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Study of the structure and properties of the metal of 10Cr17Ni8Si5Mn2Ti grade during cladding in a protective atmosphere(Article)

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Краткое описание

The positive effect of nitrogen on the formation of the structure and service properties of chromiumnickel- silicon steel under MAG cladding in a nitrogen-containing atmosphere of 70% N₂ + 30% CO₂ is considered. It is shown that the clad metal of 10Cr17Ni8Si5Mn2Ti grade, doped with nitrogen from the gas phase, forms a more homogeneous structure, increases the volume fraction of austenite, and reduces the tendency to form a sigma phase. During the crystallization of the weld pool, nitrogen forms fine-dispersed nitrides and titanium carbonitrides in the structure, with particle sizes of 0.1-1.5 μm. The clad 10Cr17Ni8Si5Mn2Ti metal, doped with 0.12-0.16% of nitrogen, has a high resistance to scoring at specific pressures up to 96 MPa. The coefficient of relative erosion resistance of the nitrogen-containing alloy is 1.73 times higher than that of the same alloy clad in argon. © National Academy of Sciences of the Republic of Kazakhstan, 2018.