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1 June 2016

**Committee D16 on Aromatic Hydrocarbons and Related Chemicals  
Subcommittee D16.07 on Styrene, Ethylbenzene and C9 and C10  
Aromatic Hydrocarbons**

**Research Report: D16-1061**

**Interlaboratory Study to Establish Precision Statements for ASTM  
D7704-16, Test Method for Total Aldehydes in Styrene Monomer by  
Potentiometric Titration**

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**1. Introduction:**

Interlaboratory Study 875 was conducted to establish a precision statement for D7704, Test Method for Total Aldehydes in Styrene Monomer by Potentiometric Titration.

**2. Test Method:**

The Test Method used for this ILS is D7704-16. To obtain a copy of D7704, go to ASTM's website, [www.astm.org](http://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](mailto:service@astm.org).

**3. Participating Laboratories:**

The following laboratories participated in this interlaboratory study:

**Metrohm USA**

Frederick Fiddler  
6555 Pelican Creek Circle  
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**Shell Chemicals Moerdijk**

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**SGS Belgium**

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**SGS OGC VOPAK**

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Industry Park 201507  
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Jurong Island  
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**4. Description of Samples:**

There were 4 samples of varying targeted results used for this study. Each sample was supplied, prepared and distributed by Shell Global Solutions. Below is a list of the samples:

1. Styrene monomer + 10 mg/kg benzaldehyde

2. Styrene monomer + 100 mg/kg benzaldehyde
3. Styrene monomer + 20 mg/kg benzaldehyde
4. Styrene monomer + 50 mg/kg benzaldehyde

**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<sup>1</sup>:**

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**

9.1 The precision of this test method is based on an interlaboratory study of ASTM D7704, Standard Test Method for Total Aldehydes in Styrene Monomer by Potentiometric Titration, conducted in 2013. Six laboratories participated in the study, testing four different styrene samples. Each analyst was asked to report two test results for this study. Practice E691 was followed for the study design; the details are given in ASTM Research Report No. D16-1061.<sup>1</sup>

9.1.1 *Repeatability limit (r)* - Results should not be suspect unless they differ by more than shown in Table 1. Results differing by less than r have a 95% probability of being correct.

9.1.1.1 Repeatability limits are listed in Table 1 below.

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<sup>1</sup> The equipment listed was used to develop a precision statement for D7704-16. This listing is not an endorsement or certification by ASTM International.

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