

KANEKA CORPORATION

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New Development of the World's Most Advanced High Thermal Conductive Graphite Sheet

— Developed especially as a thermal diffusion material for electronic and precision devices like cellular phones. We are aiming for sales of around 10 billion yen after five years. —

©Kaneka Corporation (Headquarters: Osaka. President, Mr. Kimikazu Sugawara) has succeeded in developing a graphite sheet based on the high-temperature sintering technology and polymer design technology using polyimides as raw materials that have the highest thermal conductivity in the world. We will actively develop this as a thermal diffusion material for mobile devices, focusing on cellular phones. Already, this material is being adopted by some users. We expect to sell it in the form of a product that is a composite of adhesive materials and insulation film on the graphite sheet. Therefore we expect that through preventing irregularity of temperature in camera modules and liquid crystal displays, it will be developed to meet needs for a variety of small consumer devices and precision devices such as digital cameras and video cameras and not just be used in cellular phones. We are aiming for sales of around 10 billion yen in five years.

©At present, the trend towards high function and downsizing in mobile devices such as cellular phones is rapidly advancing, and the need for the development of materials that have high levels of thermal diffusion is rapidly growing. There is a demand for heat diffusion (cooling) technology for advanced LSIs and surface temperature control technology that does not make the surface feel “hot” through alleviation of heat spots that develop on device housings. This graphite sheet that we have developed is composed entirely of carbon atoms and has a high level of crystallization, and we have succeeded in creating a thermal conductivity* about three times that of copper and about five times that of aluminium.

*The surface directional thermal conductivity of 1200W/mK is a thermal conductivity second only to diamonds.

©The graphite sheet that we have developed has the following characteristics:

- It has a thinness of less than 50 μ m, and the relative weight of about 2g/cm³ is less than a quarter that of copper, so it is able to provide a high level of thermal diffusion effectiveness even in small spaces such as inside cellular phones or precision devices.
- It has a great deal of flexibility, and is superior in its punching-out ability and bendability.
- It displays stable function at temperatures even above 400°C, and its moisture absorption ratio, which is often an issue in electronic devices, is almost 0%.
- It is different to normal graphite sheets in that it does not contain any impurities such as degassing compounds.
- It displays a greater than 50dB reflectivity effect in the 1GHz or greater waveband that is important for cellular phones and other devices, and has a high level of electromagnetic shielding that shuts out electromagnetic waves over a range of wavelengths.

©With the increasing speed of more advanced functions, greater slimness, and downsizing for electronic devices, the questions of how to transport and remove the heat developed by them ever more efficiently, or “thermal solutions,” are becoming a pressing issue. At Kaneka, we position our electronics business field as an important strategic field, and intend to work actively for the development of “thermal solution materials” that can solve this issue. In the future, with this as our first salvo, we will fully develop new-style graphite sheets. We intend to continue developing new products from new materials that can contribute to thermal solutions through our unique technology, while understanding the needs of the market in a timely manner.