

Microstructural Analysis of the deformed 316Ti and 904L StainlessSteel

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Abstract : ch are used in the petroleum industry. The two steels have been cold rolled with two widthreductions of 50 and 95%. Results of the microhardness measurements performed on the twosteels indicated that the 316L stainless steel is harder than the 904L stainless steel. In addition,the higher the deformation amount the higher the microhardness values for the two steels. X-raydiffraction analysis based on the Rietveld refinement method has been conducted and revealed adecrease of the size of the coherent domain of diffraction as a function of the deformation. Thisdecrease is accompanied by an increase of the dislocation density. A correlation withmicrohardness and a comparative discussion between the two steels is presented in this sudy.

Keywords : Cold rolling, 316Ti, 904L, Micro-hardness, Dislocation density.