

عنوان مقاله:

Thermite Welding of Aluminum Conductor by Addition of Copper

محل انتشار:

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خلاصه مقاله:

Aluminum conductors welding is an important issue in electricity transportation industry. Thermite welding is a good method to weld such parts. In some conditions, electrical arc welding or friction stir welding could not be used to weld these conductors due to environmental conditions, lack of welding tools, etc. In these cases, thermite welding could be used as an appropriate method. In this work, two aluminum conductors (with 9.3 mm diameter and 12.5 cm length) were welded by the use of thermite welding. These conductors were made of commercially pure aluminum (Al>99%) to enhance the weld strength, different contents of copper (0.73- 2.4 wt%) were added to the thermite powder and mechanical properties, electrical resistance and microstructural changes were studied by the use of hardness testing, resistance measurements and optical metallography, respectively. The results show that increasing the percentage of copper causes the reduction of electrical conductivity and increases the strength and hardness of the welded joint. Furthermore, grain size decreases due to Cu presence in the weld.

کلمات کلیدی:

Thermite welding, aluminum, copper, mechanical strength, electrical conductivity

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