Research and Analysis of the Sediments from Casting Furnaces and the Mechanism of its Origin

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Paper is focused to analysis of emerging sediment-casting furnace for the casting alloys of Al - Si. The aim in the analysis of of sediment is to confirm or disprove that a substantial portion of sediment are formed due to segregation of particles the wire used for refinement structure of alloys. Subsequently, on the basis of chemical analyzes of the various structural components of the sediment to determine the nature and methylene chanizmus formation of sediment. The optimal delay time at a temperature of alloying when master alloys type of AlTi5B1 is 5-10 minutes. All these master alloys act almost immediately, and in most cases, their effect is not dependent on time, temperature holding time of alloying, only at some alloys (e.g. AlSi11, AlSi9Cu3) after exceeding 30 minutes of holding time smoothing effect worsening slightly. The optimal temperature of alloying coincides with the temperatures that are used in technical practice in the casting of Al-Si alloys. After exceeding this temperature (about 750 C°) represents a slight coarsening of the structure. This is caused a slight deterioration of softening effect due to formation of clusters of particles of TiB_2 or leads to their segregation, which reduces the possibilities of creating of active crystallization nucleuses.

Keywords: alloying, sediments, casting furnaces, Al - Si alloy, macrostructure, microstructure, EDX analysis, TiAl3 particles, TiB2 particles

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Paper number: M2015186