

Removal of Chloride from MSWI Fly Ash

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要旨

The presence of high level of alkali chloride and soluble metal salt in MSWI fly ash is worth noting for their impact on the environment. The reuse or recycling of fly ash becomes the issue because of limited landfill space. The chloride content in fly ash limits its application as construction materials. Water-soluble chloride such as potassium chloride (KCl), sodium chloride (NaCl), and calcium chloride hydrate ($\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$) in fly ash were easily washed away. However, calcium chloride hydroxide ($\text{Ca}(\text{OH})\text{Cl}$) might not be easy to leach away at room temperature. Roasting and washing-flushing processes were applied to remove chloride content in this study. Additionally, air and CO_2 were introduced into washing process to neutralize the hazardous nature. In order to compare with water flushing process, the reuse of the Cl-removed fly ash particles by roasting process is more convenient to reduce the process of solid-liquid separation and dry. From several roasting experiments, the removal of chloride content from fly ash at 1050°C for 3hr showed the best results (83% chloride removal efficiency). In the case of water-flushing process that can totally remove water-soluble chloride at a solid to liquid ratio of 1:10 (97% chloride removal efficiency). The analyses of mineralogy change also prove that the chloride removal mechanism and efficiency during fly ash roasting and washing.



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