Effet de déformation par pliage sur le comportement à la corrosion de l'acier duplex 2205

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Abstract: The effect of cold deforming by folding on the microstructure and corrosion behavior of austenoferritic stainless steel (duplex 2205) has been studied in this work. Duplex 2205 offers a good compromise between the toughness of austenitic steels and the mechanical and corrosion resistance of ferritic steels. We deformed the duplex steel by bending it at different levels (12, 25, 40 and 50%). The effect of the deformation on the microstructure and mechanical properties was investigated by the various experimental technics; microhardness; metallography, SEM. The relationship between increasing deformation and corrosion resistance was investigated by electrochemical tests. The results showed that cold working modifies the internal microstructure of both phases and that high cold forming rates have a detrimental effect on the corrosion resistance of duplex steels.

Keywords : deformation, duplex, corrosion, Austenite, Ferrite, Resistant, Folding