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电石渣在煅烧/氯化反应中的HCl脱除特性研究

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HCl removal characteristics of carbide slag in a calcination/chlorination reactor

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全文: PDF (3897 KB)　HTML (1 KB)　输出: BibTeX | EndNote (RIS)　背景资料

摘要 采用钙基废弃物——电石渣煅烧后脱除HCl。在煅烧/氯化反应器上研究脱氯反应温度、HCl体积分数、颗粒粒径和煅烧温度对电石渣脱氯性能的影响。结果表明，电石渣在700 ℃时取得最高氯化转化率；脱氯反应温度高于650 ℃后，电石渣氯化转化率均高于石灰石，电石渣高温脱氯更有优势。电石渣氯化转化率随反应气氛中HCl体积分数提高呈线性增长。随电石渣颗粒粒径增大，氯化转化率缓慢降低。高于900 ℃的煅烧温度不利于电石渣脱除HCl。煅烧后电石渣分布在2~10 nm的孔隙较多，氯化后分布在此孔径范围内的孔容和孔面积分别降低了56.2%和62.2%，2~10 nm孔隙是煅烧后电石渣吸收HCl的主要区域。

关键词： 电石渣　煅烧反应　氯化反应　HCl脱除

Abstract： The carbide slag as a calcium-based waste was calcined and used to remove HCl. The effects of HCl removal reaction temperature, HCl volume fraction, particle size and calcination temperature on the dechlorination performance of carbide slag were examined in a calcination/chlorination reactor. The results show that the carbide slag has the highest chlorination conversion at 700 ℃, and has higher chlorination conversions than limestone at the temperature above 650 ℃. It indicates that the carbide slag has a better dechlorination performance at higher temperature. The chlorination conversion of carbide slag rises linearly with the increasing of HCl volume fraction. As the particle size increases, the chlorination conversion decreases slowly. The calcination temperature above 900 ℃ is adverse to the HCl removal by carbide slag. The calcined carbide slag possesses more pores in the range of 2~10 nm. And after chlorination, the volume and area of pores in 2~10 nm drop by 56.2% and 62.2%,respectively. The pores in 2~10 nm may be the dominating area for the calcined carbide slag to absorb HCl.

Key words： carbide slag　calcination reaction　chlorination reaction　HCl removal

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