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TECHNICAL NOTE

Preliminary Investigation of the System

Titanium - Magnesium

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Very little information is available in the literature concerning the solubility of magnesium in titanium. Aust and Pidgeon⁽¹⁾ report the solubility of titanium in magnesium to be 0.0025% at 650C and 0.015% at 850C. X-ray diffraction studies failed to detect any evidence of solid solubility. Based on the fact that the addition of titanium to magnesium increases the c/a ratio of magnesium, Busk⁽²⁾ suggested that the Mg-Ti system, like the Mg-Zr, is a peritectic. Eisenreich⁽³⁾ reported the solubility of titanium in magnesium to be 0.003% at 655C and 0.064% at 760C. Removal of hydrogen from the melt increased the solubility of titanium to 0.115% at 800C. Eisenreich proposes a peritectic type diagram for the high magnesium side of the system. Recent work⁽⁴⁾ with Ti-Mg diffusion couples indicate that the solid solubility of titanium in magnesium is extremely small and that there is limited solid solubility of magnesium in titanium.

Experimental work on the Ti-Mg system is complicated by the fact that the boiling point of Mg is considerably below the melting point of Ti. Consequently, the usual alloying

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