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Sensory analysis — Methodology — "A" – "not A" test

Analyse sensorielle — Méthodologie — Essai "A" – "non A"

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 12, *Sensory analysis*.

This second edition cancels and replaces the first edition (ISO 8588:1987), which has been technically revised. The following changes have been made:

— more detailed explanations of all aspects of the test method have been added;

— the option of testing more than one "not A" sample in a single test has been added;

— statistical calculations are presented in detail for all examples;

— an alternative data analysis procedure that deals directly with the one-sided nature of the "A" – "not A" test has been added.

Sensory analysis — Methodology — “A” – “not A” test

1 Scope

This document specifies a procedure for determining whether a perceptible sensory difference exists between samples of two products. The method applies whether a difference exists in a single sensory attribute or in several.

The “A” – “not A” test can be used in sensory analysis in the following ways:

a) as a difference test, particularly for evaluating samples having variations, for example, in appearance (making it difficult to obtain strictly identical repeat samples) or in aftertaste (making direct comparison difficult);

b) as a recognition test, particularly for determining whether an assessor or group of assessors identifies a new stimulus in relation to a known stimulus (for example, recognition of the quality of the sweet taste of a new sweetener);

c) as a perception test, to determine the ability of an assessor to discriminate stimuli.

The “A” – “not A” test is not appropriate for assessing if two products are sufficiently similar to be used interchangeably (i.e. for similarity testing) because the “A” – “not A” test inherently involves replicate evaluations of the same products by all assessors. These replicate evaluations violate the basic assumptions for similarity tests to be statistically valid.

Examples of its application are given in Annex B.

NOTE Bi and Ennis[1] point out that the estimate of the discriminal distance, d’, between the “A” and “not A” samples is the same regardless of the nature of the replicated evaluations performed in the test but that the estimate of the variance of d’ does depend on how the replicate evaluations were performed. As such, no general discussion of a Thurstonian analysis of the “A” – “not A” method, nor of the power of the test is undertaken in this document. Interested readers are referred to Reference [1] for a detailed discussion of the topic.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3534-1, *Statistics — Vocabulary and symbols — Part 1: General statistical terms and terms used in probability*

ISO 5492, *Sensory analysis — Vocabulary*

ISO 8586:2012, *Sensory analysis — General guidelines for the selection, training and monitoring of selected assessors and expert sensory assessors*

ISO 8589, *Sensory analysis — General guidance for the design of test rooms*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 5492, for terms concerning sensory analysis, and ISO 3534-1, for statistical terms, apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Principle

An assessor is presented with a series of samples, some of which are composed of the "A" product while others are composed of one or more "not A" products. For each sample, the assessor indicates whether the sample is an "A" product or is a "not A" product. This test requires the assessor to be familiar with product "A", possibly through exposure to known samples of product "A", prior to exposure to the test samples.

5 Apparatus

The apparatus shall be selected by the test supervisor according to the nature of the product to be analysed, the number of samples, etc. and shall in no way affect the test results.

If standard apparatus corresponds to the needs of the test, it shall be used.

6 Sampling

Refer to sampling standards for the sensory analysis of the product or products being tested.

In the absence of such standards, agreement shall be sought among the parties concerned.

7 General test conditions

7.1 Clearly define the test objective in writing.

7.2 Carry out each session of the test under conditions that prevent communication among assessors until all evaluations have been completed.

7.3 The facilities in which the tests are conducted shall comply with ISO 8589.

7.4 Assessors shall not be able to identify the samples from the way in which they are presented. For example, in a taste test, one should avoid any differences in temperature or appearance. Mask any irrelevant colour differences using, for example, light filters, subdued lighting or opaque serving vessels.

7.5 Code the vessels that contain the test samples in a uniform manner, using 3-digit numbers chosen at random for each sample. Each test sample in a set shall have a different code. The same two codes (one for the "A" sample and one for the "not A" sample) can be used for all assessors within a test session provided different codes are used from one session to another, if multiple sessions are required to complete the test.

7.6 The quantity or volume of product served shall be identical for all test samples. In a taste test, the quantity or volume to be placed in the mouth can be specified. If it is not, assessors shall be instructed to evaluate the same quantity or volume of each test sample.

7.7 The temperatures of the test samples shall be identical, preferably at the temperature at which the product is generally consumed.