

## **CeramTec presents its new aluminium nitride high-performance substrate Alunit® AIN HP**

**Alunit® AIN HP: The abbreviation says it all. The innovative high-performance aluminium nitride from CeramTec stands for High Performance (HP). The main new feature is a 40 percent improved flexural strength with outstanding thermal conductivity. The substrate thus offers convincing advantages, for example, for applications in power generation and distribution, in vehicle electrification and in power converters for rail vehicle construction.**

**Plochingen, 16 October 2023** - With the high flexural strength of  $\geq 450$  MPa, Alunit® AIN HP enables the conductive metallisation to bond to the ceramic substrate over the long term, even during extreme thermal cycling. The coefficient of thermal expansion of 3.7 - 5.7 ppm/K at up to 300°C is close to typical semiconductor materials. Alunit® AIN HP thus increases the long-term durability of power modules.

### **Numbers are the best facts**

Further advantages of Alunit® AIN HP include its high thermal conductivity of 170 W/mK and an electrical insulation and dielectric strength of  $\geq 15$  kV/mm at 20 °C. Metallisation in copper or aluminium is possible, which is mostly used in power electronics - for example in DCB (Direct Copper Bonded), AMB (Active Metal Brazing) or SMB (Sputtering Metal Bonding) ceramic substrates.

### **For high performance and temperatures**

Alunit® AIN HP is an excellent choice for use in high-voltage and high-performance power modules as well as for high-power LEDs and for chip resistors - also and especially at higher currents and in increasingly smaller components. In these application areas, the ceramic substrate Alunit® AIN HP is technically superior to IMS (Insulated Metal Substrates) materials, for example. CeramTec offers the product as a substrate in the masterplate format of 190.5 x 138.0 x 0.635 mm, other thicknesses (e.g. 1.00 mm) and formats on request.

### **In the future ceramics**

With the development of the high-tech substrate Alunit® AIN HP, CeramTec supports the ongoing decarbonisation and electrification of industry; for example, in the areas of e-mobility, heating, cooling or also in the conversion and distribution of electrical energy. The electronic modules required for these applications must meet extreme requirements with ever smaller dimensions: from optimal flexural strength to high thermal conductivity and excellent electrical insulation to minimal expansion coefficients.

## Substrates from a single source

CeramTec is the innovation leader in  $Al_2O_3$  substrates and also a leading one-stop-shop supplier for high-quality ceramic substrates in Europe. The product portfolio is based on own high-volume production capacities and ranges from aluminium nitride HP to aluminium oxide, aluminium oxide reinforced with zirconium oxide and zirconium oxide, to silicon nitride. Thanks to production in Europe, CeramTec offers exemplary quality standards and short delivery routes. With more than 100 years of experience in the production of technical ceramics, CeramTec also proves itself as a development partner for established as well as new areas of application.

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### Picture material

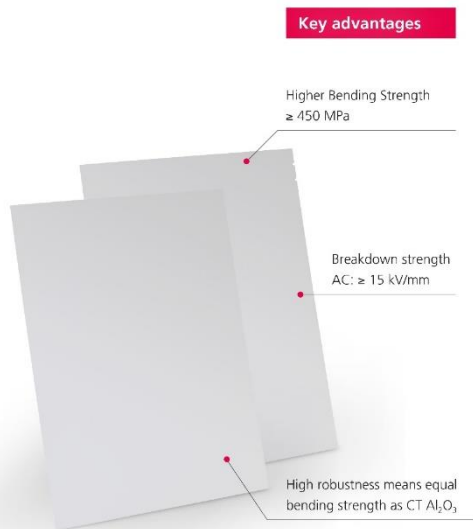
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**CeramTec\_ Alunit® AIN HP\_01.jpg**

The name says it all: the innovative high-performance aluminium nitride stands for High Performance (HP).

**Source: CeramTec**



**CeramTec\_ Alunit® AIN HP\_02.jpg**  
Numbers are the best facts: The main new feature is a 40 percent improvement in flexural strength with outstanding thermal conductivity.  
**Source: CeramTec**

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#### **About CeramTec**

CeramTec has been a supplier and manufacturer of technical ceramics with a focus on advanced ceramic (HPC) solutions since 1903 and specialises in the development, manufacture and distribution of parts, components and products made from ceramic materials. With more than a century of development and production experience in the HPC industry, CeramTec is a world leader in the manufacture of advanced ceramics and develops these materials for use in a wide range of applications. CeramTec's advanced ceramics are used in a number of areas, including medical applications such as hip prostheses, other orthopaedic implants, dental implants and medical devices, as well as in the mobility and electronics industries, and also in other industrial applications. With production sites and subsidiaries in Europe, North and South America and Asia, CeramTec has a global presence as a manufacturer and supplier. CeramTec's headquarters are located in Plochingen near Stuttgart. In 2022, CeramTec generated sales of more than 730 million euros. CeramTec employs approximately 3,600 people worldwide, of which around 2,000 are in Germany.

More info: [www.ceramtec-group.com](http://www.ceramtec-group.com)

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