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## Correlations between composition, microstructure and corrosion behavior of AM AlSi7Mg0.6 and AM 7075-Ti and alloys from selective laser melting (SLM): Electrochemical approach to local and global phenomena

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The introduction of additive manufacturing (AM), also known as 3D printing, has transformed modern metal fabrication. The method has developed rapidly and has recently gained in appeal for the creation of metal components from a range of alloys. The low carbon footprint, the ability to manufacture neat shapes, the efficient use of materials, the adaptability to small-scale production (such as prototyping) and the ability to investigate alloy compositions that were not previously achievable with conventional processes are just some of the many benefits of this technology. However, the AM process produces different microstructures to those obtained by conventional processing technologies and this has a huge impact on their corrosion resistance. This work investigates the corrosion behavior of AM AlSi7Mg0.6 alloy and AM 7075 alloy with a powder coated with 1%-Ti by PVD (before and after heat treatment) by an electrochemical approach using global electrochemical techniques, such as electrochemical techniques such as the Scanning Vibrating Electrode Technique (SVET) to correlate corrosion and microstructure, monitored by Electron Backscatter Diffraction (EBSD) and X-ray Diffraction (XRD) analysis.

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