

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



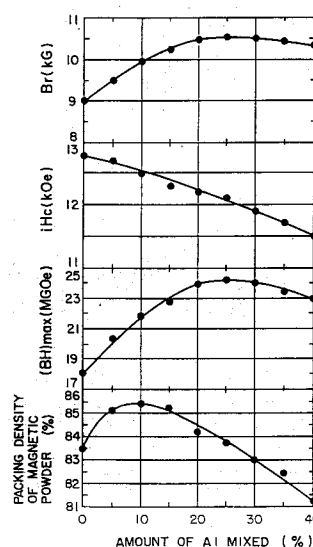
(11) Publication number:

0 654 801 A3

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **94114972.6**(51) Int. Cl.⁶: **H01F 1/055, H01F 1/057,
H01F 1/058, H01F 1/059,
H01F 1/03, H01F 1/09**(22) Date of filing: **22.09.94**(30) Priority: **11.11.93 JP 282717/93**(43) Date of publication of application:
24.05.95 Bulletin 95/21(84) Designated Contracting States:
DE FR GB IT(88) Date of deferred publication of the search report:
05.07.95 Bulletin 95/27(71) Applicant: **SEIKO EPSON CORPORATION**
4-1, Nishishinjuku 2-chome
Shinjuku-ku
Tokyo-to (JP)(72) Inventor: **Kitazawa, Atsunori, c/o Seiko Epson Corp.****3-5, Owa 3-chome****Suwa-shi,****Nagano-ken (JP)**Inventor: **Ishibashi, Toshiyuki, c/o Seiko****Epson Corp.****3-5, Owa 3-chome****Suwa-shi,****Nagano-ken (JP)**Inventor: **Akioka, Koji, c/o Seiko Epson Corp.****3-5, Owa 3-chome****Suwa-shi,****Nagano-ken (JP)**(74) Representative: **Hoffmann, Eckart, Dipl.-Ing.**
Patentanwalt
Bahnhofstrasse 103
D-82166 Gräfelfing (DE)(54) **Magnetic powder, permanent magnet produced therefrom and process for producing them.**

(57) A magnetic powder and a permanent magnet are provided which have magnetic properties enhanced by magnetic interaction. Disclosed are a magnetic powder comprising a mixture of two or more powders including a magnetic powder A (residual magnetic flux density: Br_A , coercive force: Hc_A) and a magnetic powder B (residual magnetic flux density: Br_B , coercive force: Hc_B) of which the residual magnetic flux densities and the coercive forces have the following relationships: $Br_A > Br_B$ and $Hc_A < Hc_B$, and a bonded magnet or a sintered magnet produced from the magnetic powder, and a method for mixing magnetic powders and a process for producing a magnet.

**FIG. 1****EP 0 654 801 A3**



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 11 4972

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	PATENT ABSTRACTS OF JAPAN vol. 007 no. 214 (E-199) ,21 September 1983 & JP-A-58 108708 (TOUHOKU KINZOKU KOGYO KK) 28 June 1983, * abstract *	1,9,27,30	H01F1/055 H01F1/057 H01F1/058 H01F1/059 H01F1/03 H01F1/09
X	GB-A-2 232 165 (COOKSON GROUP PLC) 5 December 1990 * page 3, line 4 - line 12; claims 1-6,9; example 2 *	1,7,18,29,34,35	
X	WO-A-92 15995 (BASF AG) 17 September 1992	1,4,7,21,34	
A	* page 13, line 1 - page 14, line 2; claims 1,3,6,9,10,17,18 *	27,36,39	
A	PATENT ABSTRACTS OF JAPAN vol. 014 no. 041 (E-0879) ,25 January 1990 & JP-A-01 274401 (TDK CORP) 2 November 1989, * abstract *	1,25	
A	PATENT ABSTRACTS OF JAPAN vol. 008 no. 226 (E-272) ,17 October 1984 & JP-A-59 106106 (TOSHIBA KK) 19 June 1984, * abstract *	1,31	
P,X	PHYSICAL REVIEW, B CONDENSED MATTER., vol. 48,no. 21, 1 December 1993 NEW YORK US, pages 15812-15816, R.SKOMSKI ET AL 'Giant energy product in nanostructured two-phase magnets' * page 15812, column 1, paragraph 3 - column 2, line 1; figure 5 *	1,20,21	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 May 1995	Examiner Decanniere, L
CATEGORY OF CITED DOCUMENTS			
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			
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			