

Statistical evaluation of hard-to-measure surfaces

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The main goal of this article will be to find ways to statistically evaluate hard-to-measure surfaces. First, the basic characteristics and rules of surface quality will be described according to the standards ČSN EN 4287, ČSN EN 4288, and ČSN EN ISO 2517-2. Subsequently, the measured values of the roughness parameter Sa (arithmetic average of the height of the measured surface) and Sz (the maximum height of the measured surface) will be compared and evaluated which is the best. [1]

These parameters will be described and measured on aluminum plates on which the test surfaces were laser engraved. To evaluate the best surface, statistical methods will be used, such as the EDA methodology (exploratory data analysis), hypothesis testing with normality and outlier tests, and last but not least, cluster or cluster analysis, which compared the similarity of the measured data. [2] This article aims to show the possibilities of surface quality assessment using 3D surface roughness parameters, which are not often used in practice.

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[2] Meloun, M.; Militký, M.; Forina, M.; Chemometrics for Analytical Chemistry; Ellis Horwood: New York (1992) ISBN 9780131263765