C-30: Analysis of fresh concrete: modified test method

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Concrete just after mixing is known as fresh concrete. According to B.S.1881, the analysis of fresh concrete to find the mix proportions should be started within 5 min of adding water and finished within 2 h. It is very difficult to do the analysis within the above tune limits. The objective of the work was to modify this standard test so that the analysis of fresh concrete could be carried out even after this specified time. The aim is to determine the amount of sugar required to keep the concrete fresh for future testing.

Experiments were done using concrete samples with mix proportion of 1:2:4 by weight and a water/cement ratio of 0.6. Sugar was added in different weight percentages of cement and the time duration up to which the mix proportions remained unchanged was determined. Amount of sugar added was varied from 0.05% to O.6% by weight of cement for different samples. Specific gravities and the correction factors for the coarse and fine aggregates were also obtained experimentally and the mix proportion was obtained as given in B.S.1881. The relationship between the sugar content and the time duration for the mix proportion to change was obtained.

The addition of sugar in 0.05, 0.075, 0.08, 0.10, 0.125, 0.15, 0.2, 0.3, 0.6% by weight of cement, makes it possible to analyse the concrete in the fresh state as specified in B.S.1881 upto 17h, 24h, 27h, 32h, 44h, 64h, 120h, 120h, 120h respectively.