ABSTRACT

Optimization of a mold design is a process to get the ideal results from a product. Product failures often occur in the plastic industry due to short shot and shrinkage defects that cause production costs to increase. Both defects occur due to the less than optimal cooling process. The purpose of this study is to design an optimal cooling system and runner system for top T dost electrical installation products.

The 2016 Autodesk Moldflow Insight software is used to simulate the cooling and runner system design to predict short shot and shrinkage responses and optimize product quality. The first process is to design several cooling layouts and runner systems, then simulate the design into Moldflow to find out the best design in reducing defects. The second process is analyzing optimal process parameters using the S / N Ratio and ANOVA analysis methods. The last process is to conduct a confirmation experiment to find out the process parameters that are stated to be optimal by the S / N Ratio analysis which can actually reduce short shot and shrinkage on top T dost products.

Optimization of the cooling system design and runner system using the Taguchi method proved to be able to minimize the occurrence of short shot and shrinkage on top T dost products using injection pressure 100 MPa process parameters, mold temperature 30 ˚C, melt temperature 200 200C, injection time 0.6 seconds in the shrinkage response to 11.13%. While the optimal process parameters for reducing short shot are injection pressure 100 MPa, mold temperature 60 ˚ C, melt temperature 200 ˚ C, holding time 4 seconds produces a cavity weight value of 3.519 grams, the optimization results are better than initial condition.

Keywords: *Short Shot, Shrinkage, Cooling, Runner, Moldflow Insight*