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The Preheating Effect of Mild Steel Layers Deposited using SMAW at 100 A and 70 A
(2024) *Journal of Advanced Research in Applied Mechanics*, 119 (1), pp. 112-120.

DOI: 10.37934/aram.119.1.112120

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Abstract

In surface melting, preheating temperature is generally caused by the heat conduction through the substrate ahead of the molten pool and their presence help to increase the material dissolution. In this work comparative study was conducted to study the melt features of two samples produced at 100 A and 70 A using the shielded metal arc welding (SMAW) process. The effect of the preheating at 100 A and 70 A on the defects, melt dimensions, surface roughness, deposition rates and losses between samples were examined. It was found that all samples were free from crack, undercutting or lack of fusion suggesting selected processing conditions and material were successfully employed to hinder the problems. The clad at 100 A was associated with higher preheating temperatures and explained the reason to ease melt dissolution for finer rippling marks and surface roughness. The work demonstrated enormous spatter which was related to burning of the electrode coating and metal evaporation that had brought the deposition rate at 100 A similar at 0.15 g/sec to the low spatter 70 A track. Low heat input can be the foundation for building high clad thickness and more dilution through high energy input is preferable for joining. © 2024, Semarak Ilmu Publishing. All rights reserved.

Author Keywords

E6013; Mild steel; preheat; SMAW

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Publisher: Semarak Ilmu Publishing

ISSN: 22897895

Language of Original Document: English

Abbreviated Source Title: J. Adv. Res. Appl. Mech.

2-s2.0-85200908136

Document Type: Article

Publication Stage: Final

Source: Scopus

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