

Accepted Manuscript

Title: Effect of shielding gas on the metal transfer and weld morphology in pulsed current MAG welding of carbon steel

Authors: Yong Zhao, Xiaojian Shi, Keng Yan, Guoqiang Wang, Zhanjun Jia, Yuxiang He



PII: S0924-0136(18)30293-0
DOI: <https://doi.org/10.1016/j.jmatprotec.2018.07.003>
Reference: PROTEC 15830

To appear in: *Journal of Materials Processing Technology*

Received date: 26-2-2018
Revised date: 2-7-2018
Accepted date: 2-7-2018

Please cite this article as: Zhao Y, Shi X, Yan K, Wang G, Jia Z, He Y, Effect of shielding gas on the metal transfer and weld morphology in pulsed current MAG welding of carbon steel, *Journal of Materials Processing Tech.* (2018), <https://doi.org/10.1016/j.jmatprotec.2018.07.003>

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.

Effect of shielding gas on the metal transfer and weld morphology in pulsed current MAG welding of carbon steel

Yong Zhao¹, Xiaojian Shi¹, Keng Yan^{*}, Guoqiang Wang², Zhanjun Jia², Yuxiang He²

(1.Provincial Key Lab of Advanced Welding Technology, Jiangsu University of Science and Technology, No. 2 Mengxi Road, Zhenjiang, Jiangsu 212003, China

2.Air Products and Chemicals (Shanghai) Gases Company. No.1166 Fulian Road, Baoshan District, Shanghai 201907, China)

*Corresponding Author: Keng Yan

Tel. :(+86)018914571603

Fax :(+86)051184434793

E-mail address: yankeng@just.edu.cn

Abstract:

A high-speed camera system has been used to observe the metal transfer with bead-on-plate welding. A stable pulsed streaming spray transfer was accompanied by arc jumping when the shielding gas of Ar+4%CO₂+3%O₂ was used, but the change of metal transfer mode had a tight relationship with the bell-shaped arc rather than critical current when a mixture of Ar+13%CO₂+3%O₂ was as shielding gas. With increasing CO₂ concentration in the shielding gas, the bright arc area and arc length decreased due to the compression effect of carbon dioxide. Weld penetration and weld width increased slightly due to the higher arc force. The ferrite content in the weld metal increased slightly with increasing CO₂ concentration in the shielding gas.

Key Words:

Metal transfer; Pulsed current MAG welding; Shielding gas; Weld morphology;

Download English Version:

<https://daneshyari.com/en/article/7176200>

Download Persian Version:

<https://daneshyari.com/article/7176200>

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