

عنوان مقاله:

The Effect of tool rotational and travel speed and addition of Fe powder on microstructure and mechanical properties of commercial pure aluminum joint

محل انتشار:

چهارمین کنفرانس بین المللی جوشکاری و آزمایش های غیرمخرب و بیست و دومین کنفرانس ملی جوش و بازرسی و یازدهمین کنفرانس ملی آزمایش های غیرمخرب (سال: 1400)

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خلاصه مقاله:

The aim of this study was investigating the effect of rotational and traverse speeds along with Fe powder addition on microstructure and mechanical properties of CP Aluminum alloys joining. After evaluating of previous studies, CP aluminum alloy sheets were prepared in dimensions of $150\text{mm} \times 100\text{mm} \times 5\text{mm}$. In order to examine the effect of rotational and traverse speeds of tool pin, rotational velocities of 400, 800, and 1250 rpm along with welding velocities of 20, 40, and 60 mm/min were selected. Also, Fe powder amounts of 1, 1.5, and 2 %wt were added into joint interface of Al alloys in separated cases. After conducting the friction stir welding process, samples were prepared for microstructural analysis and Tensile/Hardness tests. The results showed that rotational and traverse speeds have a strong effect on joint strength as the maximum ultimate tensile strength of 142 MPa was reached. On the other side, due to intermetallic phaseformation, Fe powder addition caused the UTS go up to 153 MPa

کلمات کلیدی:

Commercial Pure Aluminum alloy, Friction stir welding, Rotational and welding speed, Fe powder addition

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