

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 A3 20100721 (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 quartz 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

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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)

Citation (search report)

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- [A] DATABASE WPI Section Ch Week 198710, Derwent World Patents Index; Class M22, AN 1987-071090, XP002501280
- [A] DATABASE WPI Section Ch Week 198643, Derwent World Patents Index; Class L02, AN 1986-284029, XP002501281
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- [A] DATABASE WPI Section Ch Week 198432, Derwent World Patents Index; Class E36, AN 1984-199469, XP002501283
- [A] STRUMPS E: "JAHRESÜBERSICHT FORMSTOFFE (30. FOLGE). ÜBERZUGSTOFFE; VOLLFORMGIESSVERFAHREN. ÖTEIL 2. FORMVERFAHREN MIT NICHT TONGEBUNDENEN FORMSTOFFEN", GIESSEREI, GIESSEREI VERLAG, DUSSELDORF, DE, vol. 80, no. 18, 20 September 1993 (1993-09-20), pages 634 - 636/637, XP000411967, ISSN: 0016-9765
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