

Approach to Study the Workability of Concrete with the Fractal Model

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Abstract : The main parameters affecting the workability are the water content, particle size, and the total surface of the grains, as long as the mixing water begins by wetting the surface of the grains and then fills the voids between the grains to form entrapped water, the quantity of water remaining is called free water. The aim is to undertake a fractal approach through the relationship between the concrete formulation parameters and workability, to develop this approach a series of concrete taken from the literature was investigated by varying formulation parameters such as G / S , the quantity of cement C and the quantity of mixing water E . We also call on other model as the model for the thickness of the water layer and model of the thickness of the paste layer to judge their relevance, hence the following results : the relevance of the model of the thickness of the water layer is considered relevant when there is a variation in the water quantity, the model of the thickness of the layer of the paste is only applicable if we consider that the paste is made with the grain value $D_{max} = 2.85$: value from which we see a stable model.

Keywords : concrete, fractal method, paste thickness, water thickness, workability

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