

Influence of the Mixer on the Rheological Properties of the Fresh Concrete

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Abstract : The viscosity of the concrete has a great influence on the properties of the fresh concrete. Fresh concretes with low viscosity have a good flowability, whereas high viscosity has a lower flowability. Clearly, viscosity is directly linked to other parameters such as consistency, compaction, and workability of the concrete. The above parameters also depend very much on the energy induced during the mixing process and, of course, on the installation of the mixer itself. The University of Stuttgart has decided to investigate the influence of different mixing systems on the viscosity of various types of concrete, such as road concrete, self-compacting concrete, and lightweight concrete, using a rheometer and other testing methods. Each type is tested with three different mixers, and the rheological properties, namely consistency, and viscosity are determined. The aim of the study is to show that different types of concrete mixed with different types of mixers reach completely different yield points. Therefore, a 3 step procedure will be introduced. At first, various types of concrete mixtures and their differences are introduced. Then, the chosen suspension mixer and conventional mixers, which are going to be used in this paper, will be discussed. Lastly, the influence of the mixing system on the rheological properties of each of the select mix designs, as well as on fresh concrete, in general, will be presented.

Keywords : rheological properties, flowability, suspension mixer, viscosity

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