10 February 1989

Committee C09 on Concrete and Concrete Aggregates
Subcommittee C09.03.10 on Finely Divided Mineral Admixtures

Research Report C09-1001

Interlaboratory Study to Establish Precision Statements for ASTM C311, Interlaboratory Test Data for Specification for Raw or Calcinated Natural Pozzolan for Use in Portland Cement Concrete

Technical contact:
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REPLY TO
ATTENTION OF

August 31, 1988

A.E.A.

Structures Laboratory
Cement and Pozzolan Unit

9 Feb 89

File as research report - send notice of assignment to C9.03.10 chairman C. Cain and Me Thanks - Scott.

Mr. Craig J. Cain
Chairman ASTM Subcommittee C09.03.10
American Fly Ash Company
606 Potter Road
Des Plaines, Illinois 60016

Dear Craig:

Enclosed is the precision-statement report for the new pozzolanic-activity-with-cement test, being developed by Subcommittee C09.03.10, that I had promised to prepare. The ASTM form manual (Blue Book) says that a report summarizing the development of the precision and bias statement for a test method should be on file at ASTM Headquarters. This report is an effort towards meeting this requirement, although I am not certain that it is in the proper format. The form manual also indicates that a format example can be obtained from Headquarters, but I did not have time to do this and still get this report to you in the time frame we had discussed. If necessary, I suppose any necessary modifications can be made later.

The draft precision and bias statement begins on page 3. I could not find substantial reason to calculate separate estimates for each type of material or for each test age, therefore, I pooled all of the individual estimates into one estimate each for the within- and between-laboratory precision.

Please let me know if additional work is needed on this document.

Sincerely,

Toy L. Poole

Toy S. Poole
Chief, Cement and Pozzolan Unit

Enclosure

PRECISION ESTIMATES FOR THE PROPOSED POZZOLANIC-ACTIVITY-WITH-CEMENT TEST

ASTM Subcommittee C09.03.10 on Finely Divided Mineral Admixtures

August, 1988

1. The purpose of this report is to report estimates of single-operator (i.e. within laboratory) precision and multilaboratory (i.e. between laboratory) precision, as defined in paragraphs 6.2 and 6.3 of ASTM C 802-87, for the proposed pozzolanic-activity-with-cement test that has been under development in ASTM C09.03.10. Data were derived from the results of two interlaboratory studies. These studies are the last two in a series of five and were conducted with the method in its currently proposed form. The first three studies were developmental, consequently do not represent the currently proposed form and were not useful for precision estimates. Part 4 of the interlaboratory study was completed in 1987; Part 5 was completed in 1988. The data were analysed according to ASTM C 802-87. The precision statement was prepared according to ASTM C 670-87.

2. Part 4 of the interlaboratory study included three fly ashes: a Class C fly ash, a Class F fly ash, and an unclassified* Class F fly ash. The latter material was known, from other experience, to perform poorly and was included to verify that the proposed method would be sensitive to such a material. Twelve laboratories participated in this study. Part 5 of the interlaboratory study included one Class C fly ash and one Class N pozzolan. Eight laboratories participated. Test ages were 7 and 28 days in both studies. Lab numbers are consistent only within each study, i.e. lab numbers in study No. 4 do not relate to lab numbers in study No. 5.

3. Results from each lab were checked for outlying observations according to ASTM E 178-80, paragraph 4. Data analysis was then performed separately for each material at each age according to ASTM C 802-87. Uniformity of variance among laboratories was evaluated according to procedures in paragraph 8.2.2. Laboratory-material interaction was evaluated according to paragraph 8.2.3, using both graphical and analysis of variance (2-way) techniques.

*no particle-size processing by the producer