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KAWASAKI STEEL GIHO

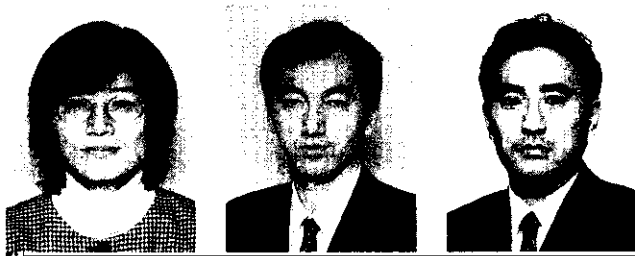
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温間成形用部分合金化鋼粉クリーンミックス 「KIP クリーンミックス HW シリーズ」*

川崎製鉄技報
33 (2001) 4, 170-174

Pre-mixed Partially Alloyed Steel Powder for Warm Compaction “KIP Clean Mix HW Series”



要旨

川崎製鉄では、温間での使用に適した潤滑剤「KWワックス」を配合することにより、温間成形用偏析防止処理鉄粉「クリーンミックス HW シリーズ」を開発した。KWワックスの採用により、室温から 423 K までの広い温度領域で、流動度および見掛密度などの粉体特性が安定なクリーンミックスが実現した。この粉体特性の安定化により、HW シリーズでは、量産成形における鉄粉の緻密な温度

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宇津 肇

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管理が不要である。さらに、鉄粉成形時の圧密化基盤の解析により

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Abstract: This paper describes the development of a pre-mixed partially alloyed steel powder for warm compaction, KIP Clean Mix HW Series, by combining a lubricant, KW Wax, with a segregation-preventing treated steel powder. The adoption of KW Wax enables stable powder properties such as flowability and apparent density in a wide temperature range from room temperature to 423 K. This stable powder property enables the production of a dense steel powder during mass production. Furthermore, the analysis of the compaction mechanism of the steel powder during warm compaction is discussed.

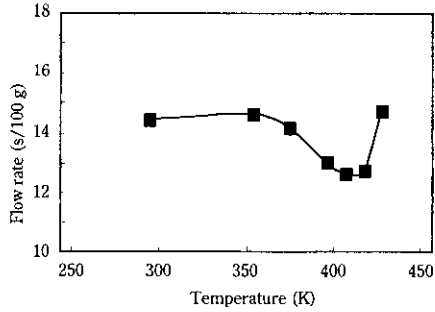


Fig. 1 Temperature dependence of flow rate for powder pre-mix of material A

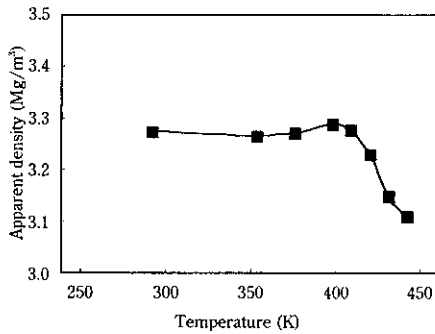


Fig. 2 Temperature dependence of apparent density for powder pre-mix of material A

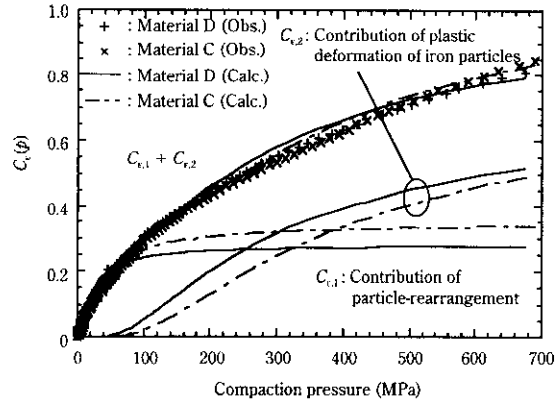
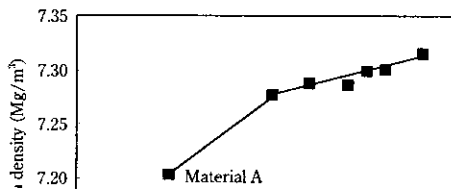


Fig. 4 Compaction pressure dependences of reduction rate of porosity, $C_r(\phi)$, of powder pre-mix C and powder D during warm compaction process

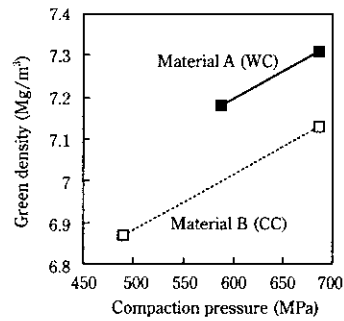


Fig. 5 Compaction pressure dependences of green density of materials A and B

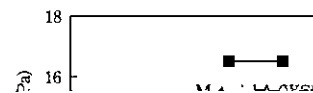


Table 3. Physical properties of KIP Clean Mix HW Series

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