Corrosion properties of EN 1.4404 (316L) stainless steel with different applied surface treatment, were studied in NaCl solution using cyclic polarization. Observed properties were related to the specific topography of each surface by scanning electron microscopy and cross-section analysis. Average roughness was measured to evaluate the usability for this parameter to be used in assessment of corrosion resistance. Increased surface roughness and the existence of crevices resulted in overall deterioration of corrosion resistance, whereas more smooth and level topographies displayed general improvement. By analyzing the characteristic geometry of the typographies produced, the correlation between the varying corrosion properties and surfaces is determinable. In continuation hereof, the utilization of average roughness values ($R_a$) as an isolated parameter, were found not to be sufficient for the assessment of corrosion resistance. Critical surface geometries with large impact on corrosion properties is not conveyed adequately by $R_a$, and thereby prevents sufficient differentiation between the actual surface properties.

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