

## 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 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

**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

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