Optimization of warpage defect in injection moulding process using ABS material

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ABSTRACT

Plastic injection moulding process produces various defects such as warpage, sink marks, weld lines and shrinkage. The purpose of present paper is to analyze the warpage defect on Acrylonitrile Butadiene Styrene (ABS) for selected part using FEA simulation. The approach was based on Taguchipsilas Method and Analysis of Variance (ANOVA) to optimize the processing parameters namely packing pressure, mould temperature, melt temperature and packing time for effective process. It was found that the optimum parameters for ABS material are packing pressure at 375 MPa, mould temperature at 40degC, melt temperature at 200degC and packing time at 1 s. Melt temperature was found to be the most significant factor followed by packing time and mould temperature. Meanwhile, packing pressure was insignificant factor contributing to the warpage in present study.

KEYWORDS

Injection moulding; warpage; FEA simulation; Taguchi's Method; ANOVA

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