

Accepted Manuscript

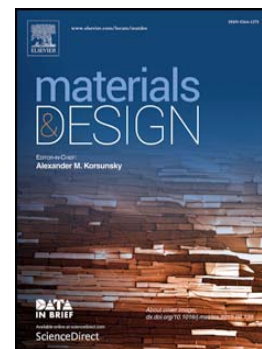
Hot corrosion behaviour of Ti-6Al-4 V modified by ultrasonic shot peening

Sanjeev Kumar, K. Chattopadhyay, G.S. Mahobia, Vakil Singh

PII: S0264-1275(16)31040-1
DOI: doi: [10.1016/j.matdes.2016.07.133](https://doi.org/10.1016/j.matdes.2016.07.133)
Reference: JMADE 2137

To appear in:

Received date: 18 April 2016
Revised date: 27 July 2016
Accepted date: 28 July 2016



Please cite this article as: Sanjeev Kumar, K. Chattopadhyay, G.S. Mahobia, Vakil Singh, Hot corrosion behaviour of Ti-6Al-4 V modified by ultrasonic shot peening, (2016), doi: [10.1016/j.matdes.2016.07.133](https://doi.org/10.1016/j.matdes.2016.07.133)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Hot corrosion behaviour of Ti–6Al–4V modified by ultrasonic shot peening

Sanjeev Kumar, K. Chattopadhyay, G. S. Mahobia and Vakil Singh

Department of Metallurgical Engineering, Indian Institute of Technology (Banaras Hindu

University), Varanasi 221005, India

Corresponding author: sanjeevphy85@gmail.com

Contact no.: +919450927709

Fax: +915422369478

Abstract

Nanostructure of 17 to 25 nm was developed in surface region of the titanium alloy Ti–6Al–4V, up to the depth of $\sim 30\text{ }\mu\text{m}$, by ultrasonic shot peening. The effect of nanostructured surface was studied on corrosion behaviour of this alloy, in three different salt mixtures: 100 wt.% NaCl, 75 wt.% Na₂SO₄ + 25 wt.% NaCl, and 90 wt.% Na₂SO₄ + 5 wt.% NaCl + 5 wt.% V₂O₅; at 400, 500 and 600 °C. Specimens were subjected to heating and cooling cycles with different hold periods in three blocks for total exposure of 100h. The main corrosion products formed in the different salt mixtures were characterized as TiO₂, Al₂O₃, V₂O₃, Ti₂O₃ and V₂O₅ oxides. The corrosion rate was found to be lower in the ultrasonic shot peened specimens as compared to those in the non-shot peened ones.

Keywords: Nanostructure, Ti–6Al–4V, ultrasonic shot peening, salt mixture, corrosion rate.

Download English Version:

<https://daneshyari.com/en/article/7217752>

Download Persian Version:

<https://daneshyari.com/article/7217752>

[Daneshyari.com](https://daneshyari.com)