Influence of process parameters on the weld lines of a micro injection molded component

The insufficient entanglement of the molecular chains and the stress amplification at the v-notch of a weld line compromise the mechanical strength of a plastic product, also in the micro scale. To investigate the influence of process parameters on the weld lines formation, a special micro cavity was designed and manufactured by µEDM (Electro Discharge Machining). Weld lines were quantitatively characterized both in the two-dimensional (direction and position) and three-dimensional range (surface topography characterization). Results showed that shape and position of weld lines are mainly influenced by mold temperature and injection speed.

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