

A short review on the phase structures, oxidation kinetics, and mechanical properties of complex Ti-Al alloys

ABSTRACT

This paper reviews the phase structures and oxidation kinetics of complex Ti-Al alloys at oxidation temperatures in the range of 600–1000 °C. The mass gain and parabolic rate constants of the alloys under isothermal exposure at 100 h (or equivalent to cyclic exposure for 300 cycles) is compared. Of the alloying elements investigated, Si appeared to be the most effective in improving the oxidation resistance of Ti-Al alloys at high temperatures. The effect of alloying elements on the mechanical properties of Ti-Al alloys is also discussed. Significant improvement of the mechanical properties of Ti-Al alloys by element additions has been observed through the formation of new phases, grain refinement, and solid solution strengthening.