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Committee C09 on Concrete and Concrete Aggregates
Subcommittee C09.23 on Chemical Admixtures

Research Report: C09-1053

Interlaboratory Study to Establish Precision Statements for ASTM C233, Standard Test Method for Air-Entraining Admixtures for Concrete

Halogen Lamp-Based Method

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1. **Introduction:**
An Interlaboratory Study was conducted to establish a precision statement for C233, Standard Test Method for Air-Entraining Admixtures for Concrete.

2. Test Method:

The Test Method used for this ILS is C233-18. To obtain a copy of C233-18, go to ASTM's website, www.astm.org, or contact ASTM Customer Service by phone at 610-832-9585 (8:30 a.m. - 4:30 p.m. Eastern U.S. Standard Time, Monday through Friday) or by email at service@astm.org.

3. Participating Laboratories:

The following laboratories participated in this interlaboratory study:

BASF Corporation
23700 Chagrin Blvd.
Beachwood, OH 44122
United States

GCP
62 Whittemore Avenue
Cambridge, MA 02140
United States

Euclid Chemical Company
19218 Redwood Road
Cleveland, OH 44110
United States

SIKA
201 Polito Avenue
Lyndhurst, NJ 07071
United States

4. Description of Samples:

There were 4 Air Entraining Admixtures of varying targeted results used for this study. Each sample was prepared and distributed by Willy Morrison of Concrete Materials Laboratory. Each participating laboratory supplied samples for distribution listed below.

Halogen Dryer Air Entraining Admixture Samples for Round Robin

Sample ID	Generic
T	alpha olefin sulfonate
X	sodium lauryl sulfate-vinsol based
Y	sodium dodecylbenzene sulfonate
Z	tall oil rosin

5. Interlaboratory Study Instructions

Laboratory participants were emailed the test program instructions. For a copy of the instructions, please see Annex A.

6. Description of Equipment/Apparatus[1]:

For information on the equipment/apparatus used by each laboratory, please see Annex B.

7. Data Report Forms:

Each laboratory was provided with a data report form for the collection of data. A copy of the data is provided in Annex C.

Please note: The laboratories have been randomly coded and cannot be identified herein.

8. Statistical Data Summary:

A summary of the statistics calculated from the data returned by the participating laboratories is provided in Annex D.

9. Precision and Bias Statement:

Precision and Bias of Halogen Lamp-Based Method

9.1 Precision:

9.1.1 The single-operator coefficient of variation of residue by the halogen lamp-based method has been found to be 0.64 %. Therefore, the results of two properly conducted tests on the same material in the same laboratory on the same material by the same operator are not expected to differ by more than 1.8 % of their average.7

9.1.2 The multilaboratory coefficient of variation of resi- due by the halogen drying lamp-based method has been found to be 1.32 %. Therefore, the results of two properly conducted tests on the same material in different laboratories are not expected to differ by more than 3.7 % of their average.7

9.2 Bias—Because there is no accepted reference material suitable for determining the bias of this test method, no statement on bias is made.

[1] The equipment listed was used to develop a precision statement for C233-18. This listing is not an endorsement or certification by ASTM International.