

عنوان مقاله:

Lap joining of Al ۵۰۸۳ to polyamide ۶ using TIG welding process

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: ۱۴۰۰)

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خلاصه مقاله:

Today, metal and polymer compounds are widely used in the automotive, aerospace and electronics industries. These compounds have a high ratio of strength to weight, good resistance to corrosion and electrical and thermal insulation; But the bonding of metals to polymers is very difficult due to the large differences in their mechanical and physical properties. Common methods for bonding the two are usually mechanical and chemical bonding (adhesive bonding), both of which have limitations such as environmental conditions and temperature differences in the bonding bond. Due to the growing demand of the industry for these compounds, in recent years, new methods have been used to connect these materials. These methods include FSW, laser beam welding and ultrasonic welding. One of the welding methods by which metal and polymer can be joined together is the GTAW welding method. In this research project, the connection of ۵۰۸۳ aluminum and polyamide ۶ metal has been investigated by arc welding with tungsten electrode and GTAW shielding gas. Since there is little information about the joining of aluminum to polymer sheets, the purpose of this study is to evaluate the feasibility of bonding ۵۰۸۳ aluminum sheet to polyamide ۶ plate by TIG method and also the effects of heat on them. For this purpose, aluminum and polymer sheets with a thickness of ۲ mm have been used. Different amps are used in the connection process. After the bonding process, metallographic, shear tensile and hardness tests were performed on the samples and their results were evaluated. Connection successful. Wounds were acceptable and no porosity and fracture was seen in the weld area and the weld area hardness was up to ۶۰ Vickers. Also, the tensile strength of the samples increased up to ۲.۵ MPa in the welded sample with ۱۰۷ amps

کلمات کلیدی:

TIG welding, aluminum ۵۰۸۳, polyamide ۶, mechanical properties, microstructure

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