

A Short Survey on Magnesium Alloys in Multiple Domains

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ABSTRACT

Magnesium is one of the most abundantly available material with good energy efficiency due to less weight. The density of magnesium is 33% lighter than aluminum and 78% lesser than steel. It is also easy to machine and can potentially be recycled. Since pure magnesium is more prone to corrosion, Magnesium and its alloys are rapidly gaining more attention in various applications in automotive, aerospace, defense, electronic and medical fields. The improved physical and mechanical properties of magnesium alloys make these materials as an alternative substitution to aluminum alloys and steel in automotive and aerospace structural applications. Biocompatibility and Biodegradation has given further edge to emerge magnesium alloys as an ideal alternate to the permanent implant materials owing to its better mechanical strengths than polymeric biodegradable materials. Recent advances in 3C products (Computer, communications, and consumer electronics) also shown an uptrend in the usage of magnesium and its alloys. Based on the studies, the usage of magnesium in various domains is significantly improved in the coming years and can provide a lot of research potentials for the young researchers. Therefore, this paper reviews the benefits of magnesium and its alloy materials in various domains and summarizes the recent works in industrial applications. The potentialities, drawbacks and research scope of magnesium alloys have also been presented towards the development of commercial products.

Keywords: Magnesium alloy, Automotive applications, 3C Products, Defense applications

