

عنوان مقاله:

Microstructure and Grain Refining Performance of a New type of Al-Ti-C master alloy

محل انتشار:

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نویسندگان:

Vahid Hassanbeygi - *Department of Materials Engineering, Isfahan University of Technology, Isfahan, Iran*

Ali Shafyei - *Department of Materials Engineering, Isfahan University of Technology, Isfahan, Iran*

خلاصه مقاله:

Grain refining process plays a significant role in preventing columnar and coarse grains and it encourages fine grain formation. Although Al-Ti-B master alloys use widely as aluminium grain refiners, but there are several problems in their applications. So, this kind of master alloys use less than last. Because of great properties of Al-Ti-C refiners, they can be considered as suitable candidates for use instead of Al-Ti-B master alloys. In recent years, Al-Ti-C refiners have attracted huge attention among researchers. In this paper, Al-3Ti-1C master alloy prepared with a melting reaction method. This method involves adding graphite powder and fine titanium particles into super-heated pure aluminium. Then microstructure of this master alloy studied by scanning electron microscope (SEM) and its phases distinguished by energy dispersive spectroscopy (EDS). In the next part, 200 ppm of Al-3Ti-1C master alloy added to pure aluminium and its refining efficiency compared with the condition in which TiC powders added to aluminium melt directly. It found that the fading time for both Al-3Ti-1C and TiC powder is about 15 minutes and in overall, grain refining efficiency of Al-3Ti-1C is more than TiC powders in 60 minutes

کلمات کلیدی:

Al-Ti-C master alloy; grain size; microstructure; grain refining; TiC powder

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