Diamond coatings can do all that!

The optimum coating solution for every application and every tool

Graphite electrodes, dental implants, sporting goods, lightweight components for automotive or aerospace, punches and dies - diamond coatings are used in many different applications and materials. CemeCon offers solutions for all cases to help users achieve the best results.

The basis of every CemeCon diamond coating is the coating material. With different coating materials, CemeCon has the right solution for every application and thus also for every tool. But what are the differences between the diamond coating materials? Diamond is diamond, after all? “That's not quite true. One difference, for example, lies in the morphology. Depending on the coating material, the crystal structure and size differ.In addition, our diamond layer materials, the so-called multilayers, always consist of several layers. The number of layers varies from 2 to over 20. Finally, the topography, i.e. the surface, also plays a central role. Smooth, smoother, smoothest – the application determines this property,” explains Manfred Weigand, Product Manager Round Tools at CemeCon.

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**

Especially with diamond coatings, the following applies: The coating material is only half the battle. In addition, there is preparation for optimum adhesion, coating thickness specifications including tolerances, precision coating and final inspection with documentation. With the optionally available precision coating, the tools receive a coating in a final dimension specified by the customer within the required tolerances – including the corresponding measurement report.

Especially with diamond coatings, the choice of a suitable carbide as a carrier for the actual cutting material “diamond” is a decisive factor. Depending on the carbide grade and coating material, the appropriate preparation is selected – from gentle to intensive – CemeCon processes the tools precisely so that the

coating adheres excellently.

With these adapted premium solutions, users achieve the best results when machining a wide variety of materials: CFRP/GFRP, zirconium oxide, graphite, hypereutectic aluminum and other non-ferrous metals. With the latest diamond coating material CCDia®CarbideSpeed®, nothing more stands in the way of cutting carbide. This opens up new possibilities for tool and mold makers (more on solutions for the industry on pages 26 and 27).

Diamond coatings are not suitable for machining ferrous materials, even if one might assume this due to their high hardness. For these materials, CemeCon has the right solution with coordinated HiPIMS coatings.

Whether diamond or HiPIMS – a first orientation to the suitable coating material for your application and your tools is available in the **CemeCon Coating App**.

CCDia®CarbideSpeed®

CRFP

Lightweight construction

Dentistry

Diamond

CCDia® AeroSpeed®

GFRP

Automotive industry

Carbide

Patented diamond coating

Graphit

CCDia®FiberSpeed®

CCDia®MultiSpeed

fiber-reinforced plastics

hypereutectic aluminum

sporting goods

graphite electrodes

stamp

Dies

zirconium oxide

CCDia®CarbideSpeed®