



Standard Test Method for Sensory Analysis—Triangle Test¹

This standard is issued under the fixed designation E1885; 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 test method covers a procedure for determining whether a perceptible sensory difference exists between samples of two products.

1.2 This test method applies whether a difference may exist in a single sensory attribute or in several.

1.3 This test method is applicable when the nature of the difference between the samples is unknown. It does not determine the size or the direction of the difference. The attribute(s) responsible for the difference are not identified.

1.4 Compared to the duo-trio test, the triangle test can achieve an equivalent level of statistical significance with fewer assessors. For details on how the triangle test compares to other three-sample tests, see Refs (1), (2), (3) and (4).²

1.5 This test method is applicable only if the products are homogeneous. If two samples of the same product can often be distinguished, then another method, for example, descriptive analysis, may be more appropriate.

1.6 This test method is applicable only when the products do not cause excessive sensory fatigue, carryover or adaptation.

1.7 *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*:³

E253 Terminology Relating to Sensory Evaluation of Materials and Products

¹ This test method is under the jurisdiction of ASTM Committee E18 on Sensory Evaluation and is the direct responsibility of Subcommittee E18.04 on Fundamentals of Sensory.

Current edition approved Aug. 1, 2011. Published August 2011. Originally approved in 1997. Last previous edition approved in 2004 as E1885 – 04. DOI: 10.1520/E1885-04R11.

² The boldface numbers given in parentheses refer to a list of references at the end of the text.

³ 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.

E456 Terminology Relating to Quality and Statistics

E1871 Guide for Serving Protocol for Sensory Evaluation of Foods and Beverages

2.2 *ISO Standard*:

ISO 4120 Sensory Analysis – Methodology – Triangular Test⁴

3. Terminology

3.1 *Definitions*—For definition of terms relating to sensory analysis, see Terminology **E253**, and for terms relating to statistics, see Terminology **E456**.

3.2 *Definitions of Terms Specific to This Standard*:

3.2.1 α (*alpha*) *risk*—probability of concluding that a perceptible difference exists when, in reality, one does not. (Also known as Type I Error or significance level.)

3.2.2 β (*beta*) *risk*—probability of concluding that no perceptible difference exists when, in reality, one does. (Also known as Type II Error.)

3.2.3 p_c —probability of a correct response.

3.2.4 p_d (*proportion of discriminators*)—proportion of the population represented by the assessors that can distinguish between the two products.

3.2.5 *product*—material to be evaluated.

3.2.6 *sample*—unit of product prepared, presented, and evaluated in the test.

3.2.7 *sensitivity*—general term used to summarize the performance characteristics of the test. The sensitivity of the test is rigorously defined, in statistical terms, by the values selected for α , β , and p_d .

3.3 *triad*—three uniquely coded samples given to an assessor in the triangle test; two samples are alike (that is, of one product) and one is different (that is, of the other product).

4. Summary of Test Method

4.1 Clearly define the test objective in writing.

4.2 Choose the number of assessors based on the level of sensitivity desired for the test. The sensitivity of the test is, in part, a function of two competing risks: the risk of declaring

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.