

Fe-Ti-Y (Iron-Titanium-Yttrium)

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[1994Zen] determined an isothermal section for this system at 500 °C. With starting metals of purity 99.9% Fe, 99.8% Ti, and 99.9% Y, [1994Zen] prepared 102 alloy compositions by induction melting under Ar atm. The alloys were homogenized at 900 °C for 30 days and finally annealed at 500 °C for 5 days and quenched in an ice-water mixture. The phase equilibria were studied mainly by x-ray powder diffraction. Supplemental results were obtained by using scanning electron microscopy with energy-dispersive x-ray analysis and differential thermal analysis. The isothermal section of [1994Zen] at 500 °C (not reproduced here) has the same phase distribution as that at 600 °C obtained by [1997Liu] using ternary diffusion couples (reviewed by [2000Rag]). One ternary compound YFe_{11}Ti with the

ThMn_{12} -type tetragonal structure is present at both 500 and 600 °C and the triangulations are identical. [1994Zen] reported a small solubility of Ti of 1.5 at.% in Fe_{17}Y_2 , not observed by [1997Liu]. The lattice parameters of YFe_{11}Ti determined by [1994Zen] are $a = 0.8514$ nm and $c = 0.4798$ nm.

References

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