Title (en)

Moulding material mixture, moulded blank for moulding purposes and method for producing a moulded blank

Title (de)

Formstoffmischung, Formling für Giessereizwecke und Verfahren zur Herstellung eines Formlings

Title (fr)

Mélange de matière à mouler, pièce brute pour des besoins de fonderie et procédé de fabrication d'une pièce brute

Publication

EP 2014392 B1 20110601 (DE)

Application

EP 08007906 A 20080424

Priority

DE 102007027577 A 20070612

Abstract (en)

[origin: EP2014392A2] Molding material mixture (I) for foundry purposes, comprises: molding sand; sodium hydroxide solution (0.1-10 wt.%); a binding agent based on alkali silicate; and additives, where: the molding sand particles comprise a grain size of 0.1-1 mm; sodium hydroxide solution comprises a concentration of 20-40 wt.%; (I) contains 0.1-5% of binding agent based on alkali silicate with a solid matter percentage of 20-70%; and the molding material mixture, as the additive, contains 0.1-3 wt.% of a suspension with a solid matter percentage of 30-70% of amorphous, spherical silicon dioxide. Molding material mixture (I) for foundry purposes, comprises: molding sand; sodium hydroxide solution (0.1-10 wt.%); a binding agent based on alkali silicate; and additives, where: the molding sand particles comprise a grain size of 0.1-1 mm; the sodium hydroxide solution comprises a concentration of 20-40 wt.%; (I) contains 0.1-5% of binding agent based on alkali silicate with a solid matter percentage of 20-70%; the molding material mixture, as the additive, contains 0.1-3 wt.% of a suspension with a solid matter percentage of 30-70% of amorphous, spherical silicon dioxide in two grain size classifications in the suspension with a first grain size classification (A) containing silicon dioxide particles with a grain size of 1-5 micrometers and with a second grain size classification (B) containing silicon dioxide particles with a grain size of 0.01-0.05 micrometers; and the distribution rule of 0.8-1.0 to 1.2-1 applied for the volume percentages of the two grain size area (A) and (B). Independent claims are included for: (1) a molded part for foundry purposes, produced from (I), where the surface of the individual molding sand grain in the molding part exhibits a primary structure made of silicon dioxide particles with a grain size of 1-5 micrometers; the micrometer-sized amorphous silicon dioxide spheres separate the individual quarts sand particles from one another and further characterized by a substructure of silicon dioxide particles with a grain size of 0.01-0.05 micrometers, which are distributed in a binding agent layer, which is 0.5-2 micrometers thick and is uniformly distributed on molding sand grains; and the nanometer-sized amorphous silicon dioxide spheres form adjoining peaks and valleys of up to 300 nanometers of height/depth; and (2) producing the molded part comprising: providing molding; mixing the sodium hydroxide solution with the binding agent based on alkali silicate; uniformly and homogeneously distributing the molding sand grains in the form of a binding agent envelope; adding a mixture of silicon dioxide particles with two grain size classifications in the binding agent envelope; and drying the molding material mixture to form a molded part, where the binding agent envelope shrinks during the drying process and forms a roughness structure with a maximum height differential of 300 nanometers.

IPC 8 full level

B22C 1/18 (2006.01)

CPC (source: EP KR US)

B22C 1/02 (2013.01 - KR); **B22C 1/18** (2013.01 - KR); **B22C 1/188** (2013.01 - EP US); **B22C 9/12** (2013.01 - KR)

Cited by

DE102012020509A1; EP3950168A1; DE102012103705A1; WO2013159762A1; DE102012020511A1; WO2014059969A2; DE102012020510A1; WO2014059968A2; DE102012020510B4; WO2020229623A1; WO2014059967A2; KR20150074109A

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 MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)

EP 2014392 A2 20090114; **EP 2014392 A3 20100721**; **EP 2014392 B1 20110601**; AR 066992 A1 20090923; AT E511419 T1 20110615; AU 2008202587 A1 20090108; AU 2008202587 B2 20100128; BR PI0803387 A2 20090804; CA 2631908 A1 20081212; CA 2631908 C 20110712; CN 101323008 A 20081217; CN 101323008 B 20121121; DE 102007027577 A1 20081218; DK 2014392 T3 20110912; ES 2365827 T3 20111011; JP 2008307604 A 20081225; JP 4719248 B2 20110706; KR 101027030 B1 20110411; KR 20080109624 A 20081217; MX 2008007515 A 20090304; NZ 568939 A 20090925; PL 2014392 T3 20111031; RU 2008123122 A 20091220; RU 2385201 C2 20100327; SI 2014392 T1 20110930; UA 88412 C2 20091012; US 2008314549 A1 20081225; US 8006745 B2 20110830

DOCDB simple family (application)

EP 08007906 A 20080424; AR P080102526 A 20080612; AT 08007906 T 20080424; AU 2008202587 A 20080611; BR PI0803387 A 20080612; CA 2631908 A 20080521; CN 200810109651 A 20080611; DE 102007027577 A 20070612; DK 08007906 T 20080424; ES 08007906 T 20080424; JP 2008152417 A 20080611; KR 20080053646 A 20080609; MX 2008007515 A 20080611; NZ 56893908 A 20080609; PL 08007906 T 20080424; RU 2008123122 A 20080610; SI 200830356 T 20080424; UA A200807901 A 20080610; US 13782208 A 20080612