## Accepted Manuscript

Microstructural evolution of friction stir welded SAF 2205 duplex stainless steel

S. Emami, T. Saeid, R. Azari Khosroshahi

PII: S0925-8388(17)34506-1

DOI: 10.1016/j.jallcom.2017.12.310

Reference: JALCOM 44396

To appear in: Journal of Alloys and Compounds

Received Date: 17 April 2017

Revised Date: 3 December 2017

Accepted Date: 25 December 2017

Please cite this article as: S. Emami, T. Saeid, R.A. Khosroshahi, Microstructural evolution of friction stir welded SAF 2205 duplex stainless steel, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2017.12.310.

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.



## Microstructural evolution of friction stir welded SAF 2205 duplex stainless steel

S. Emami, T. Saeid<sup>\*</sup>, R. Azari Khosroshahi

Faculty of Materials Engineering, Sahand University of Technology, Tabriz, Iran.

## Abstract

Microstructure evolution of SAF 2205 duplex stainless steel (DSS) was investigated in friction stir welding (FSW) process at welding speed of 50 mm/min and rotational speed of 400 rpm. Microstructural observations were carried out using optical microscopy and scanning electron microscopy equipped with electron back scattered diffraction (EBSD) system. The results showed that grain refinement took place and simple shear texture components developed in each constituent phases of ferrite and austenite in stir zone (SZ). Beside the simple shear texture components, common recrystallization texture components of cube ( $\{001\}<100>$ ), Goss ( $\{011\}<100>$ ), S ( $\{123\}<634>$ ), P ( $\{011\}<122>$ ), and Q ( $\{013\}<231>$ ) were recognized to exist in the austenite phase. These results confirmed the occurrence of the continuous dynamic recrystallization (CDRX) in both phases as well as static recrystallization (SRX) in austenite phase.

Keywords: Stainless steels, Shear texture, Continuous dynamic recrystallization, Static recrystallization.

## 1. Introduction

Duplex stainless steels (DSSs) are considered as a group of stainless steels, usually supplied with a mixed microstructure of approximately equal proportions of austenite and ferrite [1-2].

<sup>\*</sup>Corresponding Author. Tel: +98- 41- 3345 9435 E-mail address: saeid@sut.ac.ir (T. Saeid).

Download English Version:

https://daneshyari.com/en/article/7994121

Download Persian Version:

https://daneshyari.com/article/7994121

Daneshyari.com