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**Committee D20 on Plastics
Subcommittee D20.70 on Analytical Methods**

Research Report: D20-1263

**Interlaboratory Study to Establish Precision Statements for ASTM
D7823-14, Test Method for the Determination of Low Level, Regulated
Phthalates in Poly (Vinyl Chloride) Plastics by Thermal Desorption--
Gas Chromatography/Mass Chromatography**

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1. Introduction:

Interlaboratory Study 981 was conducted to establish a precision statement for D7823, Test Method for the Determination of Low Level, Regulated Phthalates in Poly (Vinyl Chloride) Plastics by Thermal Desorption--Gas Chromatography/Mass Chromatography.

2. Test Method:

The Test Method used for this ILS is D7823-14. To obtain a copy of D7823, 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 (clear solution after settling)
BASF (dispersed)

Randy Myrabo PhD
Group Leader: Structure Elucidation
BASF Corporation
Wyandotte, MI, 48192, USA
Phone: 734.324.5237
randy.myrabo@basf.com

IMR Testing

Terri Cheatham
Senior Organic Chemist
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Frontier Laboratories

Bob Freeman, PhD
R/D Group Leader
Frontier Laboratories
5141 Lone Tree Way
Antioch, CA 94531, USA
916.947.6227
Bob@frontier-lab.com

4. Description of Samples:

There were 6 samples of varying targeted results used for this study. The samples were provided by Dave Owen, BASF. Samples were prepared by PolyOne and distributed by Frontier Laboratories.

Below is a list of the samples:

Six phthalates in PVC
DIDP
DINP
DnOP
DOP

BBP
DBP

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/Apparatus¹:

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

7. Data Report Forms:

Each laboratory was allowed to submit the data using their own format. The data was reformatted to accommodate the ASTM committee by the study coordinator.

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 ASTM D7823, Standard Test Method for Determination of Low Level, Regulated Phthalates in Poly (Vinyl Chloride) Plastics by Thermal Desorption—Gas Chromatography/Mass Chromatography, conducted in 2013. As many as four laboratories tested a single PVC material for low level phthalates. Every “test result” represents an individual determination, and all participants were asked to report four replicate test results. Except for the inclusion of only one test material, Practice E691 was followed for the design and analysis of the data; the details are given in ASTM Research Report No. D20-1263.ⁱ

9.1.1 Repeatability (r) - The difference between repetitive results obtained by the same operator in a given laboratory applying the same test method with the same apparatus under constant operating conditions on identical test material within short intervals of time would in the long run, in the normal and correct operation of the test method, exceed the following values only in one case in 20.

9.1.1.1 Repeatability can be interpreted as maximum difference between two results, obtained under repeatability conditions, that is accepted as plausible due to random causes under normal and correct operation of the test method.

9.1.1.2 Repeatability limits are listed in Table 1 below.

¹ The equipment listed was used to develop a precision statement for D7823-14. This listing is not an endorsement or certification by ASTM International.
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