

Injection Pressure is a Key Variable in Injection Molding

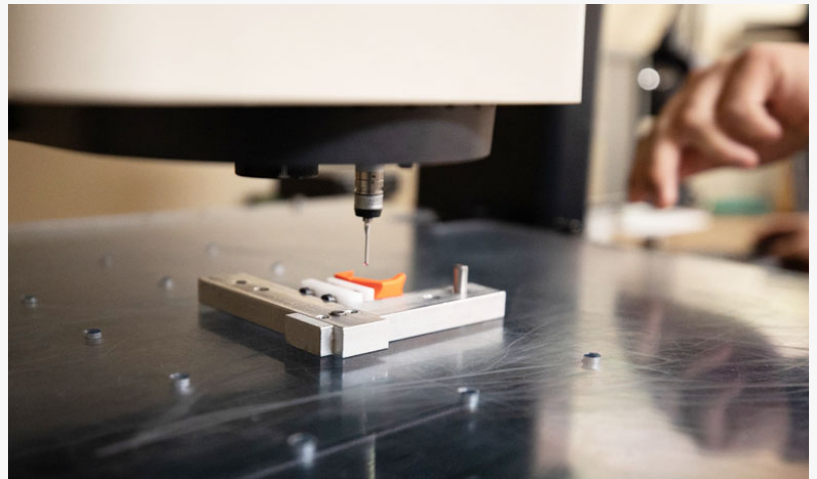
Injection pressure is a key variable in injection molding because it takes a significant amount of pressure to mold thermoplastic parts.

LINCOLN, NEBRASKA, USA, November 3, 2022 /EINPresswire.com/ -- Injection pressure is a key variable in injection molding. This is because it takes a significant amount of pressure to mold thermoplastic parts. Modern injection molding machines are capable of 30,000-40,000 psi injection pressure. The [amount of pressure required to injection mold a part](#) depends on many variables such as polymer grade, part geometry, runner system, tool temperature, polymer flow rate, etc.

Why do we need so much pressure? Molten thermoplastic polymers are viscous materials – this means that they will resist flowing due to internal friction. You can think of this as the difference between water and honey – honey is more viscous than water and is more difficult to flow. As an injection mold is filled through the sprue, runner, and cavity this resistance to flow builds and thus the injection pressure must also increase to maintain the same polymer flow rate. For a Scientific Molding Process, it is vital that the [injection molding machine](#) has sufficient injection pressure to maintain the desired



Plastic molding manufacturing plant



engineering for injection molding



injection molding under pressure

injection molding machine has sufficient injection pressure to maintain the desired

polymer flow rate during the filling stage. At HTI Plastics we monitor Fill Time on every cycle to ensure that the polymer flow rate is controlled.

Once the filling stage is complete the injection molding machine will automatically switch over to the packing stage of our Scientific Molding Process. During the packing stage the machine controls injection pressure rather than flow rate.

Packing at a controlled pressure allows the polymer flow rate to slow down as the cavity becomes full. Once the cavity is full the pack pressure will continue to slowly flow more material to the cavity to account for volumetric shrinkage as the polymer cools and solidifies. When developing an injection molding process, a person must be aware that molten polymers are compressible so there is pressure loss from the machine nozzle to the end of the cavity. Generally, the pack pressure setting is around half of the peak injection pressure that was observed during the fill stage, but it is unique to each molding process. A pack pressure setting too low may result in short shots or voids and too high may result in flash. At HTI Plastics we select a pack pressure profile that is optimized to handle the ebbs and flows of long-term production.

- Tyler Williams, Sr. Engineer

HTI Plastics manufacturing company, founded in 1985, entered into the plastics manufacturing business as a small plastics molder, with in-house engineering, and tool room, and we trace our product debut to the design and manufacturing of one of the first vaginal applicators. Today, our plastic pharmaceutical applicators are used in a wide range of treatments in both prescription and over-the-counter markets, and we've expanded into the design and production of custom and [proprietary thermoplastic injection-molded products](#) for a variety of pharmaceuticals, animal health, food packaging, sporting goods, and other custom products.

HTI Plastics has experienced remarkable growth since 1985, and after being acquired by PCE, Inc. our capabilities expanded significantly in plastics manufacturing. We know there are more innovations to be discovered, and we want to work with our customers to find new solutions for their needs. We are continually striving to make improvements to our proprietary products and are always working with our customers to bring new products to market.

As your needs evolve, HTI Plastics is using the latest technology to set the pace for the plastics



injection molding equipment and machines



pre-fill applicator manufacturing

injection molding and blow molding industries. Our high-speed precision machines are housed in our 95,000-square-foot, state-of-the-art molding facility. We practice continuous process improvement, and HTI Plastics keeps costs low and safety ratings high with our clean assembly environment, FDA and GMP compliance, computerized material distribution system, and on-site resin storage for easy access.

HTI Plastics understands that our employees are the key to our success, which is why we invest in their personal and professional well-being. We feel that providing our employees with training, cutting-edge technology and equipment, continued education, and modern facilities will equate to world-class service to our customers.

You'll see the difference when you work with HTI Plastics manufacturing company. We still believe that our phones should be answered by a real person, and our dedicated and experienced staff ensures you get personal assistance, fast order turnaround, and expedited customer care.

Ryan Lund

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