

Influence of Extrusion Variables on Bonding Effect of Hollow Shaped 6463

Aluminum Alloy

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Abstract

Rectangular hollow section of 6463 aluminum alloy was extruded by use of porthole dies with four fan-shaped and two half-moon-shaped feederports to explore the influence of the extrusion parameters on the welding effect. The experimental results showed that the extrusion parameters and the design of the feederports would influence the maximum extrusion pressure which resulted in different welding effect. The welded status could be categorized into well welded, scattered holes, thin line and strip. In T6 heat treated condition, the extruded sections showed better welding effects by use of a lower extrusion speed and a feeder die with four feederports. On the contrary, as the extruded shapes heat treated in T5 condition, less serious welding defects were found in the extrusion utilizing a higher extrusion speed. The maximum extrusion pressures were not large enough to produce good solid bonding in the welding chamber by using a die with two feederports, therefore, the welding defects in the extruded sections could be notably observed no matter extruded with a higher or a lower extrusion speed.

Keyword : 6463 aluminum alloy, hollow shape, porthole die, welding effect