

## **Optimal process conditions of warpage with thin-shallow features molded with pin-point gating system**

### **Abstract**

Thin shallow plastic parts are widely produced using injection molding processes in producing varieties of components and applications. Warpage issue always happens in manufacturing thin shallow parts due to its uneven shape of the parts and also due to lack of knowledge in selecting the best injection molding parameters to produce with minimal warpage. Due to uncertainty of selecting the best parameters in reducing warpage issue, hence this study is performed purposely to determine the best parameters to be selected in manufacturing thin-shallow parts. Three types of polymer materials are selected for experimentations and the results are obtained using Taguchi Method and Analysis of Variance (ANOVA) and run through simulation software. All parameters are then compared with each other in recommending molding designers which is the best to be applied at mold design stage. Results from this research recommend polypropylene as the best parameter in order to obtain the minimal warpage of thin-shallow parts.

**Keywords;** Thin-Shallow Parts, Injection Molding, Warpage, Taguchi Method, ANOVA.