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有机粘结剂氧化球团固结特性及强化措施

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摘 要：研究有机粘结剂球团和膨润土球团的矿相结构、矿物组成，并比较这2种粘结剂在成球过程中的作用机理。认为有机粘结剂球团比膨润土球团固结强度低的原因主要有2个：一是与膨润土球团相比，有机粘结剂球团中颗粒接触不够紧密、球团孔隙率高，二是起粘结作用的低熔点物质含量少。通过磨矿降低铁精矿原料粒度，采用润磨工艺，可增大有机粘结剂球团颗粒之间的接触，在950 ℃预热10 min以及在1 250 ℃焙烧10 min的条件下，使有机粘结剂球团的预热球强度从159 N/个提高到488 N/个，焙烧球强度从1 405 N/个提高到2 534 N/个；另外，添加1.25%的石灰石有利于球团中低熔点物质的生成，在1 010 ℃预热10 min以及在1 250 ℃焙烧10 min的条件下，可以使有机粘结剂球团的预热球强度从245 N/个提高到426 N/个，焙烧球强度从1 477 N/个提高到3 051 N/个。

关键字：有机粘结剂；膨润土；预热球；焙烧球；固结强度

Concretion properties of organic-binder oxidate pellets and strengthen measures

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Abstract: The mineral composition and the structure of two kinds of pellets made by bentonite and organic binder respectively were studied and the mechanisms of these two kinds of binders in the palletizing process were compared. The results show that the strength of organic-binder pellets is lower than that of bentonite pellets. One reason is that particles in organic-binder pellets contact looser and the porosity is higher. The other is that the content of low-melting material in organic-binder pellets which plays the role of bonding is less than that in bentonite pellets. The contact of particles in organic-binder pellets can be improved by reducing the size of iron concentrate using ball milling and the damp milling. The strength of preheated pellet increases from 159 N to 488 N, and that of indurated pellets increases from 1 405 N to 2 534 N in the condition of preheating for 10 min at 950 ℃ and indurating for 10 min at 1 250 ℃. Furthermore, the forming of low-melting material in organic-binder pellets can be improved and the strength of preheated pellets increases from 245 N to 426 N, and that of indurated pellets from 1 477 N to 3 051 N by adding 1.25% limestone to pellets in the condition of preheating for 10 min at 1 010 ℃ and indurating for 10 min at 1 250 ℃.

Key words:organic binder; bentonite; preheated pellets; indurated pellets; concretion strength

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