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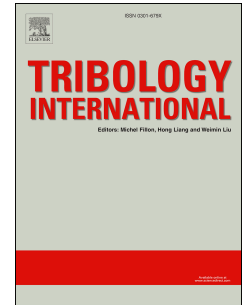
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Tribocorrosion Behavior of Plasma Nitrided Hardox Steels in NaCl Solution**İlyas HACISALİHOĞLU^a, Fatih YILDIZ^{a*}, Ayhan ÇELİK^b**^a *Erzurum Technical University, Department of Mechanical Engineering, Erzurum, Turkey.*^b *Atatürk University, Department of Mechanical Engineering, Erzurum, Turkey*^{*} *Corresponding Author: F. Yıldız (Tel: +90442 666 2527 ext. 2070, Fax: +90442 666 2537, fatih.yildiz@erzurum.edu.tr)***Abstract**

In this study, the effect of plasma nitriding treatment on structural, wear, corrosion and tribocorrosion properties of different type Hardox steels (400, 450 and 500 type) was investigated using X-ray diffraction, microhardness tester, scanning electron microscope, 3D profilometer and reciprocating wear tester coupled with electrochemical corrosion cell. The plasma nitriding treatments were performed in 50%N₂-50%H₂ gas mixture at 500°C for 1 and 4 h. The tribological tests were carried out in dry and open circuit potential conditions at 10 N normal force in 3.5% wt. NaCl aqueous solution at room temperature. Nitriding changed the electrochemical degradation mechanism of surface to pitting corrosion. Plasma nitriding time of 1 h significantly improved the corrosion and wear resistance of the Hardox steels.

Keywords: Plasma nitriding, Tribocorrosion, Wear, Hardox steel

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