

Influence of texturing parameters on surfacemodification of UNS S32101 duplex steel

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The application of laser texturing aims to modify the surface without changing its chemical composition. These alterations can be evaluated through mechanical, physical or chemical tests. Texturing can be applied to improve efficiency in industrial processes, such as the flowability of materials, by applying laser texturing to the internal surfaces of components. This work aims to evaluate the influence of texturing parameters in the flow process of industrial batchers. UNS S32101 lean duplex stainless steel (LDSS) samples were used for the tests. For laser texturing of the surfaces, laser of Yb was used, with a wavelength of 1064 nm (infrared), using the scanning speed of 140 mm/s and pulse duration of 150 ns. Two sets of textured samples were produced: with a frequency of 50 kHz and 2 kHz. In both frequencys, the power(%) was set at 100, 60 and 20. The effect of texturing was analyzed through microstructural characterization with tests of contact angle, roughness and scanning electron microscopy.