

# **Application of an experimental design of D-optimum mixing based on restrictions for the optimization of the pre-painted steel line of a steel producer and marketing Company**

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## **Abstract**

The inherent need to optimize production processes allows the generation of new knowledge that allows companies to achieve new horizons in terms of efficient management of productive resources, this study allowed to achieve a new advance in the efficiency of the pre-painting process, where the search focused on the maximization of the hardness of the paint on the metallic surface and the minimization of the percentage of solids in the paint, and by means of the application of a D-Optimo experimental design based on restrictions, it was determined that the Process variables: Monomer, Interlacer and Resin have a statistically significant relationship both with the hardness of the paint layer and with the percentage of solids in the paint. The optimum hardness values achieved are above the restriction imposed by the company to maintain the Knoop hardness value above 25, in the same way it was possible to achieve that the percentage of the solids found is below 30%, This being the minimum value desired by the leaders of the process.

## **keywords**

D-optimo experimental design, Optimization, Pre-painted process