

Title (en)  
CONTINUOUS STEEL CASTING METHOD

Title (de)  
VERFAHREN ZUM KONTINUIERLICHEN STAHLGIESSEN

Title (fr)  
PROCÉDÉ DE COULÉE CONTINUE D'ACIER

Publication  
**EP 3488947 A4 20190821 (EN)**

Application  
**EP 17853092 A 20170920**

Priority  
• JP 2016183726 A 20160921  
• JP 2017009906 W 20170313  
• JP 2017033955 W 20170920

Abstract (en)  
[origin: EP3488947A1] Surface cracking caused by nonuniform cooling of a solidifying shell at the initial stage of solidification is prevented, and the occurrence of center segregation in a thicknesswise central portion of a strand is reduced. Metal-filled portions with different thermal conductivity filled with a metal having a thermal conductivity that differs by at least 20% from the thermal conductivity of a mold copper plate of a continuous casting mold are disposed on an inner wall surface of the mold copper plate in a region extending from a position at least 20 mm above the position of a meniscus to a position at least 50 mm and at most 200 mm below the position of the meniscus. The area fraction of the total area of the metal-filled portions with different thermal conductivity relative to the area of the inner wall surface on which the plurality of metal-filled portions with different thermal conductivity are disposed is from 10% to 80% inclusive. A distance (D1) and an oscillation mark pitch (OMP) that is derived from the frequency of oscillation (f) and a casting speed (Vc) satisfy formula (1) below, and a distance (D2) satisfies formula (2) below. In formula (2), r is the radius (mm) of a circle having a center at the center of gravity of one of the metal-filled portions with different thermal conductivity and having the same area as the one of the metal-filled portions with different thermal conductivity.

IPC 8 full level  
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Citation (search report)  
• [X1] EP 2839901 A1 20150225 - JFE STEEL CORP [JP]  
• [E] EP 3488946 A1 20190529 - JFE STEEL CORP [JP]  
• [AD] JP H09206903 A 19970812 - SUMITOMO METAL IND  
• [A] US 5176197 A 19930105 - HAMAGUCHI CHIYOKATSU [JP], et al  
• See references of WO 2018056322A1

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US11759851B2

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Designated extension state (EPC)  
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KR 20190029757 A 20190320; TW 201813739 A 20180416; TW 201813740 A 20180416; TW I630961 B 20180801; TW I655979 B 20190411;  
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