

MECHANICAL PROPERTIES OF THE JOINTS IN THE ELECTRO-SLAG WITH ELECTROMAGNETIC AGITATION

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ABSTRACT

Electromagnetic agitation of the weld affects the current density and temperature distribution in the slag welding pool. The phenomena from the slag welding pool are determined by the presence and the interaction of the following fields: the electrical field, the magnetic field, the thermal field and the hydrodynamic field. Electromagnetic agitation ensures rapid temperature and concentration uniformity across the volume of bath components. The external magnetic field enhances the mixing process favoring increased number of crystallization centers. The properties of joint area depend very much upon the nature of the structural homogeneity, produced after the crystallisation of the welding pool and upon the size of the crystalline grains. Mechanical tests were conducted to determine the optimum parameters of the magnetic field.

KEYWORDS: electro-slag, magnetic, joint, CVN toughness, hardness.

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