ABSTRACT

The purpose of this study was to find out the optimal parameter of process FDM by generating part dimensional accuracy using HIPS as extruded material. Dimensions products is one of the important quality characteristics in prosses FDM. Due to the HIPS polymer is often used as a support part for other materials of the same specification, therefore the design of this parameter is proposed for the printing of good support parts thus minimizes the aesthetic impact on end-product. To achieve the object of this study conducted by making the prototype of the cube and half sphere specimens which is used for dimensional accuracy testing. For the optimization of process parameters, the method used in this study is taguchi method by analyzing four specified controlled parameter such as extrusion temperature, bed temperature, print speed and layer thickness with different levels. Experimental results indicate that optimal factor settings for each performance characteristic of cube test specimen is using extrusion temperature 240ºC, bed temperature 100ºC, print speed 40mm/s and the layer thickness 0,3mm. While the optimal factor settings of half sphere is using extrusion temperature 230ºC, bed temperature 100ºC, print speed 50mm/s and the layer thickness 0,3mm. With this optimum setting has done a better improvement than the previous size.

Keywords: *Fused Deposition Modeling (FDM), Taguchi Method, Optimization Parameter, HIPS, Dimensional Accuracy*