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Committee C24 on Building Seals and Sealants
Subcommittee C24.40 on Weathering

Research Report C24-1056

Interlaboratory Study to Establish Precision Statements for ASTM C1501-04, Standard Test Method for Color Stability of Building Construction Sealants as Determined by Laboratory Accelerated Weathering Procedures

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1. Introduction:

Interlaboratory Study 279 was conducted to establish a precision statement for C1501, Color Stability of Building Construction Sealants as Determined by Laboratory Accelerated Weathering Procedures.

2. Test Method:

The Test Method used for this ILS is C1501-04. To obtain a copy of C1501, 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 the fluorescent UV/condensation exposure in this interlaboratory study

1. Bayer Polymers LLC
100 Bayer Road
Pittsburgh, PA 15205
Dinesh Pethiyagoda
412-777-3963
Dinesh.pethiyagoda@bayermaterialscience.com

2. Degussa Const. Systems
889 Valley Park Drive
Shakopee, MN 55379
Barry Lassiter
952-496-6032
Barry.lassiter@degussa.com

3. Q-Lab
1005 S. W. 18th Ave
P.O. Box 349490
Homestead, FL 33034
Michael Crewdson
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4. Q-Lab
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Michael Crewdson
305-245-5600
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5. Atlas MTT LLC
South FL Test Service
1301 Okeechobee Road
Miami, FL 33018
Richard Slomko
305-824-3900
rslomko@atlas-mts.com

6. Schnee-Moorehead
111 N. Nursery Road
Irving, TX 75060
Brian Damschroder
972-554-3955
techmgr@schneemorehead.com

7. Dow Corning Corp.
2200 W. Salzburg Rd.
Midland, MI 48686
Larry Carbary
989-496-8696
l.carbary@dowcorning.com

8. Tremco, Inc.
3777 Green Road
Beachwood, OH 44122
Steve Mishra
216-765-6718
smishra@tremcoinc.com

The following laboratories participated in the xenon arc exposure in this interlaboratory study.

1. Bayer Polymers LLC
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Dinesh Pethiyagoda
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2. Q-Lab
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5. Degussa Const. Systems
889 Valley Park Drive
Shakopee, MN 55379
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952-496-6032
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6. Rohm & Haas Corp
727 Norristown Road
Spring House, PA 19477
Victoria Demarest
215-619-5570
vdemarest@rohmhaas.com

4. Description of Samples:

There were 4 samples with a targeted value of Delta E of 6.0 for completion of the exposures. Each sample was prepared and distributed by Brian Damschroder of Schnee Moorehead, Barry Lassiter of Degussa Construction Systems, Tom Hairston of DAP Corp., and Steve Mishra of Tremco, Inc. Below is a list of the samples:

1. Sample A: Light Gray One-Component Moisture Cured Polyurethane.

2. Sample B: White Polyurethane.

3. Sample C: White Acrylic Latex.

4. Sample D: Dark Gray Two-Part Polyurethane.

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]:

[1] The equipment listed was used to develop a precision statement for C1501-09. This listing is not an endorsement or certification by ASTM International.

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

7. Data Report Forms:

A copy of the data that was collected by the laboratories 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:

9.1 The precision of this test method is based on an interlaboratory study of C1501, Standard Test Method for Color Stability of Building Construction Sealants as Determined by Laboratory Accelerated Weathering Procedures, conducted in 2005. Results in this study were obtained from eight laboratories reporting fluorescent UV exposure and four labs reporting xenon arc exposure, testing four different sealants. Every "test result" reported represents the average of three individual determinations. Each participating laboratory reported three replicate test results, at each time interval, for every material. Except for the use of only four laboratories for the measurement of the xenon arc procedure, Practice E 691 was followed for the design and analysis of the data; the details are given in ASTM Research Report No. C24-1056.

9.1.1 *Repeatability limit (r)* - Two test results obtained within one laboratory shall be judged not equivalent if they differ by more than the "*r*" value for that material; "*r*" is the interval representing the critical difference between two test results for the same material, obtained by the same operator using the same equipment on the same day in the same laboratory.

9.1.1.1 Time dependent repeatability limits are listed in Tables 1 and 2 below.

9.1.1.2 Average repeatability limits are listed in Table 3.

9.1.2 *Reproducibility limit (R)* - Two test results shall be judged not equivalent if they differ by more than the "*R*" value for that material; "*R*" is the interval representing the critical difference between two test results for the same material, obtained by different operators using different equipment in different laboratories.

9.1.2.1 Time dependent reproducibility limits are listed in Tables 1 and 2 below.

9.1.2.2 Average reproducibility limits are listed in Table 4.