

The difference lies in the detail











Customized diamond coatings for all applications

A premium coating is the result of numerous options that CemeCon, together with the manufacturer, precisely matches to the application and the precision tool. This applies to both HiPIMS and diamond coatings. The linchpin is always the coating material. With HiPIMS, the differences between the individual coating materials are obvious; with diamond, you have to look a little closer. CemeCon keeps a close eye on these details and therefore offers exactly the right premium coating for every application.

Graphite, CFRP and GFRP, zirconium oxide, hypereutectic aluminum, other non-ferrous metals and carbide – the list of possible applications for diamond-coated tools is even longer than the list of machinable materials. They are used in the machining of components for aircraft and classic automotive construction as well as for e-mobility. In addition, they are also used for the manufacture of sports articles or in dental technology. In tool and mold making, there are various areas of application: in the machining of graphite electrodes, as well as in the milling of carbide. CemeCon supplies the right solution for all applications.

Especially with diamond, adhesion is crucial. Thus, the choice of the suitable carbide as the carrier of the coating deserves special attention. The CemeCon experts know exactly what needs to be taken into account here and are happy to provide manufacturers with advice and support in advance. Depending on the carbide grade and coating material, CemeCon then selects the appropriate preparation. There are different gradations from gentle to intensive. This gives the tools the right preparation for optimum adhesion of the coating.

With diamond coating materials, it is the subtleties, for example in morphology and topography, that determine suitable applications. “The crystals of diamond coating materials have different structures and sizes. The coating materials also differentiate in terms of surface. They are all smooth, but some are smoother than others. Here, it is important to choose the right texture for the respective application,” says Manfred Weigand, Product Manager Round Tools at CemeCon. “In addition, the number of individual layers influences the area of application. After all, our diamond coating materials are multilayers. Depending on the layer material, the number of layers varies between 2 and 20.”

Material to be machined	Application examples	Diamond coatings
Zirconium oxide	 Crowns, inlays and bridges in the dental technology	CCDia®CarbonSpeed®
Fiber reinforced Plastics (CFRP/GFRP)	 Structural components for aircraft	CCDia®AeroSpeed® CCDia®FiberSpeed® CCDia®MultiSpeed
	 Back implants	
	 Sporting goods such as bicycle rims	
	 Lightweight construction components for e-mobility	
Graphite	 Graphite electrodes for the mold production of displays	CCDia®CarbonSpeed®
Carbide	 Stamps and dies for forming	CCDia®CarbideSpeed®
Hypereutectic aluminum	 Lightweight components in automotive engineering	CCDia®FiberSpeed® CCDia®MultiSpeed

As with HiPIMS, the coordination process for the premium coating does not end with the suitable coating

material. Here, too, CemeCon adjusts the variables as usual until the perfect result is achieved: preparation for optimum adhesion, coating thickness specifications including tolerances, and final inspection with documentation. For diamond coatings, CemeCon also offers tool manufacturers the option of precision coating. In this case, the customer receives a coating with the final dimension that they specified within the required tolerances – including the corresponding measurement report.

Whether diamond or HiPIMS – a initial orientation on the suitable coating material for your application and your tools is available in the [CemeCon Coating App](#).

[CRFP](#)

[Diamond](#)

[GFRP](#)

[Aluminium](#)

[Zirconium oxide](#)

[Graphit](#)

[Premium Coating](#)

[hypereutectic aluminum](#)

[Individual coating](#)