The influence of anti-corrosion technology on the performance of railway fastening

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Abstract In order to further study the anticorrosion technology and properties of fastening elastic strip, spike and nut, seven anticorrosion technologies were selected in this paper, including zinc infiltration + passivation, zinc infiltration, electroplating, multi-element alloy infiltration + passivation, multi-element alloy infiltration + passivation + sealing, Dacromet and hot dip zinc. The microscopic morphology, thickness, Vickers hardness, neutral salt spray resistance and mechanical properties of fastening were tested and analyzed. The results show that the matrix hardness of hot-dipped zinc anticorrosive elastic strip is reduced by 10%; The thickness of anticorrosive coating of elastic strip treated by electroplating and Dacromet is about 10 μm, and the content of C and O in anticorrosive coating is about 10%; The impact absorption energy and elongation after breaking of Dacromet anti-corrosion spike are reduced by 45% and 20% respectively compared with those of non-anti-corrosion spike; Electroplated fastening have all red rust after 24 hours of neutral salt spray resistance; The thickness distribution of anticorrosion coating of the four kinds of co-infiltration processes is more uniform, especially at the thread, and the neutral salt spray resistance time of multi-element alloy co-infiltration + passivation + sealing anticorrosion coating can reach more than 2000h.

Key Words Fastening, Anticorrosion technology, Multi-element alloy permeation