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THE EFFECT OF DIFFERENT BRANDS OF WELDING ELECTRODE ON THE MECHANICAL PROPERTIES OF WELDED JOINTS IN MILD STEEL

M. PITA[1] & M. MAUMELA[2]

[1]*Department of Mechanical and Industrial Engineering, Faculty of Engineering and Technology, University of South Africa*

[2]*Physical Metallurgy Group, Advanced Materials Division, Mintek, Private Bag X3015, Randburg, South Africa*

ABSTRACT

Welding is the process of joining two pieces of similar metals or alloys by fusion. Mild steel is one of the materials most joined using welding techniques. The welding electrode used can influence the mechanical properties of mild steel during the welding process. This paper aims at investigating the effect of electrode brand on the mechanical properties of mild steel during arc welding. The welding method used in this study was shielded metal arc welding (SMAW) with using 3.2 mm electrodes (E6013) of two different brands. The welding current was 110 A and a double V groove was made on each of the samples prior to welding. Welded samples were characterised by light microscope (LM). Charpy impact and hardness tests were conducted on base metal (BM), heat affected zone (HAZ) and weld zone (WZ). The results show that similar phase and microstructure morphology were formed in both joints. The total width of the brand (R) joint was 10.08 mm, while the brand (A) joint measured 13.23 mm. Brand (A) produced the hardest weld of 179 HV, as compared to the 170 HV weld of brand (R). However, brand (R) was reported to have a higher impact toughness of 130.30 J.

KEYWORDS: Brand, Zone, Weld, Electrode & Joint

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