

SIMILAR RESISTANCE SPOT WELDS OF DP980 DUAL PHASE STEEL JOINTS: MICROSTRUCTURE AND MECHANICAL PROPERTIES

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Abstract

Favorable combinations of high strength and good formability of Dual-phase (DP) steels made them a potential candidate for the fabrication of automobile body frame structures. Because the primary method that is used in welding of automotive structures is resistance spot welding (RSW), then there is increasing demand to better understanding of failure mode of DP steels in RSW. The aim of this research is to investigate the microstructure and mechanical properties of DP980 dual phase steel joints. The microstructural results showed that the fusion zone (FZ) consisted of mostly martensite. On the other hand the heat affected zone (HAZ) could be divided to three distinct areas with different hardness. The outer part of the HAZ relatively consisted of tempered martensite with the hardness lower than the base metal (BM). The tensile-shear test results showed that there is a transition from interfacial to pullout failure mode in DP980 resistance spot welds by increase in nugget size.

Keywords: Resistance spot welding, microstructure, mechanical property, dual phase steel

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