

This Research Report is issued under the fixed designation RR: D31-1025. You agree not to reproduce or circulate or quote, in whole or part, this document outside of ASTM International Committee/Society activities, or submit it to any other organization or standards body (whether national, international or other) except with the approval of the Chairman of the Committee having jurisdiction and the written authorization of the President of the Society. If you do not agree to these conditions, please immediately destroy all copies of this document. *Copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. All rights reserved.*

1 November 2019

**Committee D31 on Leather  
Subcommittee D31.08 on Fats and Oils**

**Research Report: D31-1025**

**Interlaboratory Study to Establish Precision Statements for ASTM  
D5349-19, Test Method for Determination of the Moisture and Volatile  
Content of Sulfonated and Sulfated Oils by Hot-Plate Method**

**Technical contact:**

Massimiliano La Falce,  
Atlas Refinery  
142 Lockwood Street  
Newark, NJ 07105  
USA  
mlafalce@atlasrefinery.com

ASTM International  
100 Barr Harbor Drive  
West Conshohocken, PA 19428-2959

**1. Introduction:**

Interlaboratory Study 1624 was conducted to establish a precision statement for D5349, Test Method for Determination of the Moisture and Volatile Content of Sulfonated and Sulfated Oils by Hot-Plate Method.

**2. Test Method:**

The Test Method used for this ILS is D5349. To obtain a copy of D5349, 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:

**Atlas Refinery Inc- 3 Technicians**

142 Lockwood Street  
Newark, NJ 07105  
USA  
Massimiliano La Falce  
[mlafalce@atlasrefinery.com](mailto:mlafalce@atlasrefinery.com)

**USDA Eastern Regional Research Center**

600 East Mermaid Lane  
Glenside, PA19038  
USA  
Nick Latona  
[Nick.Latona@ARS.USDA.GOV](mailto:Nick.Latona@ARS.USDA.GOV)

**Eagle Ottawa LLC- 2 Technicians**

2930 Auburn Road  
Rochester Hills, MI 48309  
USA  
Myron Hooks  
[MHooks01@lear.com](mailto:MHooks01@lear.com)

**4. Description of Samples:**

There were 5 samples of varying targeted results used for this study. Each sample was supplied, prepared and distributed by Kathleen Lordelo of Atlas Refinery Inc. Below is a list of the samples with the corresponding supplier:

1. Sample 1 – Sulfated Oil
2. Sample 2 Fatliquor
3. Sample 3 Fatliquor
4. Sample 4 Sulfited Oil
5. Sample 5 Fatliquor

**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 Statement:**

9.1 The precision of this test method is based on an inter-laboratory study of ASTM D5349, Determination of the Moisture and Volatile Content of Sulfonated and Sulfated Oils by Hot-Plate Method<sup>1</sup> conducted in 2019. Six laboratories tested five leather oils. Every “test result” represents an individual determination, and all participants reported three replicate test results per material. Practice E691 was followed for the design of the study and analysis of the data; the details are given in ASTM Research Report No. D31-1025.<sup>i</sup>

9.1.1 *Repeatability limit (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 are 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.

9.1.2 *Reproducibility limit (R)* - The difference between two single and independent results obtained by different operators applying the same test method in different laboratories using different apparatus on identical test material 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.

9.1.2.1 Reproducibility can be interpreted as maximum difference between two results, obtained under reproducibility conditions that are accepted as plausible due to random causes under normal and correct operation of the test method.

---

<sup>1</sup> The equipment listed was used to develop a precision statement for D5349-19. This listing is not an endorsement or certification by ASTM International.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.