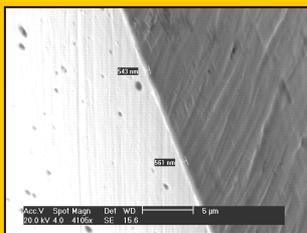
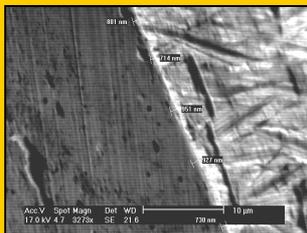


Cutting Edge.

The super hard protection coating.



Properties

Flowing liquids and gases cause continuous wear on surfaces. In particular, micro structured surfaces can be destroyed in a relatively short time. Equally sensitive are cutting tools with very small cutting radius which can be severely damaged after being only used once.

cardient® superhart has been especially developed for applications where functionality is lost after even small amount of wear.

The coating is made up of amorphous carbon with a close diamond-like structure and density. Like all carbon based coatings the surface is highly bio-compatible and is therefore suitable for medical applications.

Hardness (HV)	4000 - 6000
Friction against steel	< 0,09
Thickness	0,05 - 0,2 µm
Processing temperature	< 150 °C
Operating temperature	max. 600 °C

Usage

- Hard materials such as metals, ceramics and special plastics.
- Temperature sensitive materials such as hardened steel.

Application areas

- Medical cutting tools such as scalpels, trephine etc.
- Micro structured surfaces.

Example

- When transplanting a cornea (Kerathoplastie) a hardened trephine is used. Trephines are precision instruments with a very small cutting edge radius. These exhibit a very rapid wear and the instruments have to be replaced frequently (see Fig. A) - small amounts of damage to the edge reduces the optical function. With a 100 nm thick cardient® superhart layer increases the life by a factor of 3 (see Fig. B).

Coating process

The coating is produced in a PECVD process (plasma assisted gas phase deposition). Acetylene is used as the process gas and a plasma is created using a high-frequency generator. The hardness of the coating is achieved by an elevated ionisation in the plasma. Almost all materials can be coated, although in some cases a special bonding layer needs to be added.

