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1 November 2011

**Committee E01 on Analytical Chemistry for Metals, Ores, and Related
Materials
Subcommittee E01.04 on Aluminum and Magnesium**

Research Report E01-1116

**Interlaboratory Study to Establish Precision Statements for ASTM
E2792-11, Method for Determination of Hydrogen in Aluminum and
Aluminum Alloys by the Inert Gas Fusion Thermal Conductivity
Method**

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1. Introduction:

Interlaboratory Study 567 was conducted to establish a precision statement for E2792, Method for Determination of Hydrogen in Aluminum and Aluminum Alloys by the Inert Gas Fusion Thermal Conductivity Method.

2. Test Method:

The Test Method used for this ILS is E2792. To obtain a copy of E2792, 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

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|--|--|
| 1. Alcoa Lafayette
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Steve Campbell
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4. Description of Samples:

There were 2 samples of varying targeted results used for this study. Each sample was supplied, prepared and distributed by Mike Ruschak of Alcoa. Below is a list of the samples with the corresponding supplier:

1. Sample A 7050 extruded rod
2. Sample B 5154 alloy continuous cast rod

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 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:

9.1 The precision of this test method is based on an interlaboratory study of ASTM E2792 - New Test Method for Standard Test Method for Determination of Hydrogen in Aluminum and Aluminum Alloys by the Inert Gas Fusion Thermal Conductivity Method, conducted in 2010. Six laboratories tested two different aluminum alloys for hydrogen content. Every “test result” represents an individual determination. All labs were asked to submit ten replicate test results for each material tested. Practice E691 was followed for the overall design and analysis of the data; the details are given in ASTM Research Report No. E01-1116.¹

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 Repeatability limits are listed in Table 1 below.

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

¹ The equipment listed was used to develop a precision statement for E2792-11. This listing is not an endorsement or certification by ASTM International.
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