Nanohardness Study of Steel AISI 316L After Various Surface Mechanical Machining Processes

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Abstract. A mechanical machining of a construction materials surface is important for properties as hardness, abrasion resistance as well as corrosion resistance. This research observes nanohardness of four different mechanically machined samples of steel AISI 316L as a first step in the optimizing a surface structure in term of mechanical and corrosive properties. The samples were: a) grinded and polished, b) processed by standard industrial machining and c) treated by supercritical CO2 in fluid state (scCO2) with or without minimum quantity lubricant (MQL). The preliminary results showed that the difference between the scCO2 and scCO2+MQL was not proved, although the scCO2 method seems to be the most effective in term of the mechanical properties conservation of the affected surface layers.