

Title (en)

Permanent magnetic material and method for producing the same.

Title (de)

Dauermagnet-Material und Verfahren zur Herstellung.

Title (fr)

Matériel d'aimant permanent et procédé pour produire celui-ci.

Publication

EP 0249973 A1 19871223 (EN)

Application

EP 87108724 A 19870616

Priority

- JP 8902887 A 19870411
- JP 13965086 A 19860616

Abstract (en)

A permanent magnetic material of a desired bulk shape is obtained which comprises a composite microstructure consisting of magnetic particles of Nd₂Fe₁₄B dispersed within a metallic cementing phase of 10% or less by volume of the magnetic material. A magnetic powder is prepared from an alloy comprising Nd₂Fe₁₄B compound and is mixed with an alloy powder having a melting point lower than the peritectic temperature of Nd₂Fe₁₄B, and the mixed powder is sintered at a temperature higher than the melting point but lower than the peritectic temperature, so that the alloy powder melts and forms the cementing phase covering each magnetic particle to thereby realize high coercive force and excellent corrosion resistance. In place of Nd, other rare earth metal or metals can be used. A part of Fe can be replaced by other transition metal or metals. For the cementing metallic element or elements, Al, Zn, Sn, Cu, Pb, S, In, Ga, Ge, and Te can be used.

IPC 1-7

H01F 1/06

IPC 8 full level

B22F 1/00 (2006.01); **H01F 1/057** (2006.01)

CPC (source: EP US)

B22F 1/09 (2022.01 - EP US); **H01F 1/0577** (2013.01 - EP); **H01F 1/0578** (2013.01 - EP US)

Citation (search report)

- EP 0166597 A2 19860102 - MITSUI TOATSU CHEMICALS [JP]
- [AD] IEEE TRANSACTIONS ON MAGNETICS, vol. MAG-8, no. 3, September 1972, Kyoto, Japan KARL J. STRNAT "The Hard-Magnetic Properties of Rare Earth-Transition Metal Alloys" pages 511-516
- [AD] APPLIED PHYSICS LETTERS, vol. 39, no. 10, November 15, 1981, Washington D.C. N.C. KOON, B.N. DAS "Magnetic properties of amorphous and crystallized (Fe_{0,82}B_{0,18})_{0,9} Tb_{0,5}La_{0,05}" pages 840-842
- [AD] JOURNAL OF APPLIED PHYSICS, vol. 55, no. 6, part IIA, March 15, 1984, Michigan J.J. CROAT et al. "Pr-Fe and Nd-Fe-based materials: A new class of high-performance permanent magnets" pages 2078-2082

Cited by

US2014132377A1; US6027576A; US6045751A; US2013323111A1; CN112820528A; EP0583041A1; CN105103249A; US5354354A; CN112712955A; DE4027598A1; EP1679724A4; US2011234350A1; US9818515B2; EP1517149A3; US10695840B2; DE19945943B4; EP0392077A3; JP2012049492A; US5006045A; US2023290546A1; US11024448B2; US7237960B2; US7592799B2; WO0124202A1

Designated contracting state (EPC)

DE FR

DOCDB simple family (publication)

EP 0249973 A1 19871223; **EP 0249973 B1 19911106**; DE 3774333 D1 19911212

DOCDB simple family (application)

EP 87108724 A 19870616; DE 3774333 T 19870616