

Pore Structure and Permeation Characteristics of Foamed Concrete

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Abstract

A study has been undertaken to investigate the pore structure characteristics, porosity and critical pore diameter of preformed foamed concrete with a density between 1300 and 1900 kg/m³, and its effect on the permeation characteristics, water absorption and permeability. Different measured and calculated methods were adopted to determine the above properties and a comparison between them was done. Porosity was measured by apparent, total vacuum saturation and mercury intrusion porosimetry (MIP) methods, while permeability was measured (by constant and falling head methods) and calculated (by the Katz and Thompson model). Total porosity and dry density are found to be clearly related.

The critical pore diameter (from the MIP test) and the pore diameter size (>200nm) are found to be closely related to the permeability of foamed concrete.