

Chemically Milled Alpha-Case Layer from Ti-6Al-4V alloy Investment Cast

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Abstract

The as cast Ti6Al4V, obtained after investment casting with yttria stabilized zirconia face-coat, was chemically milled using a mixture of hydrofluoric acid and nitric acid. This process removed completely the alpha-case layer. Lower hardness and almost no oxygen contamination are revealed after microhardness measurement, Energy dispersive X-ray and X-ray diffraction analysis. The hydrofluoric acid/nitric acid ratio, pickled Ti6Al4V surface, pickling efficiency, pickling rate, immersion time and solution temperature are discussed.