



Standard Practice for Interlaboratory Testing of a Textile Test Method That Produces Non-Normally Distributed Data¹

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1. Scope

1.1 This practice covers design and analysis of interlaboratory testing of a test procedure in the case where the resulting test data are discrete variates or are continuous variates not normally distributed. This practice applies to all such interlaboratory tests used to validate a test procedure.

1.2 Analysis of interlaboratory test results permits validation that the process of using the test method is in statistical control and provides the information required to write statements on precision and bias as directed in Practice D 2906. It also gives the information for determining the number of specimens per unit in the laboratory sample as required in Practice D 2905.

1.3 Precision statements for non-normally distributed data can be written as a function of the level of the property of interest without an interlaboratory test if the underlying distribution is known and statistical control can be assumed.

1.4 If the underlying distribution is unknown, the precision of the test method can only be approximated. There are no generally accepted methods of making approximations of this sort.

1.5 If statistical control cannot be assumed, then a meaningful precision statement cannot be written and the test method should not be used.

1.6 This practice is intended for use with data from test methods that cannot be properly modeled by a normal distribution. See Practices D 2904 and E 691 for applications that can be modeled by a normal distribution.

1.7 This practice includes the following sections:

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1.8 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 123 Terminology Relating to Textiles²
- D 2904 Practice for Interlaboratory Testing of a Textile Test Method that Produces Normally Distributed Data²
- D 2905 Practice for Statements on Number of Specimens for Textiles²
- D 2906 Practice for Statements on Precision and Bias for Textiles²
- D 4646 Test Method for 24-h Batch-Type Measurement of Contaminant Sorption by Soils and Sediments³
- D 4853 Guide for Reducing Test Variability⁴
- E 456 Terminology Relating to Quality and Statistics⁵
- E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁵
- E 1169 Guide for Conducting Ruggedness Tests⁵

3. Terminology

3.1 Definitions:

3.1.1 *test method, n*—a definitive procedure for the identification, measurement, and evaluation of one or more qualities, characteristics, or properties of a material, product, system, or service that produces a test result.

3.1.2 For definitions of textile and statistical terms used in this practice and discussions of their use, refer to Terminology D 123, and Terminology E 456.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *assignable cause*—a factor which contributes to variation and is feasible to detect and identify.

3.2.2 *interlaboratory testing*—the evaluating of a test

¹ This practice is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.93 on Statistics.

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² *Annual Book of ASTM Standards*, Vol 07.01.

³ *Annual Book of ASTM Standards*, Vol 11.04.

⁴ *Annual Book of ASTM Standards*, Vol 07.02.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.