



WATER ASSISTED INJECTION MOLDING PROCESS PARAMETERS OPTIMIZATION OF POLYPROPYLENE BY EXPERIMENTAL DESIGN OVERALL EVALUATION CRITERIA (OEC) METHOD

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In this study optimization of Taguchi experimental design objective function was carried out to find out the optimum conditions in water assisted injection molding process of Polypropylene. To produce the specimens, a branched pipe mold with an overflow cavity and water injection nozzle was designed and manufactured. Considering the different objective functions in this process, optimization of Overall Evaluation Criteria (OEC) method was used. The bigger-the better quality characteristics for objective function of OEC was applied. In present research the effect of holding time, mold temperature and delay time as control variables, was investigated on water penetration and shrinkage of specimens. A Taguchi M₉ orthogonal standard array was used for experimental design and the analysis of variance (ANOVA) method was considered for statistical analysis. The ANOVA results indicated that the holding time was the most affective parameter. Results also showed that delay time and mold temperature affected the quality characteristics respectively.