
Sensory analysis — Methodology — Paired comparison test

Analyse sensorielle — Méthodologie — Essai de comparaison par paires



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Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	2
3 Terms and definitions.....	3
4 Principle.....	4
5 General test conditions	4
6 Assessors	5
6.1 Qualification	5
6.2 Number of assessors	5
7 Procedure	5
8 Analysis and interpretation of results	6
8.1 When testing for a difference	6
8.2 When testing for similarity	6
9 Report	7
10 Precision and bias	7
Annex A (normative) Tables.....	8
Annex B (informative) Examples	15
Bibliography	21

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 5495 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 12, *Sensory analysis*.

This third edition cancels and replaces the second edition (ISO 5495:1983), which has been technically revised.

Sensory analysis — Methodology — Paired comparison test

1 Scope

This International Standard describes a procedure for determining whether there exists a perceptible sensory difference or a similarity between samples of two products concerning the intensity of a sensory attribute. This test is sometimes also referred to as a directional difference test or a 2-AFC test (Alternative Forced Choice). In fact, the paired comparison test is a forced choice test between two alternatives.

NOTE The paired comparison test is the simplest existing classification test since it concerns only two samples.

The method is applicable whether a difference exists in a single sensory attribute or in several, which means that it enables determination of whether there exists a perceptible difference concerning a given attribute, and the specification of the direction of difference, but it does not give any indication of the extent of that difference. The absence of difference for the attribute under study does not signify that there does not exist any difference between the two products.

This method is only applicable if the products are relatively homogeneous.

The method is effective

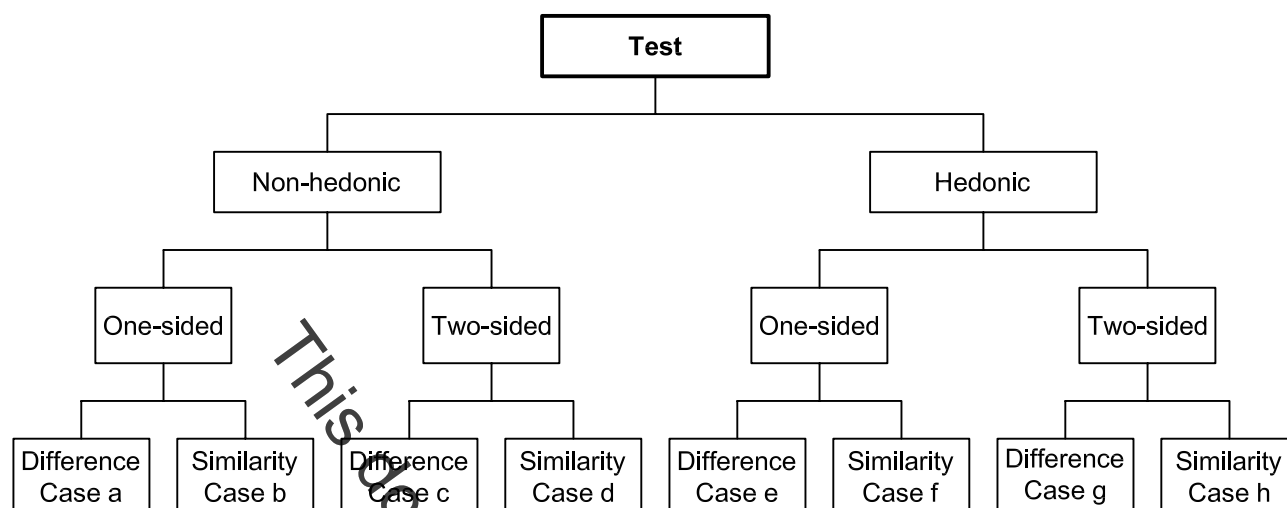
a) for determining

- whether a perceptible difference exists (paired difference test), or
- whether no perceptible difference exists (paired similarity test) when, for example, modifications are made to ingredients, processing, packaging, handling or storage operations, or

b) for selecting, training and monitoring assessors.

It is necessary to know, prior to carrying out the test, whether the test is a one-sided test (the test supervisor knows a priori the direction of the difference, and the alternative hypothesis corresponds to the existence of a difference in the expected direction) or a two-sided test (the test supervisor does not have any a priori knowledge concerning the direction of the difference, and the alternative hypothesis corresponds to the existence of a difference in one direction or the other).

The paired test can also be used in order to compare two products in terms of preference. The different cases of use of the paired test are summarized in Figure 1.



NOTE Only non-hedonic tests are dealt with in this International Standard.

Figure 1 — Possible different cases of use of the paired comparison test

EXAMPLE 1 (Case a) The production of a biscuit has been modified in order to render it more crisp. It is desired to check whether this increase is perceptible. Therefore it is necessary to try to highlight a difference to see whether the new product is perceived as being crispier than the usual product (control).

EXAMPLE 2 (Case b) A manufacturer knows that the product may contain traces of an ingredient which imparts an off-flavour to the product. He therefore wishes to determine the maximum acceptable quantity so that the flavour difference with a reference product without this ingredient is barely perceptible and therefore without any regrettable consequences.

EXAMPLE 3 (Case c) It is desired to produce a new soup and to compare two ingredients which will provide the salty flavour. For cost-intensive reasons, the ingredient which, at the same concentration, will provide the strongest salty flavour is sought. Therefore it is necessary to try to highlight a difference. It is not known a priori which ingredient will produce the strongest salty flavour.

EXAMPLE 4 (Case d) A manufacturer of plastics used, in particular, by car manufacturers for dashboards is seeking, for economic reasons, to replace the usual lubricant by a new one, but does not wish that the new plastics formula be perceived as presenting less or more surface slip than the usual one. It is a question of determining whether, for a same concentration, the new lubricant provides the same "surface slip" level as the usual product. It is necessary to show that both lubricants are similar in terms of "surface slip", but it is not known a priori which lubricant can produce the highest surface slip characteristics.

2 Normative references

The following referenced documents are indispensable for the application 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 5492 1992, *Sensory analysis — Vocabulary*

ISO 6658:1985, *Sensory analysis — Methodology — General guidance*

ISO 8586-1:1993, *Sensory analysis — General guidance for the selection, training and monitoring of assessors — Part 1: Selected assessors*

ISO 8586-2:1994, *Sensory analysis — General guidance for the selection, training and monitoring of assessors — Part 2: Experts*

ISO 8589:1988, *Sensory analysis — General guidance for the design of test rooms*