



Spiral Flow Molding

Most compounders of Polypropylene use Melt Flow Index as an indicator of the compounds flow. This test is usually performed at a given load and temperature. In the case of Polypropylene, the barrel is heated to 230 C and a 2.16 kg load is applied. The capillary insert that the material is extruded through is 0.082" in diameter.

There are several inherent problems with this test with reinforced and filled Polypropylenes. The shear rate is way too low to have any significance in either extrusion or injection molding. The value is single point data which does not show the polymer viscosity over a range of shear rates.

Shear rates are usually between 2 to 20 reciprocal seconds. The extrusion and injection molding shear rates are several thousand reciprocal seconds.

Plastics are non-Newtonian viscoelastic fluids. At a given temperature, their viscosity is dependent on their shear rate.

Rarely is anyone extruding or molding through an 0.082" orifice with a short flow length. Additionally, the blocking of the capillary entrance by glass fibers can cause a wide variance in MFI values.

The Spiral Flow Mold allows for the adjusting of injection speeds and pressures to determine flow lengths. The Spiral Flow Mold also has markings to determine flow distance. Channel width and depth can be adjusted to mimic the thin sections of your production tooling.

While Spiral Flow Molding is not perfect, it is a far better indicator of actual injection molding part performance.

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