Which Medical Injection Molding Technology Is Right for You?

To get started, read the statements and check the box that best describes what you need. Then, read the accompanying description of the injection molding technology below. When you are ready to discuss your project further, call us at (330) 786-3000.

- ☐ In what type of environment will the device be used? (see #1)
- ☐ My device could be susceptible to stress cracking. (see #2)
- ☐ I need a device that will be able to carry a heavy load without failing. (see #3)
- ☐ I need a plastic alternative to concrete, sheet metal, wood, or fiberglass. (see #3)
- ☐ My device has a complex geometry and will need to be cosmetically appealing. (see #4)
- ☐ My device will be used often and sometimes under significant force. I need it to have a "softer touch," for easier handling or gripping. (see #5)

#1: Injection Molding with a specialized shielding

Medical devices are exposed to a variety of chemicals, a broad spectrum of indoor lighting and a variety of other types of electromagnetic radiation including magnetic resonance (MRI) and electromagnetic interference (EMI). The injection molder can build in shielding characteristic to prevent breakdown or failure of the device? Similarly, some devices must be flame-retardant and meet certain regulatory safety compliances. These issues can all be addressed by the molder if details of the use environment are clear.

#2: Molding a Stress-Free Component

Medical parts that are subject to stress cracking and micro-cracking can be molded in ways that eliminate these risks. The part can be molded so that it is as stretch-free as possible. Mold-filling analysis is an effective technique for preventing micro cracking on the surface of a part. Stress analysis is essential to understand how the part functions within its environment. By identifying the type of stress -- high-tensile or compression, dynamic versus static -- the molder can greatly increase the component's usable lifespan.

#3: Structural Foam

Structural foam is optimal for a device that carries a heavy load. Structural foam parts can have additional ribbing and thicker wall to further increase their strengths. Structural foam can be used to create parts that are extremely sturdy but still very light. Structural foam is the best choice for high strength-to-weight ratio.

#4: Gas-Assist Molding

Gas-assist mold is the best choice for medical devices that have complex geometries but also need to be cosmetically appealing. These parts are strong and light but have smooth surfaces and can be painted or finished in other ways.

#5: Over Molding

Over molding is common in fabrication of medical parts and components. For instance, Ferriot over molds the handles on operating room lights. Medical instruments can be over molded as well in order to create a softer grip on a device that will be used with significant force applied by hand.