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(54) **Rare-earth based magnetic materials, production process and use.**

(57) A new magnetic material of the general formula :



is derived from an intermetallic compound of rhombohedral or hexagonal crystal structure wherein R is one or more rare earth elements, X' is an element of groups IIIA, IIIB, IVA or IVB of the periodic table, Z is one or more elements of group VA of the periodic table, x is a value from 1 to 2, y is a value from 11 to 19, a is a value from 0 to 3, b is a value from 0.5 to 3 and Fe is unsubstituted or partly, substituted with the proviso that if the component Z is antimony or bismuth the element X' is not boron.

These new materials exhibit increased Curie temperatures, magnetic strength and easy uniaxial anisotropy and are therefore suitable for fabricating into permanent magnets. Processes for preparing materials  $R_xFe_yX'_aZ_b$  are also described.

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# EUROPEAN SEARCH REPORT

Application Number

EP 91 30 3442

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	PATENT ABSTRACTS OF JAPAN, vol. 10, no. 11 (E-374)[2068], 17th January 1986; & JP-A-60 176 202 (HITACHI KINZOKU K.K.) 10-09-1985 * Abstract *	1,3,14, 27,30	H 01 F 1/053
X	PATENT ABSTRACTS OF JAPAN, vol. 11, no. 117 (E-498)[2564], 11th April 1987; & JP-A-61 263 201 (HITACHI METALS LTD) 21-11-1986 * Abstract *	1,3,7,8, 11,16, 27,28, 30	
X	PATENT ABSTRACTS OF JAPAN, vol. 14, no. 41 (E-879)[3984], 25th January 1990; & JP-A-1 274 401 (TDK CORP.) 02-11-1989 ---	1,8-10, 14,27, 30	
D,X	IEEE TRANSACTIONS ON MAGNETICS, vol. 23, no. 511, September 1987, pages 3098-3100; S. HIGANO et al.: "Magnetic properties of RE-TM-N system" * Complete article *	1,4,14, 18,24	
A	PATENT ABSTRACTS OF JAPAN, vol. 9, no. 310 (E-364)[2033], 6th December 1985; & JP-A-60 144 909 (DAIDO TOKUSHUKO K.K.) 31-07-1985 ---	1,8,10, 14,15, 16,17, 30	H 01 F
A	US-A-4 402 770 (N.C. KOON) * Claim 1 *	1	
P,X	NRC HANDELSBLAD, 4th April 1991, NL; "Nieuwe legering ontwikkeld voor permanente magneten" * Complete article, figure *	1,3,4, 14,17, 27,30	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20-09-1991	Examiner DECANNIERE L.J.
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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