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Phase composition of V-Al-Ti-N alloys smelted by using of aluminum nitride

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Abstract

Phase composition of alloys smelted from mix materials containing a V-Al alloy, a titanium and an aluminum nitride was studied by X-ray diffraction and chemical analysis methods. The possibility to control the using degree of the aluminum nitride by titanium additives to the charge mixture smelting was shown. It was determined, that the nitrogen phase state in the V-Al-Ti-N alloy depends on the titanium content in it. At the titanium content in the alloy more than 6.0 wt. % the TiN becomes dominant among nitride phases. The degree of use of the aluminum nitride can be adjusted by the amount of titanium additives to the smelting charge. The recovery of nitrogen into the alloy is maximum when the Ti : V-Al relation in the charge is equal to 0.1.