

عنوان مقاله:

تاثیر نورد بر ریزساختار فصل مشترک و خواص مکانیکی اتصال انفجاری ورق های فولاد - برنز

محل انتشار:

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خلاصه مقاله:

In this paper, the microstructure and mechanical properties of the plain carbon steel-bronze interface of explosive welding and rolling were investigated. Explosive connection was done at two stop distances and with two different thicknesses of explosive material. Rolling of the welded composite was done at both ambient and preheated temperatures of 300 °C and with a constant thickness reduction of 33.3%. The results showed that the wave interface of the steel-bronze connection includes different parts. By rolling, the connection interface was stretched and flattened and the vortex areas were compressed together and in some cases entered the steel field. The steel particles separated from the background along the wave crest and remained as isolated islands in the bronze background. On the other hand, in the areas near the vortex, a part of the bronze flying metal was caught under the wave and was observed as islands separated from the bronze background inside the steel. Porous areas were crushed and compressed as a result of rolling. The rolling force and temperature had partially removed the diffusion barriers and a metal bond had been formed between bronze and steel. During the connection, the voids and shrinkage pores were pressed together due to rolling and the separate borders were close to each other. Explosive joining and cold rolling had increased the hardness in the interface, and hot rolling has led to a decrease in the hardness in the interface. In the hardness test, the welding samples are arranged in the order of the highest impact energy. The effects of welding parameters remain after cold and hot rolling and the hardness rating does not change.

کلمات کلیدی:

dissimilar welding, composite, interface, vortex, hardness, جوش غیرهمنام،

کامپوزیت، فصل مشترک، گردابه، سختی

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