

Optimization of Abs 3d-Printing Method And Parameters

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Abstract

The paper presents research on the method of 3D-printing ABS (Acrylonitrile butadiene styrene). Series of samples were 3D-printed in FDM (Fused Deposition Modelling) technology with variable parameters. The influence of following parameters has been checked: temperature of printing and infill density. Moreover, the material properties of raw, unprocessed ABS have been inspected. The tensile strength of specimens and Young's modulus have been determined in a static tensile test. Tests were carried out in compliance with the ASTM D638-14 standard. Obtained results were then compared with the material datasheet. Optimum printing method has been defined. The carried out research resulted in optimizing the printing method for ABS vehicle parts applied in Silesian Greenpower electric car. The car has been developed by students of the Silesian University of Technology in Gliwice, Poland as an interfaculty students' project. Results of the tensile test research have been analysed and discussed and conclusions have been presented in the following article.

Keywords: 3D-printing, ABS, FDM, filament, tensile test