

Einladung zum Science Meeting

Zeit: Donnerstag, 20.01.2022 09:00 Uhr

Ort: Webinar via Zoom:

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Optimization of filiform corrosion properties of cast alloy AlSi7Mg0,3

The increasing use of recycled materials for the production of metal automotive components brings many advantages, but also challenges. One of these challenges is the behaviour with regard to filiform corrosion of coated AlSi7Mg0,3 casting alloys. These alloys are used for the production of automotive wheels and are also increasingly produced via secondary production routes. However, compared to the primary alloys, they show poorer performance in filiform corrosion tests. The reason could be the increased contents of the elements iron, copper, manganese and zinc of the secondary alloys.

In the present work, results from electrochemical measurements, paint undermining tests, EDX elemental mappings, and scanning kelvin probe force microscopy (SKPFM) studies on variations of secondary AlSi7Mg0,3 casting alloys are presented. In addition, two AW 6016 wrought alloys are carried through the studies for comparison. The alloys are compared with each other on the basis of their electrochemically determined corrosion properties, their microstructure, their performance in the filiform corrosion test according to DIN EN ISO 4623-2 and in a 240-hour CASS test, as well as the determined potential differences between their matrix and precipitates, and investigated for factors influencing the tendency to filiform corrosion.

The results presented show that no secondary casting alloys yet shows comparable resistance to filiform corrosion as the primary alloy. At the same time, it can be said that an increasing content of contaminating elements from secondary metal production is not automatically associated with a lower resistance to filiform corrosion.