Methodology for the Design of Lightweight Concrete with Expanded Clay Aggregates

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Abstract:

The increasing use in Portugal of masonry blocks composed of lightweight concrete with expanded clay aggregates emphases the need to optimize the mix design in order to achieve desired concrete properties. To date, the research on these lightweight concretes has been of limited value because the specificities of their production with vibrant-compressor system make the characterization of concrete difficult by current test procedures in the laboratory. In this paper, the results of an experimental study on expanded clay lightweight concrete masonry blocks, with samples obtained in real production condition, are presented. Concrete mixes with densities between 850 and 1,450 kg/m^3 were produced and characterized. A mix design method has been developed for precast lightweight concrete blocks. Relationship between the mix design and concrete properties has been established.

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