Extra-lightweight no-fines cellular concrete - Use for non-structural material

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Abstract

Overexploitation has led to the destruction of resources and endangered ecological environments. Therefore, research for renewable material has become more important in the construction industry. This study used sintered lightweight aggregate made of clay to replace the coarse and fine aggregate and processed aluminum-wastage to make the foaming agents for cement, producing a brand-new extra-lightweight expanded no-fines cellular concrete. The cellular concrete not only utilizes recycled materials, but also produces an environment-friendly, green building material. Validated throughout the experiment, the cellular concrete may provide functions such as fire protection, thermal resistance, and acoustic absorption when used as non-structural material. This paper attempts to evaluate the basic physical properties of cellular concrete by different water/cement ratio (W/C) and agent/cement (A/C) ratio for the coefficients of expansion, compression strengths, and the thermal conductivity.

Keyword：Sintered lightweight aggregate, foaming agent, cellular concrete