

POLYESTER (PET) HEAT SHRINK PROCESSING GUIDELINES	
Recommended Uses	<ul style="list-style-type: none"> <li>▶ Braid termination</li> <li>▶ Insulation</li> <li>▶ Encapsulation, bundling and strain relief</li> <li>▶ Masking for coating procedures</li> <li>▶ Micro-hose clamps</li> <li>▶ Tube joining (variable stiffness catheters)</li> <li>▶ Balloon bonding</li> <li>▶ Shaft lamination</li> <li>▶ Tipping</li> <li>▶ General reflow (RX ports, braided shaft lamination, etc.)</li> </ul>
Sizing	<ul style="list-style-type: none"> <li>▶ Diameter range: 0.006" – 1.5" (0.15 – 38.1 mm)</li> <li>▶ Wall thickness range: 0.0001" – 0.004" (0.0025 – 0.10 mm)</li> <li>▶ Tight fit is best: 15% gap or less*</li> <li>▶ Shrink ratios: 1.1:1 up to 3:1**</li> </ul>
Reflow Settings	<ul style="list-style-type: none"> <li>▶ Material shrink temp range: 185°F to 374°F (85°C to 190°C)</li> <li>▶ Material melt temp: 473°F (245°C)</li> <li>▶ Recommended hot box range: 300°F to 450°F (149°C to 232°C)</li> </ul>
Material Compatibility	<p>PET releases easily from most common thermoplastics. However, some low-durometer urethanes tend to tack to the PET and may require a resting period (~1hr) or may not be compatible. Run test samples with these materials.</p>

\*NOTE: PET should be sized no larger than 15% above the maximum diameter of your part. Recommended approach is to use a heat shrink tube with a minimum expanded ID that just clears the maximum diameter of your part.

\*\*NOTE: Recovery >20% can be achieved by drawing or holding the ends of the heat shrink as it is heated.

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## UNIQUE PROPERTIES / ADVANTAGES OF PET

- ▶ Ultra-thin walls, ultra-high strength and high dielectric strength
- ▶ Extremely smooth surface finish of ID transfers to processed components
- ▶ Can be recovered at relatively low temperatures
- ▶ Axial shrinkage pulls components together
- ▶ Can be formed into custom parts by drawing/shrinking onto a shaped mandrel (conical, square, triangular, etc.)
- ▶ Can be “heat-set” so that it is stable up to a prescribed temperature
- ▶ Can be printed for shaft marking/indicating

## ADDITIONAL MECHANICAL / ELECTRICAL PROPERTIES OF PET

Tensile Strength	Very high (>20,000 PSI)
Electrical Insulation	<ul style="list-style-type: none"><li>▶ One of the highest dielectric strength ratings of any thermoplastic material</li><li>▶ Dielectric strength: &gt;4,000 V/mil (60Hz)</li><li>▶ Dielectric constant: 3.3</li><li>▶ Dissipation factor: 0.0025</li><li>▶ Volume resistivity: 10<sup>18</sup> Ohm-cm</li></ul>
Surface Finish	Ultra smooth, hard, glossy finish
Color/Clarity	Available in clear and a variety of opaque and transparent colors
Bondability	Can be bonded using a wide range of adhesives (surface treatment recommended: plasma etching, corona treating, or mechanical roughening)
Flex Fatigue	Very high
Biocompatibility	Meets USP Class VI and ISO 10993 requirements
Sterilization	Ethylene oxide, gamma irradiation, e-beam and autoclave (repeat autoclaving is not recommended)

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