INVESTIGATING THE EFFECT OF PROCESS PARAMETERS ON MECHANICAL AND METALLURGICAL PROPERTIES OF FRICTION WELDED REINFORCED DISSIMILAR PLASTIC MATERIALS

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ABSTRACT

Friction welding is one of the established processes for joining of similar as well as dissimilar polymer/plastics and metals. In past 20 years number of application in different areas using this process has been highlighted. But hither to no work has been reported on properties of friction welded joints of dissimilar polymer/plastic materials after reinforcement with metal powder. In the present work an attempt has been made to perform friction welding of dissimilar plastic based materials by controlling the melt flow index (MFI) after reinforcement with metal powders. The present study of friction welding for dissimilar plastic was performed on Lathe by considering three input parameters (namely: rotational speed, feed rate, and time taken to perform welding). Investigations were performed to check the influence of process parameters on mechanical and metallurgical properties (like: tensile strength, Shore D hardness and porosity at joint). The process parameters were optimized using Minitab software based on Taguchi L9 orthogonal array and results are supported by photomicrographs