

Title (en)

Spheroidal cast iron particularly for piston rings and method for its production

Title (de)

Kugelgraphitgusseisen für Kolbenringe und Verfahren zu seiner Herstellung

Title (fr)

Fonte nodulaire pour segments de piston et procédé pour la fabrication de ladite fonte

Publication

**EP 1384794 A1 20040128 (EN)**

Application

**EP 03016555 A 20030724**

Priority

IT MI20021670 A 20020726

Abstract (en)

A spheroidal cast iron, particularly for piston rings for pistons of engines, with a particular alloyed chemical composition and subjected to a heat treatment known as austempering, which comprises an austenitization treatment followed by an isothermal hardening treatment, has mechanical characteristics that are comparable with those of the steel currently used to produce piston rings, while maintaining the best tribological and self-lubrification characteristics of spheroidal cast irons, and a process suitable to obtain said spheroidal cast iron.

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IPC 8 full level

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CPC (source: EP US)

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Citation (search report)

- [XA] DE 4305027 A1 19930819 - COFAP [BR]
- [A] EP 0018445 A1 19801112 - MUEHLBERGER HORST [DE]
- [A] US 4838956 A 19890613 - SATOU KAZUO [JP], et al
- [A] DE 3639658 A1 19880601 - MUEHLBERGER HORST DIPL PHYS DR [DE]
- [A] PATENT ABSTRACTS OF JAPAN vol. 010, no. 036 (C - 328) 13 February 1986 (1986-02-13)

Cited by

CN106119684A; CN11020362A; CN109811108A; RU2659534C1; RU2635032C1; EP1566454A1; DE102004040055A1; CN110983172A;  
CN103725950A; RU2627316C1; DE102004040056A1; CN11004968A; EP2780488A4; CN105838975A; CN108950370A; CN102851572A;  
RU2643768C1; RU2652903C1; CN114603089A; WO2006072663A3; WO2006018053A1; WO2006018054A1; US9169526B2; US9644245B2

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