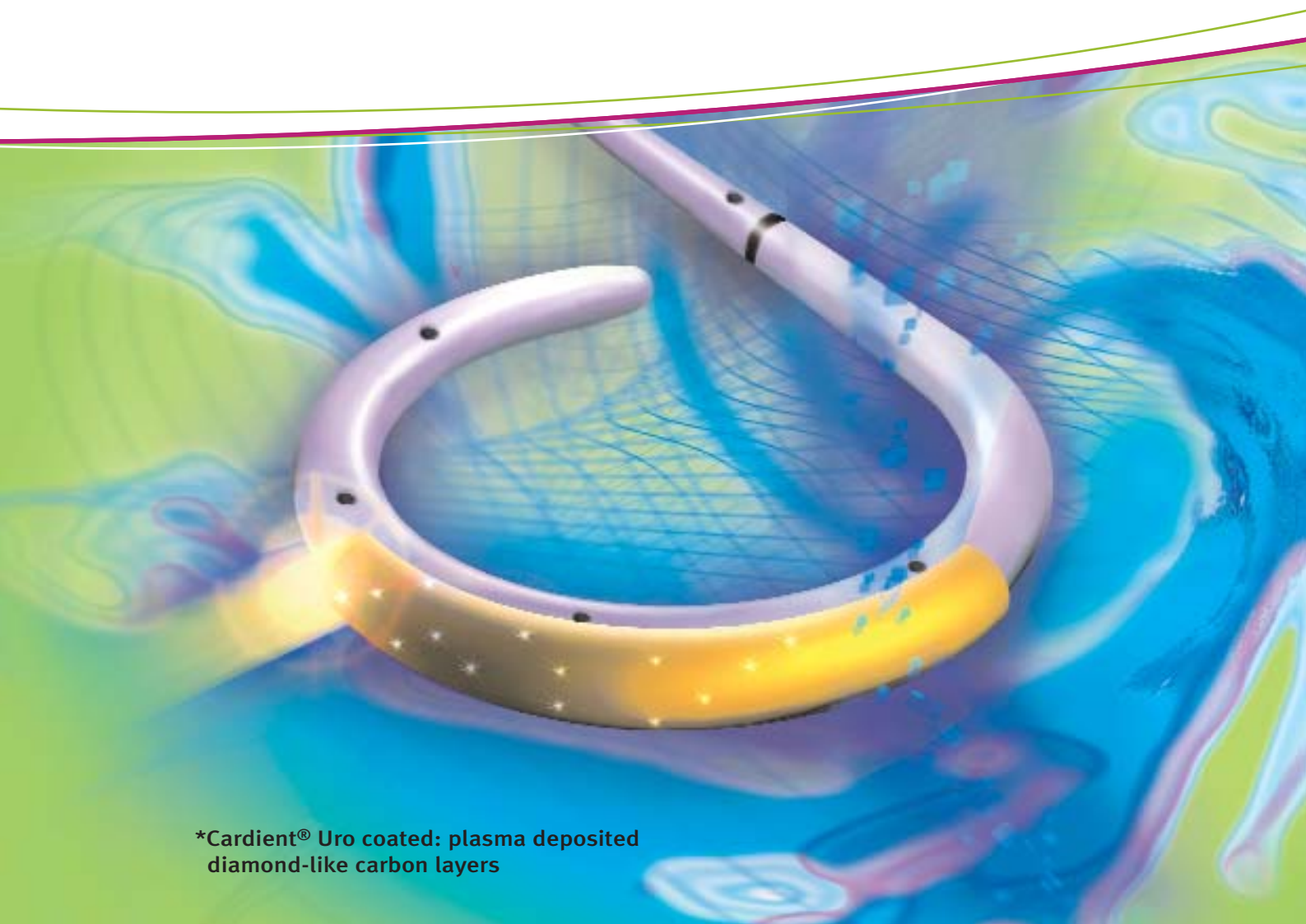


VisioSafe[®] Diamond

The first ureteral stent with
diamond-like carbon coating*



*Cardient[®] Uro coated: plasma deposited
diamond-like carbon layers

VisioSafe® Diamond

The innovation

The status quo

For more than 2500 years, catheters have been used in medicine. For the same period of time, there have been many problems and complications associated with catheterization.

Despite intensive material research, no satisfactory solutions have been found. Still today, every implant placed in the urinary tract is prone to encrustation, which is formed from crystalline bacterial biofilms. These biofilms cause sometimes serious side effects.

Approx. 250,000 nosocomial infections of the urinary tract occur in Germany each year. In up to 90 % of the cases, the cause of these infections is associated with catheterization. As early as after an indwelling time of 30 days, almost all patients are affected by an infection of this kind.

The socio-economic consequences burden the German social security system with costs amounting to several billion each year. Attempts which have been made to reduce these complications by modifying the surface of the implant material have not lead to the expected positive results.

Owing to their excellent biocompatibility, carbon coatings have been successfully used in cardiology, orthopaedics and microbiology for years. Until recently, however, it was not possible to coat temperature-sensitive materials.

VisioSafe® Diamond now offers a forward-looking perspective.

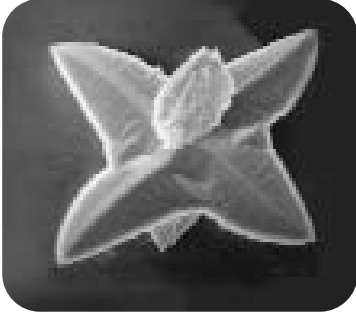
A new, patented low temperature process enables the coating of temperature-sensitive catheter materials with pure, diamond-like carbon.

For the first time, the known advantages of diamond-like carbon layers have been made available for urological implants by NTTF Coating GmbH in cooperation with university research institutes.

NTTF is the specialist for biocompatible and biofunctional coatings in medicine. NTTF was presented awards for innovative products by the German state of Rhineland-Palatinate in 2000, 2004 and 2006.

NTTF is ISO certified: ISO 9001 and ISO 13485.





Crystalluria: a natural process; approx. 10 million crystallites are formed per day; calcium oxalate microcrystals ($\varnothing = 2 \mu\text{m}$).



Encrustation: Formation of a mineralized phosphate salt deposit on ureteral stents after an indwelling time of only a few weeks. These deposits cause complications.



In vivo situation of a female patient: After an indwelling time of 6 weeks the uncoated ureteral stents show a clear deposit build-up of crystalline biofilm.



Improved in vivo situation: With the same urinalysis results no biofilm has formed on the ureteral stents with diamond-like carbon coating after an indwelling time of 3 months.

VisioSafe[®] Diamond

Ordering information:

• VisioSafe DIAMOND ureteral stent kit

- with carbon-coated double-J stent (aliphatic polyurethane, **closed tip**, FR xx, yy cm long)
- PTFE-coated guidewire (0.022", 150 cm, rigid end and flexible end)
- Pusher and clamp

| Order No. | Size (Fr) | Length (cm) |
|-------------|---------------------|-------------------|
| ST-58 xx yy | 4.7 (5) / 6 / 7 / 8 | 24 / 26 / 28 / 30 |

• VisioSafe DIAMOND ureteral stent kit

- with carbon-coated double-J stent (aliphatic polyurethane, **open tip**, FR xx, yy cm long)
- PTFE-coated guidewire (0.022", 150 cm, rigid end and flexible end)
- Pusher

| Order No. | Size (Fr) | Length (cm) |
|-------------|---------------------|-------------------|
| ST-59 xx yy | 4.7 (5) / 6 / 7 / 8 | 24 / 26 / 28 / 30 |

• VisioSafe DIAMOND MONO-J ureteral stent kit

- with carbon-coated single-J stent (aliphatic polyurethane, **closed tip**, CH xx, 70 cm long)
- PTFE-coated guidewire (0.022", 150 cm)
- Clamp

| Order No. | Size (CH) | Length (cm) |
|-------------|---------------------|-------------|
| ST-54 xx 70 | 4.7 (5) / 6 / 7 / 8 | 70 |

• VisioSafe DIAMOND MONO-J ureteral stent kit

- with carbon-coated single-J stent (aliphatic polyurethane, **open tip**, CH xx, Länge 70 cm)
- PTFE-coated guidewire (0.022", 150 cm)

| Order No. | Size (CH) | Length (cm) |
|-------------|---------------------|-------------|
| ST-55 xx 70 | 4.7 (5) / 6 / 7 / 8 | 70 |

• VisioSafe DIAMOND tumour stent

- carbon-coated (aliphatic polyurethane with reinforcing STAINLESS STEEL HELIX, **closed tip**, CH xx, yy cm long, no openings in the shaft)
- PTFE-coated guidewire (0.035", 150 cm)
- Pusher and clamp

| Order No. | Size (CH) | Length (cm) |
|-------------|-----------|--------------|
| TS-50 xx yy | 6 / 7 / 8 | 26 / 28 / 30 |

• **VisioSafe DIAMOND tumour stent**

- carbon-coated (aliphatic polyurethane with reinforcing STAINLESS STEEL HELIX, **open tip**, CH xx, yy cm long, no openings in the shaft)
- PTFE-coated guidewire (0.035", 150 cm)
- Pusher

| Order No. | Size (CH) | Length (cm) |
|-------------|-----------|--------------|
| TS-51 xx yy | 6 / 7 / 8 | 26 / 28 / 30 |

• **VisioSafe DIAMOND with steerable VISIOMATIC stent delivery system**

- with tumour stent (carbon-coated, aliphatic polyurethane with reinforcing STAINLESS STEEL HELIX, **closed tip**, CH xx, yy cm long, no openings in the shaft)
- PTFE-coated guidewire (0.035", 150 cm)
- Pusher and clamp

| Order No. | Size (CH) | Length (cm) |
|-------------|-----------|--------------|
| TS-52 xx yy | 6 / 7 / 8 | 26 / 28 / 30 |

• **VisioSafe DIAMOND with steerable VISIOMATIC stent delivery system**

- with tumour stent (carbon-coated, aliphatic polyurethane with reinforcing STAINLESS STEEL HELIX, **open tip**, CH xx, yy cm long, no openings in the shaft)
- PTFE-coated guidewire (0.035", 150 cm)
- Pusher and clamp

| Order No. | Size (CH) | Length (cm) |
|-------------|-----------|--------------|
| TS-53 xx yy | 6 / 7 / 8 | 26 / 28 / 30 |

• **VisioSafe DIAMOND with steerable VISIOMATIC stent delivery system**

- with carbon-coated double-J stent (aliphatic polyurethane, **closed tip**, CH xx, yy cm long)
- PTFE-coated guidewire (0.035", 150 cm) and Y-adapter (guidewire clamp; irrigation also possible with wire clamped in place)

| Order No. | Size (CH) | Length (cm) |
|-------------|---------------------|-------------------|
| US-50 xx yy | 4.7 (5) / 6 / 7 / 8 | 24 / 26 / 28 / 30 |

• **VisioSafe DIAMOND with steerable VISIOMATIC stent delivery system**

- with carbon-coated double-J stent (aliphatic polyurethane, **open tip**, CH xx, yy cm long)
- PTFE-coated guidewire with movable core (0.035", 150 cm) and Y-adapter (guidewire clamp; irrigation also possible with wire clamped in place)

| Order No. | Size (CH) | Length (cm) |
|-------------|---------------------|-------------------|
| US-51 xx yy | 4.7 (5) / 6 / 7 / 8 | 24 / 26 / 28 / 30 |

VisioSafe[®] Diamond

Features and benefits

- CE-certified for an indwelling time of more than 30 days
- successfully used with an indwelling time of up to 365 days
- reduces the risk of urinary tract infections by effectively suppressing the formation of biofilm
- increases the efficiency of antibiotics by reducing the inhibitory effect of encrustation
- excellent lubricity facilitates placement and change
- reduces pain to the patient and irritations
- improved lubricity and compatibility increases the patients' acceptance
- provides for a durable and inert surface on proven urological catheter materials