

Accepted Manuscript

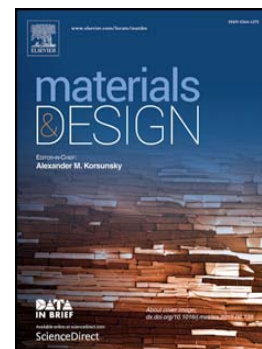
Microstructure and mechanical properties of medium-carbon steel bonded on low-carbon steel by explosive welding

C. Borchers, M. Lenz, M. Deutges, H. Klein, F. Gärtner, M. Hammerschmidt, H. Kreye

PII: S0264-1275(15)30573-6
DOI: doi: [10.1016/j.matdes.2015.09.164](https://doi.org/10.1016/j.matdes.2015.09.164)
Reference: JMADE 734

To appear in:

Received date: 15 July 2015
Revised date: 28 September 2015
Accepted date: 29 September 2015



Please cite this article as: C. Borchers, M. Lenz, M. Deutges, H. Klein, F. Gärtner, M. Hammerschmidt, H. Kreye, Microstructure and mechanical properties of medium-carbon steel bonded on low-carbon steel by explosive welding, (2015), doi: [10.1016/j.matdes.2015.09.164](https://doi.org/10.1016/j.matdes.2015.09.164)

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.

Microstructure and mechanical properties of medium-carbon steel bonded on low-carbon steel by explosive welding

C. Borchers^{1*}, M. Lenz^{1,2}, M. Deutges¹, H. Klein², F. Gärtner³,
M. Hammerschmidt³, H. Kreye³

¹*Institut f. Materialphysik, Universität Göttingen, Friedrich-Hund-Platz 1, D-37077 Göttingen, Germany*

²*GZG Abt. Kristallographie, Universität Göttingen, Goldschmidtstr. 1, D-37077 Göttingen, Germany*

³*Department of Mechanical Engineering, Helmut Schmidt University of the Federal Armed Forces, D-22039 Hamburg, Germany*

Abstract

The mechanical properties of medium-carbon steel bond onto low-carbon steel by explosive welding are correlated to the microstructure of the steels. In the investigated weld there is a wavy interface including melt pockets exhibiting ultra-high hardness. It is found that the bonding is of high quality, reflected by the fact that in tensile testing with the bonding zone perpendicular to the tensile direction fracture happens in the medium-carbon steel.

Keywords: Medium-carbon steel; low-carbon steel; transmission electron microscopy; explosive welding; severe plastic deformation.

*Corresponding author.

Tel.: +49-551-39-5584;

fax: +49-551-39-5012.

E-mail address: chris@ump.gwdg.de

Download English Version:

<https://daneshyari.com/en/article/7219711>

Download Persian Version:

<https://daneshyari.com/article/7219711>

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