

## **MmeMcc40-011**

## Characterization and evaluation of 22MnB5 steel welded joints with coating Al-Si and Zn

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The increasingly intense search for mass reduction aiming at sustainability without losing mechanical strength is a must in the automobile industry. This study was developed to investigate the optimization of the laser welding process on PHS 22MnB5 steel samples, focusing on the influence of the type of coating and heat treatment on the mechanical properties of the welded joints. The steel was supplied by two different manufacturers. Through a series of experiments to parameterize the welding process, it was identified that the combination of a laser speed of 4 m.min-1 and the use of argon as shielding gas resulted in welded joints with high mechanical performance. The results demonstrated that the samples with Zn coating, subjected to quenching heat treatment in water, from 950 °C to room temperature, presented good tensile strength. The results provided by this study is contributing to the development of the automotive industry and establish efficient and reliable laser welding processes to improve the quality and performance of vehicles.