Microstructure and Corrosion Resistance of Fe314 Alloy Prepared by Laser Cladding on EA4T Steel Surface

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An Fe314 alloy cladding layer was prepared on EA4T steel by laser cladding. Scanning electron microscopy (SEM), X-ray diffraction (XRD), energy dispersive spectroscopy (EDS) and an electrochemical workstation were used to investigate the microstructure, phase composition, element distribution and corrosion resistance of the cladding layer. The results showed that the microstructure of the cladding layer is columnar crystal and equiaxial crystal, the interior of the cladding layer grains is mainly an austenite phase, and the intergranular precipitates mainly include Fe₃C, FeB and Cr₃C₂. The closer the cladding zone is to the bonding zone, the lower the Cr element content and the higher the Fe element content. Compared with the substrate, the cladding layer has excellent corrosion resistance.

Keywords: EA4T steel; laser cladding; microstructure; corrosion resistance

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