

NEWS RELEASE

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July 14, 2020

SDK Develops Wet-Resistant Heat-Conductive Aluminum Nitride Filler

Showa Denko (SDK) (TOKYO: 4004) has developed wet-resistant heat-conductive aluminum nitride filler to be used as heat-radiation filler for semiconductor devices. SDK has started to offer samples of the aluminum nitride filler.

In accordance with the development of more powerful semiconductor devices, heat generated in semiconductor devices continues to increase. On the other hand, progress in downsizing and high-density integration of semiconductor devices makes it more difficult to radiate heat from inside to outside of them. Accumulated heat may have harmful effects including a decline in efficiency, reliability and safety not only on semiconductor devices themselves but also on electronic devices in which those semiconductor devices are installed. Thus, it is very important for electronic device manufacturers to remove generated heat quickly in order to avoid these harmful effects of accumulated heat.

Aluminum nitride has excellent properties including high insulation against electricity, almost the same coefficient of thermal expansion as that of silicon, and corrosion resistance against chlorinated gases which are used in the process to produce semiconductors. Aluminum nitride also has thermal conductivity higher than those of other materials for fillers such as alumina and boron nitride. However, if moisture sticks to the surface of aluminum nitride, aluminum nitride starts to hydrolyze, and corrosive ammonia is produced. It is a weakness of aluminum nitride. This time, however, SDK successfully developed a technology to treat the surface of aluminum nitride with ultra-thin film which drastically reduces the amount of corrosive ammonia produced as hydrolysate of the material to ten-thousandth of that of aluminum nitride without the surface treatment. This surface treatment does not reduce thermal conductivity of aluminum nitride filler injected into resins. With this innovative surface treatment technology, SDK has successfully developed aluminum nitride filler which has excellent wet resistance and high thermal conductivity. Through offer of samples, we will develop a new market for this aluminum nitride filler, and plans to start mass production of the filler in 2023.

The Showa Denko Group's Vision is to make itself a "KOSEIHA Company" (a group of KOSEIHA Businesses that can maintain profitability and stability at high levels over a long period). Through offer of best solutions, SDK will respond to the demands of customers in the semiconductor device industry which is expected to continue showing rapid growth in accordance with the development of new technologies including 5G mobile communication technology and CASE (Connected, Autonomous/Automated, Shared, and Electric) related technologies in the automotive industry. In this way, we aim to establish a new KOSEIHA business.

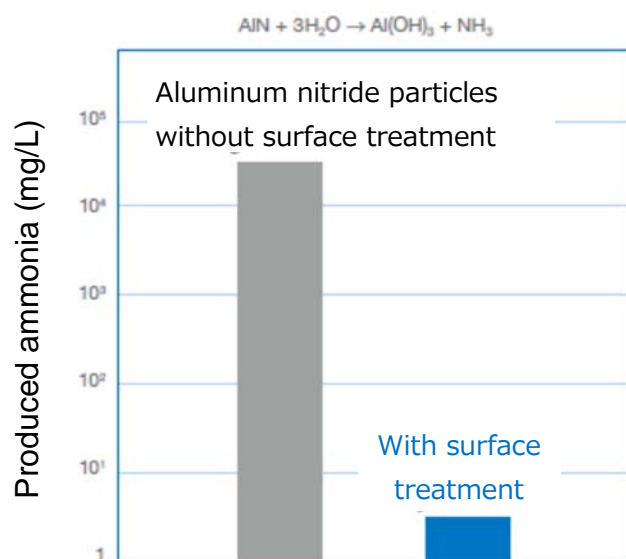
For further information, contact:
CSR & Corporate Communication Office (Phone: 81-3-5470-3235)

【Aluminum nitride filler】



【Evaluation of wet resistance of aluminum nitride filler】

Surface treatment reduces the amount of ammonia produced by hydrolysis of aluminum nitride particles to ten-thousandth of that of those without surface treatment.



Note: These data are based on our original measurement method. These data are results of actual measurement, but not guaranteed properties of our products.

For details of this technology, please access:

https://www.sdk.co.jp/innovation/english/points/aln_filler.html