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Foaming around fastening elements

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Abstract: The aim of this work was to improve the joining between the fastening elements and the aluminium alloys foams. The research work was carried out on joining fastening elements into aluminium alloy foams during the foaming process, i.e., foaming around fastening elements. The foamable precursor material was produced by hot pressing the powder mixture of metal and a small fraction of the blowing agent. A steel mould containing a foamable precursor material and the fastening elements were heated to temperatures above the melting point of metallic matrix of foamable precursor material in order to obtain the final specimens. Each aluminium foam specimen (6061 and AISi12) has 200x80x80mm and contains two fastening elements. The steel moulds design, the fastening elements geometry, the aluminium alloy composition, as well as the foaming parameters were studied in order to optimise the quality of the joints produced. The quality of the joints were determined by means of visual inspection and mechanical tests.

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