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Noise Variables Transformation of a Mixture Problem

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Abstract: In a mixture problem, the proportions of the components must sum to a unit. However, the quality of the products depends not only on the correct combination of these proportions. But also, on the right conditions of the manufacturing process factor that can be controllable or noise. This study proposed a direct methodology, which uses a transformation of the information integrating noise to the response, with the purpose of working only with mix and process variables. Also, it optimizes the quality characteristic of the product. The analysis results are then verified with respect to the ones obtained by the traditional methodology thus obtaining less variability. Furthermore, this transformation allows us to analyze the mean, the homogenized variance, the dual response, the cpk and cpkm.

Keywords: Mixture Designs, Robust Parameter Design, Dual Response, Cpk, Cpkm