High frequency pulse anodising of magnetron sputtered Al–Zr and Al–Ti Coatings - DTU Orbit (08/11/2017)

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High frequency pulse anodising of Al–Zr and Al–Ti coatings is studied as a surface finishing technique and compared to conventional decorative DC anodising. The Al–Zr and Al–Ti coatings were deposited using DC magnetron sputtering and were heat treated after deposition to generate a multiphase microstructure with Al3Zr and Al3Ti intermetallic phases in α-Al matrix. The effect of the Zr/Ti content and the anodising potential on the anodising rate, the optical appearance and the microstructure is investigated. Characterisation of the surfaces was performed using transmission electron microscopy, grazing incidence X-ray diffraction and the optical appearance was quantified using an integrating sphere-spectrometer setup. The anodising rate and the surface reflectance of the anodised surfaces were found to be increasing with anodising potential. Anodised layer was more homogeneous in terms of degree of oxidation of the intermetallic phases for high frequency pulse anodising when compared to conventional DC anodising.

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