Medical – Braided Catheter

Braided catheter designs are generally used for applications that require high torque, push-ability, kink resistance and steer-ability. When designing a braid reinforced catheter it is crucial to consider the benefits of plating in the design phase to assure that the part meets the needs of the user.

The Challenge

ProPlate® wanted to test their theory that they could improve braided catheter performance through electroplating. The initial challenge for this project was working with a variety of polymer cores. Each material reacts different to the chemistries that they are exposed to throughout the Torq-Lok® process. The additional challenge was to set up a control to ensure good adhesion. Lastly, ProPlate® needed to be able to reproduce their Torq-Lok® process at production volumes for various braid configurations.

The Engineered Solution

ProPlate® worked to determine requirements for manufacturing. A set of trials were run with different core materials to determine the best fit. Next, the Torq-Lok® process had to be tailored for dependable adhesion. Lastly, custom tooling was developed to ensure consistent and repeatable outcomes for volume production. The outcome was successful and ProPlate’s® theory was proven correct. Preliminary testing of the Torq-Lok® process showed significant increased torque. Compared to traditional catheters there was a 30-66% increase in torque response, a 66% increase in torque to failure, and a 90° twist increase (kink resistance). Torq-Lok® also eliminated unraveling at the catheter ends. In addition to these enhancements Torq-Lok® also improved pushability, enabled control of the radial forces and minimized elongation, while maintaining flexibility. (Braided catheters used in this test: 4 french OD, 60 pic count, 12 inches long, 2-over-2-under-2 pattern, .001" X .004" wire. Results may vary.)

Enhanced Torque for Braided Catheters

- 30-66% Greater Torque Response
- 90° Twist Increase
- 66% Torque to Failure Increase
- Maintain Flexibility
- Control Radial Forces
- Minimize Elongation
- Eliminate Unraveling at Ends
- Atomically Bonded
- Increase Tensile Strength
- Kink Resistance
- Improved Pushability

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