

# Influence of Ti and V substitution for Al on the properties of $\text{Nd}_{60}\text{Fe}_{30}\text{Al}_{10}$ alloys

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Abstract: Systems with compositions  $\text{Nd}_{60}\text{Fe}_{30}\text{Al}_{10-x}\text{Ti}_x$  and  $\text{Nd}_{60}\text{Fe}_{30}\text{Al}_{10-x}\text{V}_x$  ( $x=2, 4, 6, 8,$  and  $10$ ) have been prepared by arc melting and copper mold suction-casting. The cast surface of the samples is partially crystalline. At increasing the Ti or V content, the crystalline fraction in the samples increases and for  $x=10$ , the alloys are fully crystalline. Melting temperatures also increase with increasing Ti or V content in the samples. All samples, some of them in a partly crystalline state, exhibit good hard magnetic properties at room temperature. With increasing Ti or V content, the magnetization continuously decreases, whereas both the coercivity and the Curie temperature increase. Thermomagnetic curves measured for all samples at low field exhibit an interesting shape. The temperature dependence of the coercivity of the samples has been determined. © 2003 Published by Elsevier Science B.V.

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