



ANALYSIS OF Ti6Al4V P/M PROPERTIES UNDER THERMOMECHANICAL COMPRESSION TESTS

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Abstract

Since titanium powder metallurgy poses opportunities for the manufacture of a range of components, there now exists the need to establish its performance characteristics under industrial conditions that these components need to operate under. In line with this, there is a need to analysing *amongst others the mechanical properties of Ti6Al4V P/M* ^{[1][5]} *under various thermo-mechanical conditions and compression tests.*

The main objective of the research is to study and compare the properties after forging of high quality Ti6Al4V powder metallurgy alloy with that of titanium ingot. Both samples has been manufactured under the same thermo mechanical conditions. P/M alloy will be prepared from the mixture of elemental powders, and will have the chemical composition of that of ingot Ti6Al4V alloy as per ASTM 1580-1 standard. Powder mixtures will be fully densified by hot compaction under precisely controlled conditions using the Thermal Technology Inc. press at AGH University of Science and Technology in Poland.

Various physical tests will be conducted including mechanical property tests and microstructural analysis. Additionally simulations will be performed using simulation software, GFormTM , using parameters used on actual forgings. Results will be compared to physical tests performed earlier.
