

Title (en)
HIERARCHICAL COMPOSITE MATERIAL

Title (de)
HIERARCHISCHER VERBUNDWERKSTOFF

Title (fr)
MATERIAU COMPOSITE HIERARCHIQUE

Publication
EP 2334836 B1 20120314 (FR)

Application
EP 09782201 A 20090826

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• EP 2009060980 W 20090826
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Abstract (en)
[origin: WO2010031662A1] The invention relates to a hierarchical composite material that comprises a ferrous alloy reinforced with titanium carbides according to a predetermined geometry, wherein said reinforced portion includes an alternating macro-microstructure of millimetric areas with a concentration of globular micrometric titanium carbide particles separated by millimetric areas substantially free of globular micrometric titanium carbide particles, said areas having a concentration of globular micrometric titanium carbide particles defining a microstructure in which the micrometric gaps between the globular particles are also filled by said ferrous alloy.

IPC 8 full level
C22C 33/02 (2006.01); **C22C 1/05** (2006.01); **C22C 29/06** (2006.01)

CPC (source: EP KR US)
B22D 19/14 (2013.01 - EP US); **C22C 1/05** (2013.01 - KR); **C22C 1/055** (2013.01 - EP US); **C22C 1/1052** (2023.01 - EP);
C22C 1/1068 (2013.01 - EP US); **C22C 29/06** (2013.01 - EP US); **C22C 33/0228** (2013.01 - EP US); **C22C 33/0242** (2013.01 - EP US);
C22C 37/00 (2013.01 - EP US); **C22C 38/00** (2013.01 - EP US); **B22F 2998/00** (2013.01 - EP US); **B22F 2998/10** (2013.01 - EP US);
B22F 2999/00 (2013.01 - EP US); **C22C 1/1052** (2023.01 - US); **Y10T 428/12576** (2015.01 - EP US); **Y10T 428/12806** (2015.01 - EP US);
Y10T 428/12951 (2015.01 - EP US); **Y10T 428/256** (2015.01 - EP US)

C-Set (source: EP US)
1. **B22F 2999/00 + C22C 33/0228 + B22F 2207/01**
2. **B22F 2998/00 + B22F 3/23**
3. **B22F 2998/10 + B22F 3/02 + B22F 3/26**

Cited by
CN115867401A; EP3915699A1; IT202100024641A1; WO2021239294A1

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)
AL BA RS

DOCDB simple family (publication)
WO 2010031662 A1 20100325; AT E549427 T1 20120315; AU 2009294781 A1 20100325; AU 2009294781 B2 20130613;
BE 1018130 A3 20100504; BR PI0913538 A2 20151215; BR PI0913538 B1 20191217; CA 2735912 A1 20100325; CA 2735912 C 20160329;
CL 2011000577 A1 20110826; CN 102187002 A 20110914; CN 102187002 B 20130605; DK 2334836 T3 20120702; EG 26641 A 20140416;
EP 2334836 A1 20110622; EP 2334836 B1 20120314; EP 2334836 B9 20130807; ES 2383782 T3 20120626; ES 2383782 T9 20131105;
JP 2012502802 A 20120202; JP 5484468 B2 20140507; KR 101614180 B1 20160420; KR 20110059720 A 20110603;
MX 2011003029 A 20110414; MY 156696 A 20160315; PL 2334836 T3 20120831; PT 2334836 E 20120723; US 2011229715 A1 20110922;
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EP 2009060980 W 20090826; AT 09782201 T 20090826; AU 2009294781 A 20090826; BE 200800521 A 20080919;
BR PI0913538 A 20090826; CA 2735912 A 20090826; CL 2011000577 A 20110318; CN 200980137113 A 20090826;
DK 09782201 T 20090826; EG 2011020427 A 20110220; EP 09782201 A 20090826; ES 09782201 T 20090826; JP 2011527280 A 20090826;
KR 20117006354 A 20090826; MX 2011003029 A 20090826; MY PI20111243 A 20090826; PL 09782201 T 20090826; PT 09782201 T 20090826;
US 200913119688 A 20090826; ZA 201101791 A 20110308