

Slick, Fast and Right On-Track

HYDAK[®] Hydrophilic Coatings



For Cardiovascular Devices

Advantages of the HYDAK[®] Coating System



- ✓ **Lubricious:** Exhibits an extremely low surface friction
- ✓ **Biocompatible:** Made from hyaluronic acid, a natural biopolymer
- ✓ **Durable:** Able to stand up to cardiovascular procedures
- ✓ **Non-thrombogenic:** Resists adsorption of fibrin and platelet adhesion
- ✓ **Hydrophilic:** Absorbs water to increase its lubricity
- ✓ **Thin:** Less than 4 microns thick!
- ✓ **Flexible:** Amenable to devices that travel through tortuous paths

BIOCOAT
INCORPORATED

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The HYDAK® Coating System is an excellent consideration for use in cardiovascular devices.

Possible applications for this technology include:

Catheters

Balloons

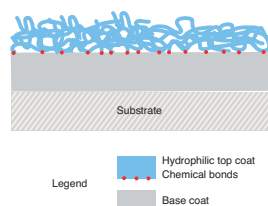
Introducers


Lead wires

Stents

Other blood contacting surfaces

Coatings are composed of two layers: a polyacrylate base coat and a hyaluronic acid top coat covalently bonded to the base coat. The combination can be applied to a multitude of different substrates (see Table). The total thickness of both layers can be as thin as 2 to 3 microns when dry, swelling to 10 microns when wet. The covalent bonding of the top coat to the base coat insures consistent quality and physical properties.



Legend
 Hydrophilic top coat
 Chemical bonds
 Base coat

Unlike some other coating systems, HYDAK is applied via dipping, injecting, spraying, or wiping and is heat cured at temperatures in the range of 60 to 70°C. There is no photo curing equipment necessary. This produces several advantages:

- HYDAK coatings are easily applied to lumens
- UV exposure of the surface is not an issue in manufacturing
- Heat curing allows for uniform coating properties through entire cross section
- Equipment required for manufacturing is an order of magnitude less expensive

HYDAK Coating Adhesion to Various Substrates (ASTM D3359-78, Method B)		
Substrate	Base Coat in Organic Solvent	Base Coat in Aqueous Dispersion
HDPE	Excellent*	
LDPE	Excellent*	
Nylon 12	Excellent*	Poor
Nylon 6	Excellent*	
Nylon 66	Excellent*	Excellent
70D Pebax	Excellent	Poor
55D Pebax	Excellent	Poor
35D Pebax	Good	Excellent
90A Polyurethane	Poor	Excellent
60A Polyurethane	Excellent	
PEEK	Excellent	Excellent
PET	Excellent	Excellent
PMMA	Excellent	
Polycarbonate	Not Recommended	Excellent*
Polypropylene	Good*	
PVC	Excellent	Excellent
Silicone	Good*	Poor
Stainless Steel	Good	Excellent
Tygon	Not Recommended	Excellent
FEP	Poor	Poor
Teflon	Poor	Poor

* With plasma treatment



About Biocoat

Biocoat, Inc. is based in Horsham, Pennsylvania with core competencies focusing on coatings development and licensing. The company works with its clients to tailor its HYDAK® and other coating technologies to specific surfaces, and acts as a support network for development and manufacturing throughout the project/product life cycle.