

عنوان مقاله:

Experimental Investigation of Pin Geometry Influence on Tensile Strength of Friction Stir Welds in Polypropylene Composites

محل انتشار:

دوازدهمین کنفرانس ملی مهندسی ساخت و تولید ایران (سال: 1390)

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نویسندگان:

F. kordestani - PG student, Faculty of Mechanical Eng., Shahid Rajaee Teacher Training University, Tehran

N.B. Mostafa Arab - Assist. Prof., Faculty of Mechanical Eng., Shahid Rajaee Teacher Training University, Tehran

F. Ashenai Ghasemi - Assist. Prof., Faculty of Mechanical Eng., Shahid Rajaee Teacher Training University, Tehran

R. Eslami Farsani - PG student, Faculty of Mechanical Eng., Shahid Rajaee Teacher Training University, Tehran

خلاصه مقاله:

Friction stir welding (FSW) is a solid-state welding process which has been successfully applied in several industries such as aerospace and automotive for joining materials. The friction stir tool is the key element in FSW process. In this study, the influence of four different tool pin geometries on tensile strength of two types of polypropylene composite plates with 30% glass fiber (GF) and 30% carbon fiber (CF) have been investigated. For this purpose four different stir pins namely threaded taper pin, square pin, four flute threaded pin and threaded taper pin with chamfer were made and used to carry out butt welding of 5 mm thick plates. Standard tensile tests were performed to evaluate the tensile strength of the welded specimens. The results indicated that threaded taper pin with chamfer produced welds with better surface appearance and higher tensile strength. It was also found that with this tool, the tensile strength of the specimens for GF composite and CF composite were about 30% and 34% that of the base materials respectively.

کلمات کلیدی:

Carbon fiber, Friction Stir Welding, Glass Fiber, Pin Geometry, Polypropylene

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