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Metallographic Tests of Modifying Ability of Rods from Aluminum Alloys Obtained by Combined Casting and Rolling-Extruding

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Proposed new ways of obtaining rods-modifiers from aluminum and aluminum alloys. Were researched of their modifying ability and tested in industrial conditions modification technology in the production of aluminum alloy ingots.

Keywords: modifying, structure, combined casting and rolling-extruding, subgrain structure, rods-modifiers.

Structure and properties of deformed semi-finished products from aluminum and aluminum alloys largely depend on the quality of the ingot which is determined by the shape, size and internal structure of the grains. It is important to properly evaluate expediency of application the method of modification and find ways to overcome its negative aspects. Therefore, the search for new modifiers which have high ability of modifying along with the ability to maintain the chemical composition of the alloy after uploaded it and the study of the structure and properties of obtained semi-finished products is an actual task.

One of the leading causes of obtaining small grains as a result of the modifying effects on the melt is the process of homogeneous nucleation of the main substance as a result of the transformation of clusters into stable nuclei. The number of nuclei in a supercooled liquid immeasurably more than the number of any foreign particles introduced into the melt with modifiers. Therefore it is necessary to study the modification mechanism of aluminum alloys based on the formation of a homogeneous nucleation, arising on the basis of advanced subtly differentiated sub grain structure of rod-modifier.

Most progressive trend in the manufacturing of non-ferrous metals and alloys is a combining in one process stream of casting and deformation. Complex of special properties of aluminum semi-finished products can be obtained using the methods of the combined casting and rolling-extruding (CCRE).

To get modifying rods used molten aluminum grade A7 and also alloys AD31, 6082, V95pch, 2219. As a basic equipment to obtain rod-modifier used laboratory installment of combined casting

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