

عنوان مقاله:

MECHANICAL AND METALLURGICAL PROPERTIES OF WIDE-GAP ALUMINOTHERMIC RAIL WELDS

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خلاصه مقاله:

The wide-gap aluminothermic rail welds with root opening of ۵۰-۷۰ mm were produced using plain carbon steel rail and non-alloy aluminothermic charge. Mechanical properties and micro-structure of the weld metal and HAZ as well as the impact energy and the fracture toughness of the welds were investigated. The yield and tensile strength of wide-gap welds were about ۹۸% and ۹۵% of the base metal, respectively. Both minimum and maximum hardnesses of the joint were seen in HAZ which were related to the grain coarsening and normalizing, respectively. The mean value of wide-gap weld fracture toughness is more than narrow-gap weld. Moreover, trans-granular cleavage indicated the brittle fracture mode of the weld metal.

کلمات کلیدی:

Wide-gap weld, Aluminothermic weld, Fracture toughness, Microstructure

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