

The Tribological Behaviors of Vacuum Gas Nitriding Titanium and Steel Substrates at Different Process Temperatures

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Abstract : Metal nitrides show excellence tribological properties and they used for especially on machine parts. In this work, the vacuum gas nitriding proses were applied to the titanium, D2 and 52100 steel substrates at three different proses temperatures (500 °C, 600°C and 700 °C). Structural, mechanical and tribological properties of the samples were characterized. X-Ray diffractometer, scanning electron microscope and energy dispersive spectroscopy analyses were conducted to determine structural properties. Microhardness test and pin-on-disc wear test were made to observe tribological properties. Coefficient of friction, wear rate and wear traces were examined comparatively. According to the test results, the process temperature very effective parameter for the vacuum gas nitriding method.

Keywords : gas nitriding, tribology, wear, coating

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