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## Use of Taguchi Robust Design to Optimize Rubber Glove Process (Conference Paper) (Open Access)

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## Abstract

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In this paper, Taguchi concept of robust process design and the classical statistical experimental design methodology are integrated for improving both the product quality and efficiency. It is a systematic method of optimizing a production process, and is concerned with productivity enhancement and cost effectiveness. The aim of this study is to investigate the effect of the inputs on the outputs in the presence of a noise factor and also to choose the best level settings of the control factors that will maximize the mean and minimize the variation in the glove's quality characteristics at minimal cost. The quality characteristic of the rubber glove that is considered in this study was the tensile strength. Taguchi L16, the orthogonal array is employed to run the experiments. The analysis of variance (ANOVA) and the signal-to-noise (S/N) ratio were performed. The BG interaction was identified as the important mean effect. However, factor (B), the latex temperature was not affected by factor (G), oven temperature after coagulation dip when it was at high but enhanced the strength when both were set at low. Factor (A), curing temperature profile affected both the mean and the process variability. The effect of humidity (H) appeared insignificant using ANOVA, but was significant in S/N ratio for the mean tensile strength. The preferred optimal setting were: $A_2 B_1 C_1 D_1 F_2 H_1 G_1$.


## SciVal Topic Prominence

Topic: Warpage | Plastics Molding | Injection Mold

Prominence percentile: 92.420

## Author keywords

ANOVA | design of experiments | interaction | larger the best | noise | Robust design | signal to noise

## Indexed keywords

Engineering controlled terms: Cost effectiveness | Product design | Quality control | Rubber | Signal to noise ratio | Tensile strength

Engineering uncontrolled terms: Curing temperature | Process Variability | Productivity enhancement | Quality characteristic | Robust process design | Signal to noise (S/N) ratios | Statistical experimental design | Taguchi robust design

Engineering main heading: Analysis of variance (ANOVA)


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