Coefficient Thermal Expansion of Fe_3Al and FeAl – type iron aluminides

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The iron aluminides appear to be suitable materials for use in high temperature applications. Knowledge of thermal expansion of the machine parts is prerequisite for their use in industrial applications. The study of expansion properties of iron aluminides in temperature range 400 – 1200 °C is the subject of this article. There were investigated four FeAl – type alloys, four Fe3Al – type alloys and two reference materials. Tests were carried out in the furnace on a horizontal dilatometer on cylindrical or cuboidal specimens with a length of approximately 15 mm. An absolute and relative expansion was measured. The coefficients of thermal expansion (CTE) for temperature 400, 600, 800, 1000 and 1200 °C were calculated from the measured data. The effect of heat treatment on the expansion properties of selected alloys was also verified. The results were tabulated.

Keywords: Coefficient Thermal Expansion (CTE), High – temperature dilatation, Fe_3Al and FeAl – type iron aluminides

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