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Standard Guide for Committee D01 for Conducting an Interlaboratory Study for the Purpose of Determining the Precision of a Test Method[1]

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1. Scope

1.1 This guide covers a simplified statistical procedure for planning and conducting interlaboratory evaluations of test methods.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
E456 Terminology Relating to Quality and Statistics
E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
E1345 Practice for Reducing the Effect of Variability of Color Measurement by Use of Multiple Measurements

3. Significance and Use

3.1 The purpose of an interlaboratory evaluation, as defined in this guide, is to determine the variability of results obtained in different laboratories on equivalent equipment using a prescribed test method.

3.2 The definitions of statistical terms used in this guide are contained in Terminology E456.

4. Problem Formulation

4.1 The objective of the evaluation should be to clearly define the expected precision of the test method. Within the current limits of both the software, and the statistical protocols currently available, this effectively restricts the use of this guide to test methods which yield results that are continuous. This generally means a measured quantity, such as pH or brightness. Results that are discrete (such as counts or pass-fail), or ordered (ranked), present three special problems in the creation of a meaningful precision statement:

4.1.1 The amount of information contained in discrete and ordered data is much less than in continuous data, necessitating the collection of much more data.

4.1.2 The sensitivity (the ability to discriminate between similar samples) is much less in discrete and ordered data than continuous data.

4.1.3 Since the precision statement relies on the normal distribution, and the distributions of discrete and ordered data are usually decidedly non-normal, the normal precision statement is invalid.

4.2 Given these concerns with discrete and ordered data, a simple statement of the results obtained in these types of studies might be the most useful information for a prospective user of a test method.

5. Preliminary

5.1 Flow chart the test method.

5.2 Survey known sources of information related to the test method to establish how results are affected by variations in operating conditions, atmospheric conditions, differences between operators, etc. Select what appears to be the optimum procedure.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the ~~standard's~~standard's Document Summary page on the ASTM website.