

Explanatory Text:

Titanium alloys have been applied in aeronautical components mainly due to their high strength-weight ratio. Ytria-stabilized zirconia (YSZ) of thermal barrier coating systems (TBC) applied by air plasma spraying (APS) increases the lifetime of turbine blades by providing higher operating temperatures. Laser modification of the YSZ layer is a technique that has been investigated to enhance the properties of components with TBC. This work evaluated the creep behavior of Ti-6Al-4V alloy with CO₂ laser- remelted plasma sprayed thermal barrier coating. Creep tests were performed at constant temperature and load in the range of 500 to 700 °C at 125 MPa. The microstructure and fractography of the specimens were also investigated. The stationary creep rate at 600 °C was reduced by 50 % and the creep rupture life increased by 20 %, which can be associated with greater oxidation resistance and thermal protection. Typically ductile fractures formed by equiaxial dimples were observed. In a region close to the fracture, it was observed a dual phase ($\alpha+\beta$) equiaxed microstructure was homogeneously distributed.