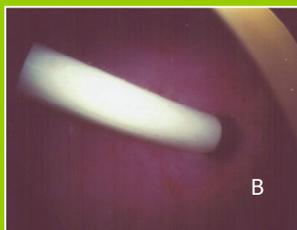
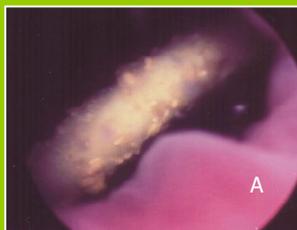


**Flexible
Medical
Carbon**

**The flexible
coating for
medical
polymers.**



Properties

cardient® FMC® is a biocompatible and biofunctional coating especially developed for medical and biological applications.

The coating is an amorphous carbon coating with a quasi diamond-like structure, particularly suitable for flexible polymer based medical implants.

Above a coating thickness of 10 nm the coating is diffusion proof and chemically inert. At a thickness of 100 nm the coating is still optically transparent with an UV absorption of over 90 %. Despite a hardness of 1000-3000 HV and a friction coefficient as low as 0.05, the coating is still very flexible and will follow the device surface and does not detach even after extreme flexing. A coating thickness of 30-50 nm will cover the surface completely and will extend the properties of the coating over the complete surface. This maintains the mechanical properties of the device while providing it with an improved surface.

With a cardient® FMC® coating the medical device remains biologically neutral to living tissue so that endothelial cell proliferation is accelerated and the implant is absorbed quickly. At the same time the adhesion of biomolecules is reduced so that the implant can be easily removed.

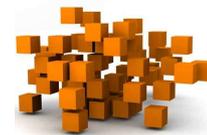
Hardness (HV)	1000 - 3000
Friction against steel	< 0,05
Diffusion resistance	10 ⁻⁵ with water
Thickness	10 - 100 nm
Processing temperature	< 50 °C
Operating temperature	max. 600 °C

Usage

- Polymer materials.
- Highly temperature sensitive materials.

Application areas

- Catheters, stents, sensors.



Examples

- Urethral stent catheters are implanted in the urethra to help with urine drainage under certain medical conditions. During insertion bacteria is often introduced and may collect on the catheter surface. These will build a crystalline biofilm using elements found in urine which has the appearance of a solid crust. This crust can lead to infections and severe damage to the urethra and bladder on removal. This has lead to infections, plus formation or in the worst case septicaemia. A cardient® FMC® coating in a thickness of 50 nm prevents adhesion of bacteria and crust formation as well as reducing surface friction. The good gliding properties and long implantation time of cardient® FMC® coated catheters is highly valued by patients and doctors alike. Patients often report a higher quality of life.

- In-vivo images of an implanted catheter.
Fig. A: Uncoated stent 6 weeks
Fig. B: cardient® FMC® coated stent after 12 weeks.

Coating process

The coating is applied using a reactive gas phase plasma. The properties are controlled using the free radical content and energy applied. As the coating process is carried out below 50 °C polymers can be coated as well as metals.

