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Microstructure and mechanical properties of medium-carbon steel bonded on low-carbon steel by explosive welding

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Abstract

The mechanical properties of medium-carbon steel bond onto low-carbon steel by explosive welding are correlated to the microstructure of the steels. In the investigated weld there is a wavy interface including melt pockets exhibiting ultra-high hardness. It is found that the bonding is of high quality, reflected by the fact that in tensile testing with the bonding zone perpendicular to the tensile direction fracture happens in the medium-carbon steel.

Keywords: Medium-carbon steel; low-carbon steel; transmission electron microscopy; explosive welding; severe plastic deformation.

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