

# **Optimization on parameter settings in determining warpage factors of a side-gated thin shallow part injection molding for PP, ABS & PC+ABS materials**

## **Abstract**

The injection molding process of thin shallow part requires several concerns in order to produce a quality output. In part of determining the best parameter settings, among other considerations that need to be taken are the types of plastic materials selected and the mold design. This research is performed to optimize the parameter settings for the injection molding process of thin shallow part using three different types of plastic materials; Polypropylene(PP), Acrylonitrile Butadiene Styrene+Polycarbonate(PC+ABS) and Acrylonitrile Butadiene Styrene (ABS). The parameters setting and warpage results are analyzed using Taguchi Method and optimized using Analysis of Variance (ANOVA) to identify the contribution of each parameter. The processes are simulated in three experiments corresponds to the three selected materials using Moldflow Plastic Insight (MPI) software. The result shows that the process of thin shallow part using ABS and PC+ABS materials are influenced by the packing time parameter by more than 85%. For PP material, the most affecting parameter is the packing pressure by 58%. For all three materials analyzed, it can be concluded that the warpage of the thin shallow part are most affected by both packing parameters; the packing time and packing pressure.