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Notice Regarding Development of Spherical Silica Manufacturing Technology Using Ammonia-Pure Oxygen Combustion

Taiyo Nippon Sanso Corporation (“TNSC”, President: Kenji Nagata) and Admatechs Company Limited (President: Susumu Abe) announced the joint development of spherical silica manufacturing technology aimed at achievement of carbon neutrality in the future, combining the CERAMELT[®] powder melting and spheroidizing system, which uses oxygen combustion, with ammonia combustion technology.

CERAMELT[®] is used in the process of manufacturing spherical silica, contributing significantly to performance increase and miniaturization of semiconductors. Spherical silica is used as a filler for semiconductor sealant. As the scope of semiconductor applications has expanded over the past few years, demands regarding the quality of spherical silica have been increasing.

CERAMELT[®] uses pure oxygen rather than air, enabling it to achieve a distinctive high temperature flame. However, when fossil fuels are used, there is a risk that the carbon generated could contaminate the spherical silica product. Since carbon impairs the insulating performance of the semiconductor sealant, it reduces the reliability of the semiconductor. Spherical silica manufacturers therefore needed to reliably eliminate carbon from the product in their quality control.

To solve this issue, TNSC has jointly developed a melting and spheroidizing technology using the carbon-free fuel ammonia (NH₃) together with spherical silica manufacturer Admatechs Company Limited. This technology uses ammonia-oxygen combustion, which does not generate carbon in principle, to enable the production of high-quality spherical silica free from carbon contamination. In addition, it contributes to reducing CO₂ emissions in the manufacturing process.

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