Medical Monofilament for X-Ray and MRI Applications

Putnam Plastics Corporation, a leader in advanced extrusions for minimally invasive medical devices, has developed a proprietary process for manufacturing custom monofilament fibers up to 0.100 inches (2.54 mm) in diameter from performance materials such as nylon and polypropylene. Oriented, large diameter fibers offer substantial strength properties to replace metals in applications that require x-ray transparency or non-magnetic properties for magnetic resonance imaging (MRI) applications.

Large diameter medical monofilaments between 0.025 in. (0.64 mm) and 0.100 in. (2.54 mm) are generally not stock items from current suppliers of medical monofilaments. Custom manufacturing these sizes requires increased extrusion volume and substantial draw down for orientation. This can present challenges in controlling diameters, maintaining strength performance and managing setup time and costs. Putnam has overcome these challenges by developing a proprietary extrusion process for custom monofilament manufacturing that controls voids and diameters, resulting in more consistent product performance.

Putnam’s custom medical monofilament fiber capabilities range from 0.001 - 0.100 in. (0.025 -2.54 mm) in diameter and are available in a range of materials that include polypropylene, nylon, polyester, polyurethane and thermoplastic elastomers. These monofilaments are non-magnetic, transparent to x-rays, light weight and high strength, thus ideally suited for tension components used in minimally invasive devices and magnetic resonance imaging (MRI).

“The convergence of minimally invasive devices and medical imaging technologies

are increasing demand for non-metallic components made from high performance materials. These emerging device solutions are custom by definition," said Ray Rilling, General Manager at Putnam. "There is no off-the-shelf source for medical monofilaments with diameters greater than 0.025 in. (0.64mm). Our monofilament lines are built for custom medical applications, with capabilities for processing the broadest range of sizes and materials for device prototypes through production.

Putnam Plastics
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