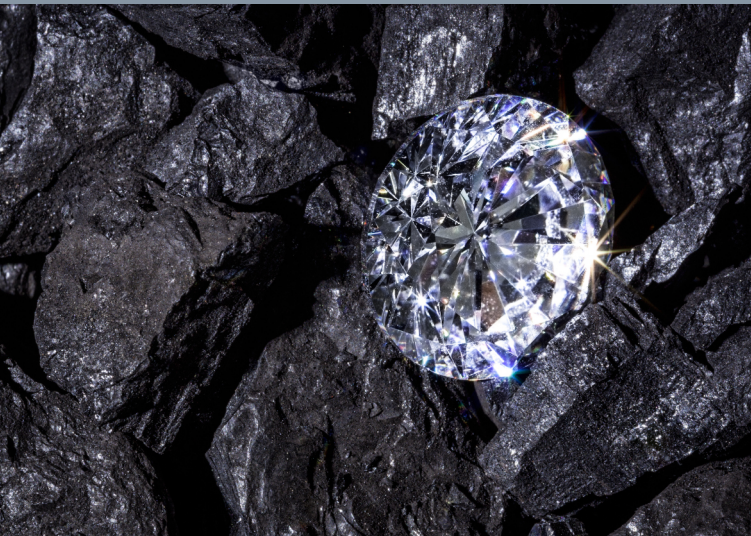


Depending on the inner structure, i.e. the configuration and correlation of the C-atoms, pure carbon exists just in two extremes in nature. On the one hand as an extremely hard and indestructible diamond, a pure  $sp^3$ -chemical bond, and on the other hand as a ( $sp^2$ -chemical bond) soft graphite even with lubricating properties.

**DLC combines both of these characteristics of diamonds and graphite in one material and shows high hardness and at the same time a very low coefficient of friction rate.** The hardness varies or even exceeds a range of 15-35 GPa. At the same time, the coefficient of friction can be as low as  $\leq 0.15$ .

Because of these properties DLC-coatings work very well for surface finishing. Friction and wear of coated tools for machining of non-iron containing materials are reduced. The DLC-coating also reduces sliding friction significantly in roller bearings and sliding parts.

Additionally there is the bio-compatibility of this material. This makes DLC suitable for medical purposes as in the coating of prostheses, surgical instruments and in the coating of components used in the food industry. Additionally due to the non-conductivity it can be used for electronic components.



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# DLC DIAMOND-LIKE CARBON COATINGS

PVT Plasma und Vakuum Technik is an internationally renown specialist in the field of vacuum coating processes for the production of hard coatings for wear protection applications.

We develop and manufacture coating systems for the deposition of these coatings for our customers. In addition we offer a wide portfolio of different coatings for custom-designed applications. This range of coatings includes DLC-coatings for wear protection applications with a requirement for low friction.

DLC refers to a category of amorphous carbon compounds that provide a wide field of technical applications due to their excellent properties.

We offer the following DLC-coatings custom designed for your applications:

Coating	ta-C	a-C:H	M:DLC
Layer thickness [ $\mu\text{m}$ ]	1-2	2-3	2-3
Hardness [GPa]	$\leq 35$	15	20
Coefficient of friction [dry against steel]	0.15	0.05 - 0.1	0.1 - 0.15
Service temperature; max. [ $^{\circ}\text{C}$ ]	< 500	350	400



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#### ta-C

Maximum hardness of the DLC-coating due to the very high content of  $\text{sp}^3$ . Minimal wear due to a low coefficient of friction in combination with a high temperature stability. **Applicable e.g. on cutting tools to be used for machining soft metals or plastics.**

#### a-C:H

Hydrogen-containing DLC-coating to achieve the lowest coefficient of friction. **For example applicable in roller bearings.**

#### M:DLC

Various metal doped DLC-coatings for custom designed requirements with high pressure- and surface stress for example on cutting tools or dies.



We will be delighted to assist you in choosing the appropriate DLC-coating for your application!

Please contact us:

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