

Study on the Suppression of Hydrogen Generation by Aluminum-Containing Waste Incineration Ash and Water

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Abstract : Explosions have occurred in incineration plants in conveyors, ash pits, and other locations. The cause of such explosions is thought to be the reaction of metallic aluminum contained in the ash with water used to cool the ash and prevent scattering, resulting in the generation of hydrogen. Given this background, conveyors and other equipment have been damaged by explosions, which has hindered the stable operation of incineration plants. In addition, workers may be injured by equipment explosions, creating an unsafe situation. To remedy these problems, it is necessary to devise a way to prevent hydrogen explosions from occurring. To overcome this problem, we conducted a hydrogen generation reaction experiment using simulated incinerator ash powder containing aluminum and calcium oxide and water and confirmed that conditions exist to stop the hydrogen generation reaction. The results of this research may contribute to the suppression of hydrogen explosions at incineration plants.

Keywords : waste incinerated ash, aluminum, water, hydrogen

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