

عنوان مقاله:

Recycling of aluminium alloy ADC12 turning chips via mechanical stirrer

محل انتشار:

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خلاصه مقاله:

Recycling of the aluminum is considered to be a sustainable process, as it requires significantly less energy than extracting mined bauxite ore from its natural resources[1]. Aluminum chips collected from machining operations are specifically suitable for this process, as their high surface area to weight ratio allows for more rapid oxidation and increases the value of the recycling[2, 3]. In the present study, recyclability of aluminum alloy ADC12 which is commonly used in die-casting industry, has been experimentally investigated using a mechanical stirrer in molten aluminum method. The implemented mechanical stirrer included a motor, a gearbox, and two plates for generating turbulence in molten aluminum and the aluminum chips were added to the melt during stirring process. The efficiency of the recycling has been measured by calculating the percent of weight loss. Also, the chemical composition of the samples were compared with the reference one that was obtained from melting. The results showed that the proposed method is able to recycle up to 94 percent of the Chips and to recover all of the main elements. Also the achieved mechanical properties of the recycled aluminum were shown to be very to those of the aluminum ADC12 alloy ingot

کلمات کلیدی:

Aluminium chips, recycling, machanical stirrer, melting, Die casting

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