New Method to Replace the Foam Index Test

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ABSTRACT

The foam index test is a relatively crude method used to determine the relative degree of adsorption of air-entraining admixtures (AEAs) that a fly ash sample's components, primarily carbon, will have in a concrete slurry. AEAs are surfactants that are added to concrete mixes to form fine, stable bubbles which are needed for void volume so that concretes do not crack when interstitial water freezes. Foam index tests are usually done by titrating an AEA solution into a mixture of fly ash and water until a stable foam forms on the surface after agitation. The number of drops it takes to saturate the fly ash components and be available to form a surface foam denotes the sample's foam index.

Unfortunately, there is frequently significant variability and, sometimes, a lack of repeatability in performing foam index measurements. These are the result of significant operator discretion, the use of different and variable natural reagents, differing laboratory ware and "drop" sizes, non-standardized procedures, and the dynamic, non-equilibrium nature of the test.

A new method has been developed by Sorbent Technologies Corporation which appears to be a more accurate and robust indicator of AEA interference than the traditional foam index. It uses a standard reagent, tests at an equilibrium condition, and eliminates operator discretion in determining when a sample begins to "foam" by using instrumental measurements. The new, more scientific method will be described in the presentation and its results contrasted with traditional foam index measurements.

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