

Comparison of Corrosion Behavior of Thermal Sprayed and Diffusion-Coated Materials

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In this paper, the corrosion behavior of thermal sprayed and diffusion-coated materials are compared. The results of the high temperature corrosion test shows that the layers with NiCr applied by atmospheric plasma spraying (APS) and high velocity oxy fuel flame spraying (HVOF) are more resistant than the layers with NiCrBSi and Cr₃C₂/NiCr. Furthermore, the layer with NiCr on 15 Mo 3 is more resistant than that on 13 CrMo 44 as base material. The corrosion behavior of Al, Cr, and Cr/Si diffusion-coated materials on 13 CrMo 44 are better than those same diffusion coatings on 15 Mo 3 surfaces. In particular, the Cr diffusion-coated materials show the highest corrosion resistance's in this work. Also, the diffusion-coated materials have higher resistance's than thermal sprayed materials in HCl-H₂O-O₂-N₂ atmosphere.