

# ENERGY AND MATERIALS RESEARCH

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## Study of corrosive behavior of ASTM A335 P92 steel exposed to simulated refinery environments

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This work studies the corrosive behavior of ASTM A335 P92 steel in simulated refinery environments:  $O_2$ - $N_2$ - $H_2O$  and  $O_2$ - $H_2O$ . Within the working conditions were selected four working temperatures: 450, 550, 650 and 750°C; also five service times: 1, 20, 50, 100 and 200 hours. It was possible to observe the microstructural changes produced in the steel through the corrosive environments, as well as changes in physical properties such as hardness and microhardness. Through the kinetic study of the material a characteristic parabolic behavior could be observed. By means of the characterization technique of scanning electron microscopy (SEM), it was possible to analyze the morphological behavior of the layers; As well as by the technique of energy dispersive X-ray spectrometry (EDS), the chemical compositions of the elements present in each of the formed layers were determined. In addition, X-ray diffraction (DRX) and X-ray photoelectron spectroscopy (XPS) techniques were analyzed on this material to identify corrosion products formed.

### Biography

Juan Orozco is a Chemical Engineer and is currently studying Master's degree in Corrosion of Materials exposed to high temperatures at the Industrial University of Santander, Colombia. His research focuses on the behavior of ASTM A335 P92 steel in corrosion atmospheres, specifically in refinery atmospheres. He has a great interest in the science of materials engineering and from his field of research seeks to contribute to the scientific community in the study of the corrosive phenomena and changes that occur in this type of real environments in the petrochemical industries.

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