



Study of a complex protein foaming agent from disintegrated brewery sludge supernatant

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ABSTRACT

In this study, disintegrated brewery sludge supernatant was used to make complex protein foaming agent (CPFA), which was applied in cellular concrete. The influences of CPFA proportion, additives and temperature were investigated. Foam property was measured by the Ross–Miles method and the optimal foaming condition for CPFA was found to be when the complex proportion was 1:60 to disintegrated supernatant and the temperature 40°C. The relationship of foam property (Υ) and dosage of additives (gum arabic X_1 , sucrose X_2 and zinc sulfate X_3) was a polynomial. CPFA was used to produce cellular concrete and its performance contrasted with the concrete made using an animal protein foaming agent. The density of CPFA concrete was very similar to that of animal protein concrete, but the former's compressive strength, sorptivity and pore structure found to be superior. Applied disintegrated brewery sludge supernatant as a foaming agent, not only can produce economic benefit, but also solve a growing environmental problem. This study provided a new idea in the resource utilization of brewery sludge.

Keywords: Disintegrated supernatant; Complex protein; Foaming agent; Foam property; Cellular concrete

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