

DLC (Diamond Like Carbon)

What is DLC?

DLC is an acronym for "diamond like carbon". As this name implies DLC offers some of the outstanding properties of diamond. The properties of diamond include in particular:

- Extreme hardness,
- Wear resistance,
- Low coefficient of friction,
- Optical transparency from ultraviolet (225 nm) to infrared,
- Chemical resistance,
- Biocompatibility,
- Extremely high thermal conductivity (5 times that of copper).

Properties	ta-C
Hydrogen containing	No
Color	Rainbow
Hardness (HV)	~ 2.000
Thickness [µm]	0.2 - 1.0
Coefficient of friction against steel, dry	0.15 - 2
Surface roughness Rz [µm]	< 1
Use with	e.g. aluminium, tin, zinc, copper

Coating process

The carbon layer is coated by PVD (engl. Physical Vapor Deposition; Physical vapour deposition for example by evaporation or sputtering) at the locating pin.

Test results

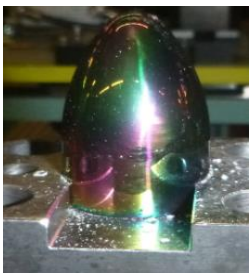
Installation location: Body shell construction (Body in white)

Cycles: >700.000

Workpiece material: Aluminium / aluminium die casting

Locating pin material: EN 1.7242

ta-C (Rainbow)



Further applications

- DLC coatings are used, for example, in automotive engineering in combustion engines. Moving parts such as camshafts, piston rings and gears are coated with DLC or ME-DLC in order to minimize wear and friction and thus make vehicles more powerful and less polluting.
- For similar reasons, DLC coatings are used on deep drawing-, extrusion- and forging dies.
- Seals, e.g. mechanical seals for boiler feed pumps to minimize wear (electro-corrosion)