

DELAYED ANALYSIS OF SUPERPLASTICIZED FRESH CONCRETE

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Fresh analysis techniques allow concrete to be checked for compliance of mix proportions with specified requirements. Even though the limits on the maximum and minimum cement contents are prescribed in standards specifications, the cement contents are rarely checked, due to the practical difficulties associated with conventional analysis techniques. Fresh concrete can be analysed for cement content by using Rapid Analysis Machine (RAM). RAM is quick and considered reliable if concrete is tested within an hour of being mixed.

By using sugar, fresh concrete can be kept without setting for at least 7 days for the determination of cement content using Rapid Analysis Machine (RAM). This technique is useful in checking the cement content of concrete mixes supplied to construction sites, which do not have ready access to a suitable fresh concrete analysis facility. The test can be used for the concrete containing superplasticizers as well.

The sugar percentage added to a single sample was 2% by mass of cement content of the sample and two superplasticizer dosages were used, 800ml and 1000ml per 100kg of cement content, respectively. For a given sugar and superplasticizer content tests were conducted after three delay times, 1 hour, 24 hour and 7 days, and five samples were checked using RAM for selected amount of sugar and superplasticizer dosages and a delay time. The average cement content of the five samples was taken as the cement content given by RAM for a particular test.

The test results reveal that the cement content can be determined to an accuracy of 3.5%, within 7 days of initial adding of mixing water, even if the fresh concrete contains superplasticizers.