



论文摘要

中南大学学报(自然科学版)

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Vol.40 No.4 Aug.2009

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文章编号: 1672-7207(2009)04-0851-06

焙烧气氛对内配碳赤铁矿球团焙烧行为的影响

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摘要: 模拟氧化球团生产工艺, 研究焙烧气氛对内配碳赤铁矿氧化球团强度的影响, 并结合矿相显微结构和FeO含量的变化规律分析, 揭示内配碳赤铁矿球团在不同氧含量下的焙烧行为和固结规律。研究表明: 内配碳赤铁矿氧化球团在接近空气配比(氧含量约20%, 体积分数)的氧化性气氛中焙烧强度最大, 氧含量过高或过低都会影响 Fe_2O_3 的再结晶, 使球团强度降低; 在氧化性气氛中焙烧含碳赤铁矿球团时, 原生赤铁矿先还原为磁铁矿, 磁铁矿再氧化成活性较高的次生赤铁矿, 提高了赤铁矿焙烧固结性能和球团强度。

关键字: 赤铁矿; 内配碳; 氧化球团; 焙烧

Effects of atmosphere on roasting behaviors of carbon-burdened hematite pellets

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Abstract: By simulating pelletizing process in lab, the effects of atmosphere on the strength of pellet prepared with hematite concentrate with carbon-burdened were studied, and the roasting behaviors and induration mechanisms under different oxygen partial pressures were revealed by analyzing mineralogical microstructure and FeO content. The results show that the perfect strength can be obtained under oxygen partial pressure about 20% O_2 , overhigh or low oxygen partial pressure is unfavorable for recrystallization of Fe_2O_3 , which causes a decrease of pellet strength. The original hematite will be transformed into magnetite on reduction firstly when carbon-burdened hematite pellet is roasted in oxidizing atmosphere, and then the magnetite will be oxidized to secondary hematite, which is more active than original hematite, therefore, the induration strength of pellet is able to be enhanced.

Key words: hematite; carbon-burdened; oxidized pellet; roasting

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