

Title (en)
SPHEROIDAL GRAPHITE CAST IRON

Title (de)
KUGELGRAPHIT-GUSSEISEN

Title (fr)
FONTE À GRAPHITE SPHÉROÏDAL

Publication
EP 2377960 B1 20180926 (EN)

Application
EP 09833255 A 20090730

Priority
• JP 2008322696 A 20081218
• JP 2009063560 W 20090730

Abstract (en)
[origin: US2011211986A1] A ductile iron having superior high-temperature strength and oxidation resistance at temperatures exceeding 800° C. compared with conventional high Si and Mo ductile iron. The ductile iron comprises, in terms of mass ratio, carbon: 2.0 to 4.0%, silicon: 3.5 to 5.0%, manganese: not more than 1.0%, chromium: 0.1 to 1.0%, molybdenum: 0.2 to 2.0%, vanadium: 0.1 to 1.0%, and magnesium: 0.02 to 0.1%, with the remainder being composed of iron and unavoidable impurities.

IPC 8 full level
C22C 37/04 (2006.01); **C22C 37/06** (2006.01); **C22C 37/10** (2006.01)

CPC (source: EP KR US)
C21D 5/00 (2013.01 - EP US); **C22C 37/04** (2013.01 - EP KR US); **C22C 37/06** (2013.01 - EP US); **C22C 37/10** (2013.01 - EP US)

Citation (opposition)
Opponent : Siemens Aktiengesellschaft
• WO 2005085488 A1 20050915 - HITACHI METALS LTD [JP], et al
• JP H10195587 A 19980728 - TOYOTA CENTRAL RES & DEV, et al
• JP S58171553 A 19831008 - TOYO KOGYO CO
• JP S6324041 A 19880201 - TOYOTA MOTOR CORP
• JP S63100154 A 19880502 - TOYOTA MOTOR CORP
• JP 2004360071 A 20041224 - HYUNDAI MOTOR CO LTD
• WO 2008112720 A1 20080918 - WESCAST IND INC [CA], et al
• JP S5858248 A 19830406 - NISSAN MOTOR
• JP S62142745 A 19870626 - TOYOTA MOTOR CORP
• JP S6372850 A 19880402 - TOYOTA MOTOR CORP
• JP 2002339033 A 20021127 - SUZUKI MOTOR CO, et al
• JP 3582400 B2 20041027
• DE 19827861 A1 19990107 - MITSUBISHI MATERIALS CORP [JP], et al
• DE 3639658 A1 19880601 - MUEHLBERGER HORST DIPL PHYS DR [DE]
• DE 10252240 A1 20040603 - AISIN TAKAOKA LTD [JP], et al

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EP3118340A4; US10294550B2

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

DOCDB simple family (publication)
US 2011211986 A1 20110901; CN 102264931 A 20111130; CN 102264931 B 20140903; EP 2377960 A1 20111019; EP 2377960 A4 20161214; EP 2377960 B1 20180926; EP 2377960 B2 20220406; JP 2010144216 A 20100701; JP 5232620 B2 20130710; KR 101373488 B1 20140312; KR 20110069170 A 20110622; WO 2010070949 A1 20100624

DOCDB simple family (application)
US 200913127403 A 20090730; CN 200980146974 A 20090730; EP 09833255 A 20090730; JP 2008322696 A 20081218; JP 2009063560 W 20090730; KR 20117010779 A 20090730