Corrosion mechanisms in ADI parts

A.D. Sosa[1,2], C. Rosales[1], R. Boeri[1,2] and S.N. Simison[1,2]
1 School of Engineering, Universidad Nacional de Mar del Plata, Mar del Plata, Argentina
2INTEMA, UNMdP – CONICET, Mar del Plata, Argentina

The objective of this research is to study the influence of microstructure and grinding on the corrosion resistance of ADI in salt water. Immersion and electrochemical tests were performed on samples austempered at two different temperatures and ground. The results indicate that the dissolution rate increases as the nodule count does, and depends on the microstructure and on the surface changes introduced during grinding. A porous layer is formed on ADI corroded surface due to the selective dissolution of ferrite, and a preferential dissolution of the matrix around graphite is noticeable. Ground surfaces are less corrosion resistant than polished ones.

Keywords: Austempered ductile iron, Corrosion, Ausferrite, Plastic strain.

Article available in the International Journal of Cast Metals Research