

发电

熔融温度对城市生活垃圾焚烧飞灰旋风熔融试验特性的影响

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收稿日期 2006-8-15 修回日期 网络版发布日期 2007-10-15 接受日期

摘要

采用自行设计的旋风熔融系统对焚烧飞灰进行熔融试验,研究了不同熔融温度条件下熔渣的微观形貌及熔融过程中重金属行为。结果表明,旋风熔融处理系统设计合理,系统能够协调稳定运行,使用方便;旋风熔融可有效地固溶焚烧飞灰中的重金属,易于焚烧飞灰的大规模处理。在较低熔融温度下(1250~1300℃),试样仅发生烧结反应或部分熔融;较高的熔融温度(>1350℃)可使试样完全转化为玻璃态。在1250~1400℃范围内,Ni、Cr、Cu、Co、Mn的固溶率随熔融温度的升高呈缓慢增长趋势,而熔融温度变化对As、Pb、Cd、Zn的固溶率影响显著。熔融产物中Zn、Cr、Pb、Cu、Cd、Hg等重金属浸出率均非常低,低于美国EPA标准限值。

关键词 [热能动力工程](#) [垃圾焚烧炉](#) [焚烧飞灰](#) [熔融](#) [重金属形态](#) [固溶率](#)

分类号 [TK229](#); [X705](#)

Effects of Melting Temperature Experimental Property of Fly Ash From Municipal Solid Waste Incinerator During Swirling Melting Process

Abstract

The fly ash (FA) was melted in the self-developed swirling melting furnace system. At different temperature, the physical changes of microstructure and behavior of heavy metals were investigated during fly ash melting process. The results show that the design of the experimental system design is reasonable, and the running stability are verified. The swirling melting process technology would effectively immobilize the heavy metals in fly ash from municipal solid waste incineration(MSWI). The sample happened to sintering reaction or part melting reaction at the lower range melting temperature between 1250 to 1300℃. The fly ashes samples would be transformed to the glassy state at the higher melting temperature above 1350℃. The melting temperature range is between 1250 to 1400℃, the fixation rates of Ni, Cr, Cu, Co, and Mn are slowly increased with melting temperature enhancement during melting process. The changes of melting temperature have marked affect on the fixation rates of Ad, Pb, Cd, and Zn. Vitrification of fly ash results in a decrease of the leaching of heavy metals (Zn, Cr, Pb, Cu, Cd, and Hg) to much below the EPA regulatory limit values.

Key words [thermal power engineering](#) [municipal-solid-waste incinerator](#) [municipal solid waste incineration fly ash](#) [melting](#) [heavy metal speciation](#) [fixation rates](#)

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