

BRAZED JOINTS PROPERTIES OF THE AUTOMOTIVE GALVANISED THIN SHEETS

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ABSTRACT

MIG Brazing (MIGB), as well as other hybrid variants, is meant to replace MIG welding, which usually introduces excessive heating. MIG welding of zinc coated thin plates in automotive industry leads to major issues, mainly zinc evaporation followed by a decrease of corrosion resistance, as well as to residual strains and stresses difficult to minimize. The use of MIGB with the recently commercialized allied copper based filler metal and various shielding gases is an alternative worth considering. Even when brazing, despite the lower melting temperature of the filler alloys, the effect of the electric arc heat is detrimental, especially on the zinc layer integrity and on the physical-chemical and metallurgical processes, which occurs in the plates and deposited material during the MIGB process. The present paper addresses the MIGB process, underlining the influence of the different shielding gases and process parameters on metal transfer and bead appearance when lower heat input procedures are targeted. It also briefly describes the influence of the different shielding gases and the process parameters on the mechanical, corrosion and metallurgical properties of the joint.

KEYWORDS: MIG brazing, zinc coated plates, shielding gases, heat input, metal transfer stability, mechanical properties, corrosion resistance.

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