



Standard Guide for Designing and Conducting Visual Experiments¹

This standard is issued under the fixed designation E1808; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide is intended to help the user decide on the type of viewing conditions, visual scaling methods, and analysis that should be used to obtain reliable visual data.

1.2 This guide is intended to illustrate the techniques that lead to visual observations that can be correlated with objective instrumental measurements of appearance attributes of objects. The establishment of both parts of such correlations is an objective of Committee E12.

1.3 Among ASTM standards making use of visual observations are Practices D1535, D1729, D3134, D4086, and E1478; Test Methods D2616, D3928, and D4449; and Guide E1499.

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

2. Referenced Documents

2.1 ASTM Standards:²

D1535 Practice for Specifying Color by the Munsell System
D1729 Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials
D2616 Test Method for Evaluation of Visual Color Difference With a Gray Scale
D3134 Practice for Establishing Color and Gloss Tolerances
D3928 Test Method for Evaluation of Gloss or Sheen Uniformity
D4086 Practice for Visual Evaluation of Metamerism
D4449 Test Method for Visual Evaluation of Gloss Differences Between Surfaces of Similar Appearance
E284 Terminology of Appearance
E1478 Practice for Visual Color Evaluation of Transparent Sheet Materials

¹ This guide is under the jurisdiction of ASTM Committee E12 on Color and Appearance and is the direct responsibility of Subcommittee E12.11 on Visual Methods.

Current edition approved Nov. 1, 2015. Published November 2015. Originally approved in 1996. Last previous edition approved in 2009 as E1808 – 96 (2009). DOI: 10.1520/E1808-96R15.

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 Document Summary page on the ASTM website.

E1499 Guide for Selection, Evaluation, and Training of Observers

3. Terminology

3.1 The terms and definitions in Terminology E284 are applicable to this guide.

3.2 Definitions:

3.2.1 *appearance, n*—in psychophysical studies, perception in which the spectral and geometric aspects of a visual stimulus are integrated with its illuminating and viewing environment.

3.2.2 *observer, n*—one who judges visually, qualitatively or quantitatively, the content of one or more appearance attributes in each member of a set of stimuli.

3.2.3 *sample, n*—a small part or portion of a material or product intended to be representative of the whole.

3.2.4 *scale, v*—to assess the content of one or more appearance attributes in the members of a set of stimuli.

3.2.4.1 *Discussion*—Alternatively, scales may be determined by assessing the difference in content of an attribute with respect to the differences in that attribute among the members of the set.

3.2.5 *specimen, n*—a piece or portion of a sample used to make a test.

3.2.6 *stimulus, n*—any action or condition that has the potential for evoking a response.

3.3 Definitions of Terms Specific to This Standard:

3.3.1 *anchor, n*—the stimulus from which a just-perceptible difference is measured.

3.3.2 *anchor pair, n*—a pair of stimuli differing by a defined amount, to which the difference between two test stimuli is compared.

3.3.3 *interval scale, n*—a scale having equal intervals between elements.

3.3.3.1 *Discussion*—Logical operations such as greater-than, less-than, equal-to, and addition and subtraction can be performed with interval-scale data.

3.3.4 *law of comparative judgments*—an equation relating the proportion of times any stimulus is judged greater, according to some attribute, than any other stimulus in terms of just-perceptible differences.