

## **Anti-corrosive coatings of magnesium : A review**

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### **ABSTRACT**

Magnesium's lightweight property made it an intriguing element as a component in automobiles and aerospace, as well as its biodegradability to be used in orthopaedic. However, magnesium is prone to corrosion that limits its application. To fully utilize magnesium, corrosion protection methods should be established. Various techniques have been used to protect magnesium and its alloys from corrosion, including coating. Coating provides a barrier to prevent corrosive electrolytes from reacting with magnesium substrates and initiate Mg dissolution. This study reviewed several surface coating methods used for Mg alloys, such as chemical conversion coating, anodizing, plasma electrolytic oxidation (PEO), organic coating, cold spraying, and layered double hydroxide (LDHs). The composite coatings, for example, combined PEO-hybrid sol-gel coating, provide dense barrier, thus better corrosion protection performance than conventional single PEO layer. The newer advanced self-healing coatings which incorporate inhibitors into the layer, either directly added or within carriers, are considered in this study.

### **KEYWORDS**

Anodizing; Anti-corrosion coating; Layered double hydroxide; Magnesium corrosion; Self-healing coating

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