

Title (en)
COMPOSITE MATERIALS.

Title (de)
ZUSAMMENGESETZTE MATERIALIEN.

Title (fr)
MATERIAUX COMPOSITES.

Publication
EP 0018377 A1 19801112 (EN)

Application
EP 79900490 A 19791217

Priority
GB 2149578 A 19780523

Abstract (en)
[origin: WO7901103A1] An article, for example a piston for an internal combustion engine is formed of two or more layers of different material compositions in which there is a controlled graded change of composition between layers or within at least one of the layers. In a piston the skirt (3) has a first composition the crown (4) has a second composition (1) and between the skirt and the crown there is an intermediate zone (2) in which the relative proportions of the materials lie intermediate those in the skirt and crown.

Abstract (fr)
Un produit, par exemple un piston d'un moteur a combustion interne est forme de deux ou plusieurs couches de compositions de materiaux differentes dans lesquelles le degre de variation de la composition entre les couches ou dans au moins une des couches est controle. La jupe (3) d'un piston possede une premiere composition, la couronne (4) possede une seconde composition (1) et entre la jupe et la couronne se trouve une zone intermediaire (2) dans laquelle les proportions relatives des materiaux se situent entre celles de la jupe et de la couronne.

IPC 1-7
B23B 5/14; B32B 15/20; F02F 3/12; B22F 7/06; C22C 32/00

IPC 8 full level
B22D 19/16 (2006.01); **B22F 7/06** (2006.01); **B23K 20/12** (2006.01); **B23P 15/10** (2006.01); **B32B 5/14** (2006.01); **B23P 15/04** (2006.01); **B32B 15/00** (2006.01); **C22C 32/00** (2006.01); **C23C 28/00** (2006.01); **F01D 5/28** (2006.01); **F01D 25/24** (2006.01); **F02F 3/10** (2006.01); **F02F 3/12** (2006.01); **F16J 1/01** (2006.01); **F16J 10/00** (2006.01)

CPC (source: EP)
B22F 7/06 (2013.01); **C22C 32/0036** (2013.01); **C23C 28/321** (2013.01); **C23C 28/34** (2013.01); **C23C 28/341** (2013.01); **C23C 28/345** (2013.01); **C23C 28/3455** (2013.01); **F02F 3/12** (2013.01); **B22F 2998/00** (2013.01); **F02F 2200/04** (2013.01); **F05C 2201/021** (2013.01); **F05C 2251/042** (2013.01)

C-Set (source: EP)
B22F 2998/00 + B22F 2207/03

Designated contracting state (EPC)
FR

DOCDB simple family (publication)
WO 7901103 A1 19791213; AU 4732779 A 19791129; BE 876507 A 19790917; DK 21980 A 19800118; EP 0018377 A1 19801112; ES 480829 A1 19801001; IT 7968102 A0 19790523; JP S55500363 A 19800626; NL 7904066 A 19791127; NO 791675 L 19791126; SE 8000505 L 19800122

DOCDB simple family (application)
GB 7900069 W 19790521; AU 4732779 A 19790523; BE 195361 A 19790523; DK 21980 A 19800118; EP 79900490 A 19791217; ES 480829 A 19790523; IT 6810279 A 19790523; JP 50076979 A 19790521; NL 7904066 A 19790523; NO 791675 A 19790521; SE 8000505 A 19800122