WEBER TECHNOLOGIES

the coating experts

Diamond coating for high precision tools

Innovative and high quality solutions
for cutting tool industries

What we do

Diamond coating

Weber Technologies GmbH uses a hot wire CVD process for the deposition of diamond coatings on various base materials. CVD stands for Chemical Vapor Deposition. In this case, the process gases introduced into the coating chamber are decomposed by means of heated filaments under vacuum and the carbon atoms are deposited on the substrate surface, so that a crystalline diamond layer is growing through the entire deposition process.

Who we are

The company

Weber Technologies was founded in July 2018 in Potsdam near Berlin. By the end of March 2019, a diamond coating centre had been put into operation.

Weber Technologies has positioned itself within the market as a strong and reliable partner in the coating service, especially as a diamond coating specialist for carbide tools and other tool-wear parts as well as ceramic components.

We at Weber Technologies want your project to be a success.

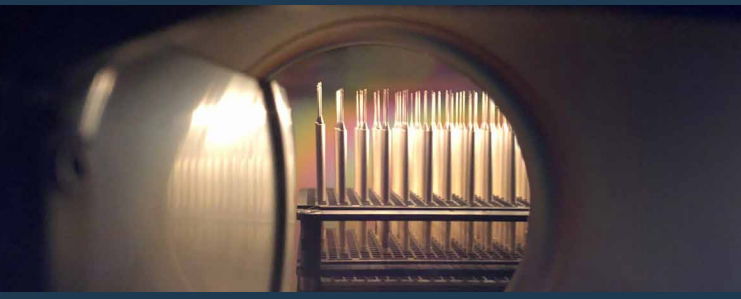
The founder

Dr. Frank-Reinhard Weber

The company owner Dr. Weber has over 20 years of experience in PVD, PACVD and CVD coating technologies as well as in the areas of tungsten carbide and machining tools. This enables Weber Technologies, as a competent partner, to serve the specialised industrial sectors on an international level.

Diamond coating process

The entire coating technology, including chemical pretreatment come from a single source.
Our range of services include micro- and nanocrystalline coating, as well as gradient structured diamond coating in thickness layers ranging from 3 to 20 µm.

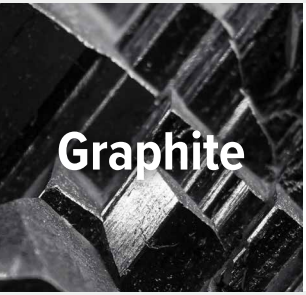


Applications

Carbon fibre reinforced polymer is a composite material in which carbon fibres are embedded in a plastic matrix (such as epoxy resin). The matrix serves to connect the fibres and to fill the gaps between them. CFRP is used particularly where the increased costs are accepted for a low mass and simultaneously high rigidity. Examples are bicycle frames, rowing boats and accessories and compressed gas containers. Here, the mechanical properties of the cured composite benefit above all from the tensile strength and stiffness of the carbon fibres.

The fibre-reinforced materials, which are expensive to produce, are used above all in areas where their advantages (usually weight savings) result in at least a correspondingly high cost-saving potential, such as in aerospace and, in future, also in vehicle construction.

- **Automotive**
- **Aircraft**
- **Wind turbines**



Graphite is a modification of carbon and crystallizes hexagonal. At room temperature and normal pressure graphite is the thermodynamically stable form of carbon. It is obtained by pyrolysis and graphitised by means of pressing processes and subsequent temperature treatments. Graphite is mainly used as graphite electrode and in mould making.

- **Electrodes and moulds (e.g. Smartphones)**

Ceramic

(ZrO2) Ceramics The ceramic material, zirconium dioxide, is used in dental materials for dental prostheses and is gaining year on year market share. The blank dental prostheses are first made from zirconium dioxide powder to so-called green bodies by a uniaxial or isostatic dry pressing process. After shaping the green bodies, heat treatment, i.e. de-binding and presintering, follows. In this way, important properties of the zirconium dioxide green bodies such as strength, hardness and shrinkage factors are adjusted. The production of crowns or bridge frameworks are carried out using diamond-coated carbide cutters. Here, microcrystalline diamond coatings show an excellent performance.

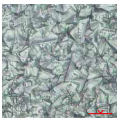
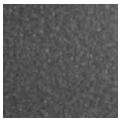
- **Dental tools**

Aluminium-Silicon alloys (AlSi) are aluminium alloys consisting mainly of aluminium - with silicon as the most important alloying element in terms of quantity. Copper occurs in almost all technical alloys, at least as an admixture. This also improves machinability. Important areas of application are, for example, automotive parts, including cylinder heads, crankcases, engine blocks and pistons.

- **Automotive**
- **Aircraft**

Coating properties

WT DIA coatings are used for machining in CFRP, CFRP/Al stack material, Ceramics, Graphite and Al-alloy materials. Combined with high-performance tungsten carbide cutting tools designed specifically for these applications, our diamond coatings provide the best results.

	WT M-DIA	WT N-DIA	WT G-DIA
			
Coating material and structure	micro-crystalline	nano-crystalline	gradient structure. micro/nano
Medium grain size	5 µm	15 nm	50-100nm
Layer structure	Monolayer	Monolayer	Gradient Layer
Deposition temperature	800°C - 850°C	800°C - 850°C	800°C - 850°C
Max. application temperature	650°C	650°C	650°C
Coating hardness [Gpa]	>95	80-95	>90
Coating-thickness [µm]	3-12	3-20	3-20
Coating colour	grey	shiny grey	grey
Applications	Graphite, Ceramics, Carbide	CFRP / GFRP / Stack Al>9% Si Ceramics	CFRP Stack

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