Title (en)

Coating for cylinder friction surface part of a piston engine

Title (de)

Beschichtung einer Zylinderlauffläche einer Hubkolbenmaschine

Title (fr)

Revêtement pour partie d'usure d'un cylindre d'un moteur à pistons

Publication

EP 0896073 B1 20030910 (DE)

Application

EP 98113380 A 19980717

Priority

DE 19733205 A 19970801

Abstract (en)

[origin: EP0896073A1] A reciprocating piston engine cylinder running face coating consists of a hypereutectic aluminium-silicon alloy or aluminium-silicon composite material which has a heterogeneous structure of an aluminium solid solution, intermetallic phases such as Al2Cu and Mg2Si, oxides and (i) silicon precipitates, (ii) embedded silicon particles or (iii) silicon precipitates and embedded silicon particles, the mean size of the primary silicon precipitates or embedded silicon particles being less than 10 mu m and the mean oxide size being less than 5 mu m. Also claimed are processes for producing the above coatings by thermal (especially atmospheric plasma) spraying with parameters adjusted for formation of oxides. Preferably, the spraying material has the composition (by wt.) (A) (for coating type (i)) 23-40 (especially 25)% Si, 0.8-2.0 (especially 1.2)% Mg, NOTGREATER 4.5 (preferably 3.9)% Cu, NOTGREATER 0.6% Zr, NOTGREATER 0.25% Fe, NOTGREATER 0.01% each of Mn, Ni, Cu and Zn and balance Al; (B) (for coating type (i)) as (A) but containing 23-40 (especially 25)% Si, 1-5 (especially 4)% Ni and 1.0-1.4 (especially 1.2)% Fe; (C) (for coating type (ii)) 5-50% Si particles and 50-95% alloy particles of composition (A) but containing 0-11.8 (especially 9)% Si; (D) (for coating type (ii)) 5-50% Si particles and 50-95% alloy particles of composition (B) but containing 0-11.8 (especially 9)% Si; (E) (for coating type (iii)) 5-50% Si particles and 50-95% alloy particles of composition (A) but containing 11.8-40 (especially 17)% Si; or (F) (for coating type (iii)) 5-50% Si particles and 50-95% alloy particles of composition (B) but containing 11.8-40 (especially 17)% Si.

IPC 1-7

C23C 4/04; C23C 4/12

IPC 8 full level

F02F 1/00 (2006.01); **C22C 21/02** (2006.01); **C23C 4/04** (2006.01); **C23C 4/12** (2006.01); **C23C 4/134** (2016.01); **C23C 28/00** (2006.01); **C23C 30/00** (2006.01); **F16J 10/04** (2006.01)

CPC (source: EP KR US)

C23C 4/04 (2013.01 - EP US); **C23C 4/134** (2016.01 - EP US); **C23C 28/00** (2013.01 - KR); **C23C 30/00** (2013.01 - EP US)

Cited by

EP1176228A3; EP0987339A1; US6329021B1; WO0141942A3

Designated contracting state (EPC)

DE ES FR GB IT SE

DOCDB simple family (publication)

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