Contribution ID : **95** Type : **not specified**

Microstructural changes, corrosion response and their correlation with the mechanical properties of a martensitic stainless steel subjected to a prolonged, high-temperature annealing process.

Content

The present work aims to perform heat treatments of quenching and tempering at temperatures higher than conventional ones in a martensitic stainless steel and analyze the resulting microstructure, the mechanical properties of the material and evaluate the anticorrosive capacity of the material in an acidic medium. It was obtained that the initial microstructure of the steel was predominantly martensitic and ferrite, this because the chemical composition allows the formation of said microconstituents in the conditions in which the heat treatments were carried out. As the temperature and annealing time increases, the microstructure undergoes changes such as the change in size of the microconstituents, increase in size and formation of metallic inclusions, which improves the ductility of the material, but reduced its hardness in cases of higher temperatures, being the microstructure at 700 ° C for 6 hours showed a higher density of ferrite due to the growth of these, which was the highest temperature and residence time analyzed. The specimens tempered at higher temperatures and for longer showed a lower corrosion rate, due to the greater amount of ferrite, which is more resistant to corrosion. However, a specimen tempered at 700 ° C for 6 hours showed a greater susceptibility to corrosion. A possible answer is that the area where the electrochemical tests were carried out presented a microstructure more susceptible to corrosion, due to the sensitization of the steel and / or the final microstructure.

Tipo de presentación

Póster

Primary author(s) : Mr. TAPIA ORTEGA, Pablo (Universidad Nacional Autonoma de México, Facultad de Quimica)

Co-author(s) : Dr. CAMPILLO ILLANES, Bernardo Fabian (Facultad de Quimica, UNAM); Dr. FLORES CEDILLO, Osvaldo (Facultad de Quimica UNAM); Prof. FLORES ALVAREZ, Jose Fernando (Facultad de Quimica UNAM)

Presenter(s) : Mr. TAPIA ORTEGA, Pablo (Universidad Nacional Autonoma de México, Facultad de Quimica)