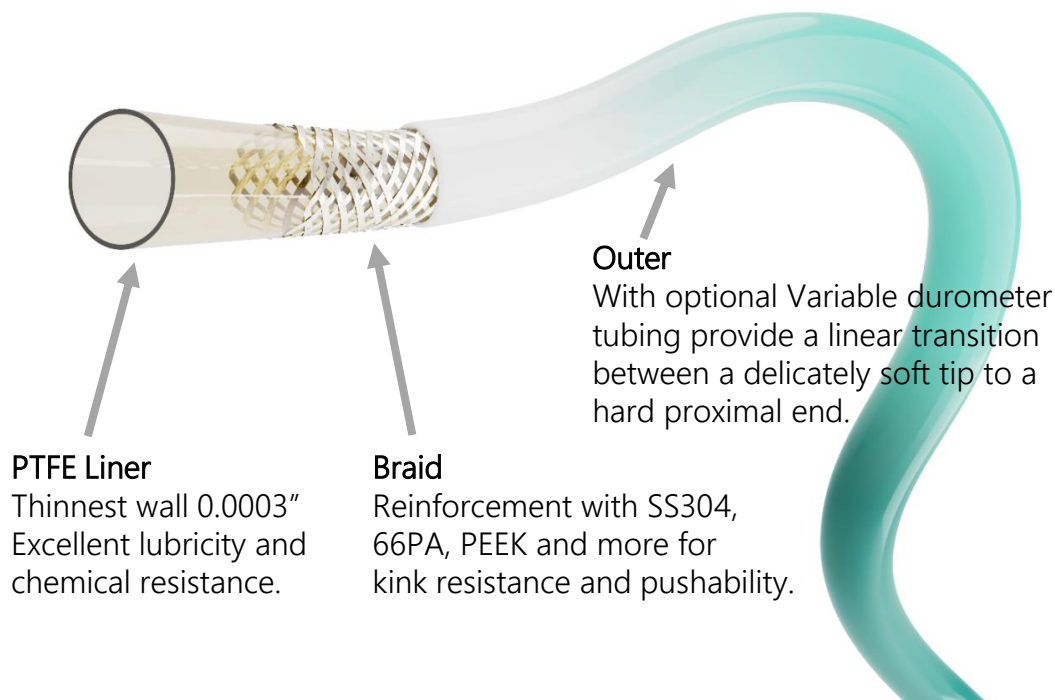


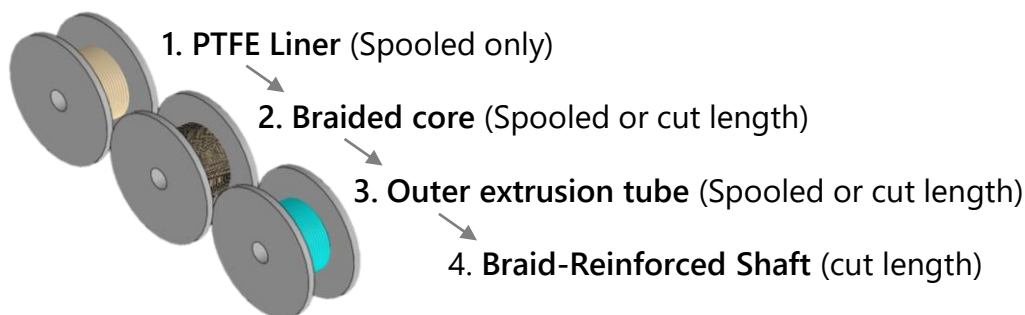
Braid-Reinforced Shaft



With our continuous spooling process ensuring exceptional consistency with tighter tolerance, we can design, develop, and manufacture engineered shaft for a complex catheter. The shaft is designed to balance flexibility, pushability, kink resistance, and more, with our capability in a wide range of materials, including PTFE, Pebax®, PA12, stainless steel, etc.

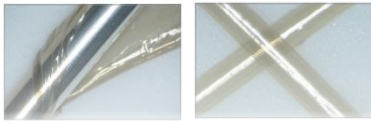
Shaft specifications

| | |
|-----------------------|---|
| Wall thickness : | Min. 0.003" (0.08mm) |
| Inner diameter : | 0.012" - 0.11" (0.3 – 2.8mm) |
| Outer diameter : | 0.018" - 0.14" (0.46 – 3.5mm) |
| Typical application : | Micro catheter, Delivery catheter |
| Medical field : | Neuro, Peripheral, Interventional Oncology |
| Supplied : | Continuous-spooled or cut length, details below |



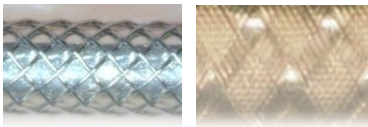
Detail specifications of each product

1. PTFE Liner



- Supplied on spool with silver-plated copper-core mandrel
- Tightly controlled wall tolerance: $\pm 0.00008''$ ($\pm 2\mu\text{m}$)
- Pin hole check on the entire length (Marking at the pin hole .)
- Inside diameter: 0.01" – 0.11" (0.3mm – 2.8mm)
- Optional etched or thermoplastic tie layer for adhesion

2. Braid



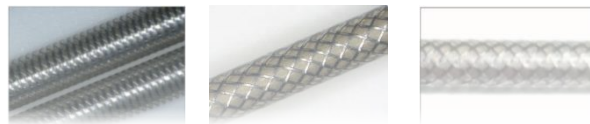
1 wire traveling over 2 wires then under 2 wires

1 wire traveling over 1 wire then under 1 wire

| | | | | | |
|----------------|---|--|--|--|--|
| Carrier number | 16 braid standard: 2 over / 2 under PPI:10-400 | 8 braid 1 over / 1 under PPI:10-400 | 48 braid standard: 2 over / 2 under PPI:30-1200 | 24 braid 1 over / 1 under PPI:30-1200 | |
| Material | SS304 | Min Limit Round wire 0.00165"/40um Flat wire 0.001"x0.002" / 25um x 50um | 1 or 2 wire each carrier | | |
| | Terminal treatment: laser weld or laser cut with marker | | | | |
| | Tungsten | Min Limit Round wire 0.0005"/10um Flat wire 0.0002"x0.0016"/ 7um x40um | 1 or 2 wire each carrier | | |
| | Terminal treatment: laser weld or laser cut with marker | | | | |
| | 66PA | Only 0.0007" x 7 wire / 18um x 7 wire | | 1 or 2 wire each carrier | |
| | LCP | Only 0.0007" x 6 wire / 18um x 6 wire | | 1 or 2 wire each carrier | |
| | PEEK | Min Limit Round wire 0.0020"/50um | Flat wire NA | 1 or 2 wire each carrier | |
| PPS | Min Limit Round wire 0.0022"/56um | Flat wire NA | 1 or 2 wire each carrier | | |
| PFA | Min Limit Round wire 0.0039"/100um | Flat wire NA | 1 or 2 wire each carrier | | |

3. Outer extrusion tube

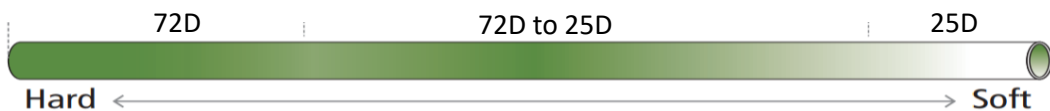
- ID/0.01"-0.11" (0.3-2.8mm)
- OD/0.013"-0.14" (0.33-3.5mm)
- Length/MAX 110" (2800mm)



- Material Nylon-Pebax[®] Poly Urethane-Pellethane[®] LLDPE ETFE-C-88AXB[®]
- Nylon-Vestamid[®] Poly Urethane-Tecothane[®] HDPE PFA-P-62XP[®]
- Nylon-Grilamid[®] Poly Urethane-TECOFLEX[®] LDPE EFEP-RP5000[®]
- Nylon-Rilsamid[®] Poly Urethane-Carbothane[®] PVDF-kyner[®]
- Poly Urethane-Isoplast[®] PEEK-381G[®] Etc...

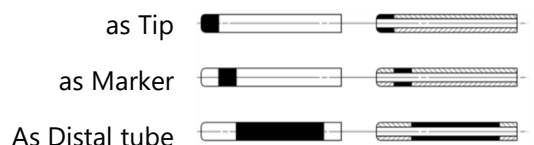
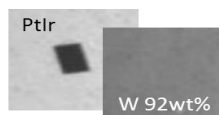
Option1: Variable durometer

With variable flexibility along their length, this tubing may be used where a proximal push and rotation along with a delicately soft tip is desirable to access the treatment area. For the benefit of seamless flexibility and streamlining process, used to replace manually connecting joint tubing



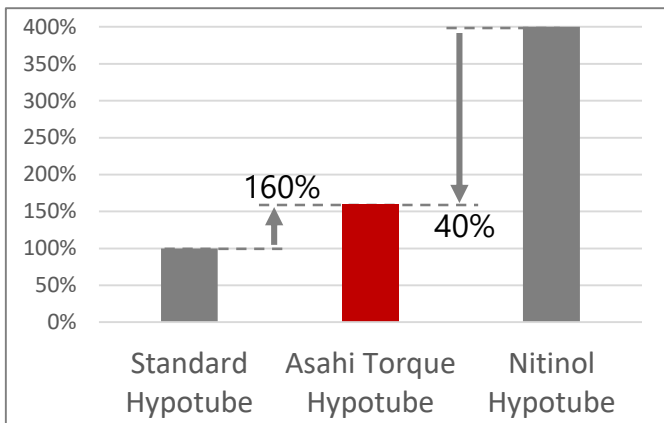
Option2: Radiopaque resin tube

This tubing may be used where tip, marker and distal tube. It shows excellent radiographic visibility comparable to Ptlr.



Comparison of mechanical property

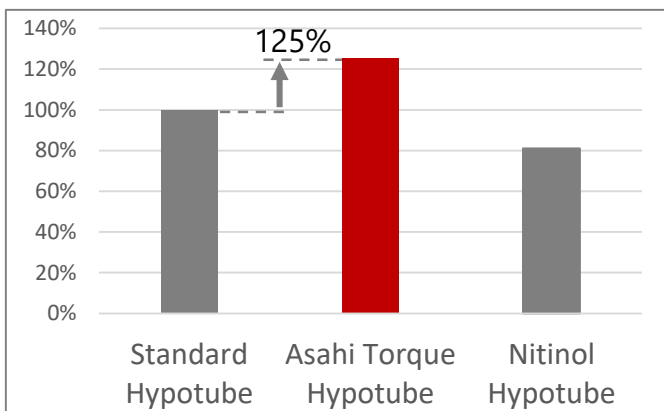
1. Shape recovery characteristics



Asahi's Torque Hypotube is superior to the standard one and less expensive than Nitinol. Also, it's not complicated to weld to other stainless material, makes it easy to design a catheter system combining different properties of stainless tubing.

*Relative percentage difference of maximum curvature without bending tendency, using same size as each one.

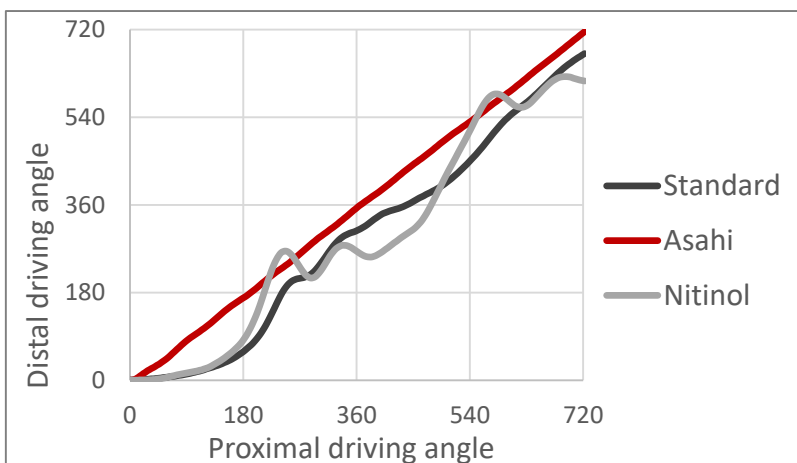
2. Hoop strength



Asahi's wire drawing technologies make it superior to others. Kink resistance is also better as well as Hoop strength.

*Relative percentage difference of strength, using same size as each one.

3. Torque response



Excellent torsional rotation capabilities with Asahi's proprietary torque technologies to realize advanced operability.

*Measurement in 2 loops torsion (R=50mm)