

Interface Catheter Solutions

Extruded Balloon Tubing

- Precise monitoring and control of the extrusion process
- Consistent mechanical properties, tested and certified
- Tight dimensional and concentric wall thickness tolerances
- Wide range of tubing materials and sizes
- Competitive lead times

Interface Balloon Tubing Extrusion Capabilities

Balloon tubing quality is the single most important factor in the balloon forming process. A narrow tolerance range for specific mechanical properties must be achieved and maintained from lot to lot. In addition, tubing extrusion parameters can change the mechanical properties of the finished product, so precise monitoring and control of the extrusion process is required. Interface Catheter Solutions addresses these issues head on.

We focus on source material quality, inspection, contamination filtering, and exacting balloon extrusion processes. Pellet cleansing, moisture removal and material filtration are needed to eliminate problem fish eyes, gels and other flaws and particulates.

As a result, we produce consistent and controllable performance characteristics, as well as significantly reduced visual flaws.

Custom Extrusion and Rapid Prototyping

Interface tubing exceeds the requirements needed to meet our clients' demanding balloon specifications. We've spent the past three years designing, developing and manufacturing balloon tubing for our own high-yield balloon manufacturing.

Our expert design teams specify highly-detailed extrusion processes (which include the selection of materials), and we employ custom pre- and post-extrusion processes that deliver unparalleled performance and predictable results.

In-house production capabilities include:

- Rapid response prototyping
- Verification of balloon tubing performance and manufacturability
- Standard balloon tubing with proven performance characteristics
- Comprehensive inventory of extrusion screws, dies and pins accommodate an extensive range of balloon tubing dimensional requirements

Precise Extrusion Monitoring and Control Process

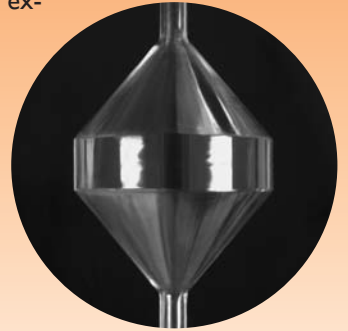
Interface Catheter Solutions examines every aspect of tubing output quality. We closely inspect polymer tubing material as it's received and take active steps to monitor early pre-extrusion processes.

Next, our extruder performs real-time computer controlled extrusion which continuously monitors tubing diameters and provides feedback for managing dimensional properties. This includes laser measured wall thickness and concentricity (during the extrusion process). Precise controls of the extruder pull speed, temperature, draw down ratio and balance is maintained and monitored. Mechanical properties are continually evaluated including tensile and elongation. The extrusion process delivers consistent results for inner and outer tubing dimensions and wall thickness accuracy.

The extrusion process includes:

- Our proprietary database of extrusion parameters
- Controlled linear draw down ratio and draw down balance
- Continuous in-line dimensional, visual, tensile and concentricity monitoring
- An extensive inventory of pin and die sets

With proven, repeatable processes and tooling, Interface Catheter Solutions offer customers lot-to-lot consistency and high-performance, reliable results.

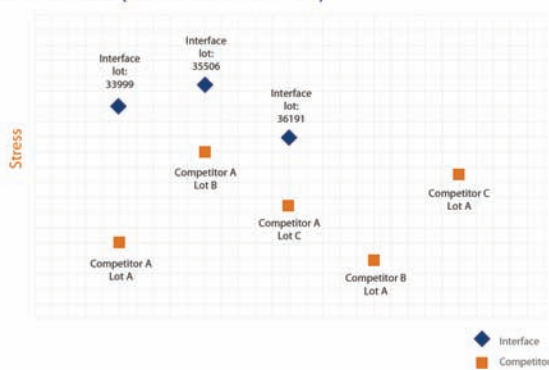


Interface Quality Commitment

Post-extrusion tubing properties are evaluated for tensile, elongation and dimensional quality. Each tubing lot comes with complete documentation, including certificate of compliance, dimensional and visual inspection reports, and tensile test reports.

Our entire production process – from initial inspections to extrusion and quality assurance – ensures shorter cycle and set-up times for the balloon forming process. We tailor everything to unique customer requirements and work to maintain repeatable results.

MAX STRESS (ICS vs. COMPETITOR)



Extrusion stress is a function of the material strength. Insufficient stress can cause decreased burst strength and premature fatigue failure. Decreased stress can be induced by the extrusion process (Ref. Molecular Weight Distribution)



*Interface offers
custom medical extrusion*

Balloon Tubing Specifications

Inner Diameter: Minimum of .010" (.25 mm)

Outer Diameter: .014" - .128" (.36 mm – 3 mm)

Wall Thickness: Minimum of .005" (.13 mm)

Tensile Strength: 25,000 – 60,000 psi

Concentricity: > 90%

Elongation: ± 25% absolute

Wall Thickness Tolerance: ± 0.0005" (± 0.012 mm)

Inner Dimensional Tolerance: ± 0.0005" (± 0.012 mm)

Material: Nylon, PET, Polyurethane, Pebax®, Rilsan® AESNO and blended materials

INTERFACE

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