

On the monograph of Gavrylyuk V.P., Vasylyuk P.M.

" Structure-phases transformations to the Fe-Cr alloys".

Monograph of Gavrylyuk V.P., Vasylyuk P.M. " Structure-phases transformations to the Fe-Cr alloys" sanctified to research of structure-phases transformations of high temperature alloys of Fe - 35%Cr, alloyed Al, Si, Mo, W, Ti for the workers of temperatures to 1673K, that gives an opportunity to work out new casting alloys. Influence of every element is described, or them compatible operating on firmness of alloys in oxidation environments.

The structure of monograph includes six divisions. The feature of this monograph are descriptions of structure-phases transformations of alloys depending on the temperature-sentinel modes and their influence on operating properties. The described calculation model gives an opportunity to forecast structure-phases transformations and, thus, shorten the search of the alloying systems. The special attention is spared to forming and transformation of fragile σ -phase.

Presented researches of kinetics of oxidation of alloys on air and at cooperating with silicate fusions of different chemical composition on the initial stage, in laboratory terms and in the conditions of exploitation. It is shown that the protective action of oxides is related to content of aluminium to silicon and chrome, which at certain content provide oxidation alloys on a parabolic law and to forming of monophase structure.

Described complex researches of kinetics of oxidation , structure-phases transformations, interval of crystallization of alloys diffusive descriptions with the use of metallography, X-ray , gravimetical methods which gave an opportunity to set optimal content of alloyed elements.

Investigational to cooperating of alloys with silicate fusion, on air in the conditions of the electric heating of alloys to the working temperature. The educed effect of extrusion of aluminium and silicon is on a surface in the conditions of the electric heating what gives an opportunity to manage forming of oxides of aluminium, silicon and magnetic oxides of spinel type- FeCr_2O_4 , CoCr_2O_4 .

Research of alloys showed in the conditions of exploitation, that of long duration annealing resulted in the change of chemical composition from the charges of aluminium, chrome to silicon on formation of protective oxides, that in turn results in aging of alloys with the selection of alloyed σ -phase, that contains a molybdenum, tungsten, silicon.

The mechanism of cooperation of alloys is described in oxidation environments and in the conditions of action of electric current.