing process. The technology combines the CERAMELT<sup>®</sup> powder melting and spheroidizing system, which uses pure oxygen combustion, with hydrogen combustion technology.

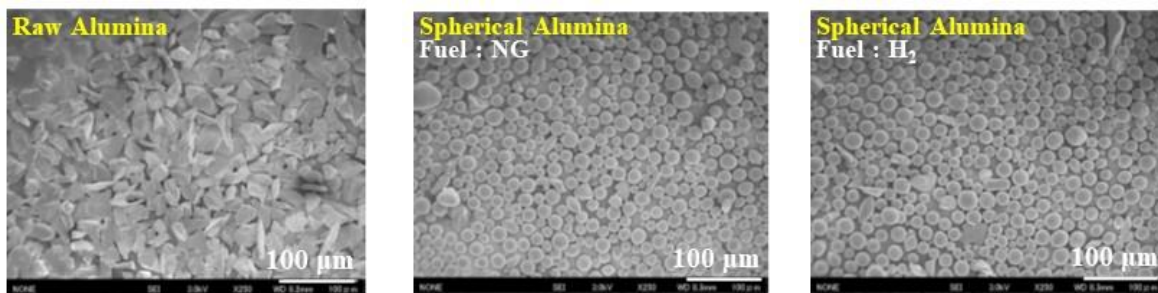


Figure: Appearance of alumina particles before and after melting and spheroidization

Spherical particles are used as resin filler for semiconductor sealant, etc., contributing significantly to performance increase and miniaturization of semiconductors. CERAMELT<sup>®</sup> is used in the process of manufacturing spherical particles such as spherical silica, and is characterized by melting and spheroidizing powder by passing the raw material particles through a high-temperature flame using oxygen combustion.

With the recent expansion of semiconductor use, requirements for reducing the environmental impact of the manufacturing process have become more demanding. TNSC has developed a powder melting and spheroidizing technology using hydrogen-pure oxygen combustion to solve this challenge. CERAMELT<sup>®</sup> conventionally used fossil fuels such as propane as fuel, and thus contained CO<sub>2</sub> in the exhaust gas. This technology uses hydrogen as the fuel, thus reducing CO<sub>2</sub> emissions in the exhaust gas to zero. This greatly contributes to the reduction of environmental impact while maintaining the same performance as conventional fossil fuels for melting and spheroidizing the raw material particles. In addition, since no carbon source is supplied to

CERAMELT<sup>®</sup>, carbon impurities in products is reduced, contributing to the manufacturing of high-quality spherical particles. We will work together with our customers to practically implement this technology in the future.

**[Company Overview]**

**Taiyo Nippon Sanso Corporation**

**Business description:** Manufacture and sale of various industrial gases such as oxygen, nitrogen, and argon, LP gas, gas for medical uses, and specialty gases, manufacture and sale of welding equipment and materials, gas-related devices, and, air separation equipment, assembly, processing, inspection of electrical components, and equipment maintenance

**Established:** October 30, 1910

**Incorporated:** February 4, 2020

**Capital:** 1.5 billion yen

**Shareholder:** Nippon Sanso Holdings Corporation (Investment ratio: 100%)

**Revenue:** 420.4 billion yen\*

\*Note: This figure shows the revenue of Japan for Nippon Sanso Holdings Corporation in FYE2023

Taiyo Nippon Sanso Corporation

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