



## Carbodeon Ltd. Oy

# When it's the best in carbon nanotechnology you want

*Carbodeon develops, manufactures, and supplies some of the best and the latest in application-focused carbon nanotechnology – in the shape of superhard materials designed for applications where particularly high performance is called for.*



Carbodeon's uDiamond® products are ideal for improving the thermal conductivity of plastic components and ensuring that equipment lasts longer.

Carbodeon's superhard materials are ideal for use in applications where durability and wear resistance are a key priority. The company's patented technologies, application-focused design process, and two main product lines – uDiamond® nanodiamonds and Nicanite® graphitic carbon nitride – are opening up new opportunities in a number of fields.

As a new and evolving area of technology, nanodiamonds offer a wide range of benefits. The uDiamond® product range is very much at the cutting edge of this technology and offers significant benefits at very low nanodiamond levels in areas such as thermal conductivity; wear resistance; strength, hardness, and toughness; coating adhesion and low porosity; and low friction.

The key features of the range include high purity, controlled properties and quality, affordability, and availability in industrial volumes as powders, aqueous suspensions, or polar solvents.

uDiamond® products are based on nanodiamonds with a typical size in the 4-6 nm range, and Carbodeon uses its proprietary technology to adapt their particle surface chemistry for optimum performance in specific applications. This

is very much in line with Carbodeon's belief that application-driven product development is the best way to get the most performance and value out of carbon.

### ADVANCED COATING PROPERTIES

Carbodeon has also developed and patented production technology to make a high-purity, graphitic carbon nitride known as Nicanite®. Inert, non-toxic, and stable at temperatures up to 650 °C under an inert atmosphere, Nicanite® can be used to produce hard, wear-resistant coatings. The properties of these coatings can be adapted with the help of composites, such as boron carbide and boron nitride, to increase their hardness.

Applications include transparent, wear-resistant coatings offering diffusion barrier properties; biocompatible coatings for medical applications; chemically inert coatings; insulators; and energy storage solutions.

### HELPING ACCELERATE THE TAKE-UP OF ELECTRIC CARS

One area that Carbodeon has been focusing on recently is plastic composites, and it has success-

fully developed a number of nanodiamond composites that are helping pave the way to better circuit boards – that do not overheat as power levels increase – as well as more efficient, lighter, and cheaper electronic components.

There is a major potential market for composites that conduct heat more effectively than current solutions, believes Carbodeon, which has been able to improve the thermal conductivity of these materials many times over.

Carbodeon has already developed applications based on its technology for mobile phones, electronics, and the automotive industry, amongst others.

Nanodiamond plastic composites have the very real potential to speed up the adoption of electric and hybrid cars, for example, as replacing components with highly durable plastic ones will help to cut the weight of cars while ensuring a long service life.

info

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