

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 A1 19990210 (DE)

Application
EP 98113380 A 19980717

Priority
DE 19733205 A 19970801

Abstract (en)
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 µm and the mean oxide size being less than 5 µm. 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.

Abstract (de)
Die Erfindung betrifft Beschichtungen einer Zylinderlauffläche einer Hubkolbenmaschinen auf einer Eisen-, Aluminium- oder Magnesium-Basis mit einer übereutektischen Aluminium/Silizium Legierung sowie Verfahren zu deren Herstellung. <IMAGE>

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)

Citation (search report)
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• [A] WO 9713884 A1 19970417 - FORD MOTOR CO [GB], et al
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