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Sensory analysis — Guidance on substantiation for sensory and consumer product claims

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Foreword

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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 of 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 www.iso.org/iso/foreword.html.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document provides a framework to be considered when planning studies designed to support a sensory claim to consumers. The document specifies the principles to be followed, defines the key terms, provides a classification scheme with examples, and also provides case studies for different types of claims.

Product claims are designed to inform the audience of potential buyers or the general population of users about the product characteristics, differentiate the product from its competitors, and influence the buying decision.

Sensory claims in this document refer to the information and messages provided on a pack or label, in printed sales literature, or on television or digital media to communicate to the target users, or potential target users, information about the product's sensory attributes or the user's response to the experiences of using/consuming the product.

In general, countries have guidelines that provide information about claims substantiation testing (for a list of sources, see the Bibliography), or regulatory, legal or media-based requirements that govern advertising messages about products.

Given that the rapid development of new products has resulted in a crowded marketplace in some countries, from a company's standpoint there is more need for sensory claims to differentiate between products. At the same time, however, governments and regulatory bodies also look to protect consumers from misleading claims. Therefore, researchers are more frequently asked to design, conduct and interpret results of sensory claims studies.

This document is intended to guide those researchers to support sensory claims on a scientific basis. Using this guidance will allow sensory professionals to conduct research in a manner that provides competent and reliable evidence to support a claim.

Competent and reliable evidence provides proof that test design, data collection and data analyses are done using sound scientific principles and implemented in a technically competent manner. What constitutes competent and reliable evidence is established by the scientific community but will be debated by the legal community. Establishing that a test result can serve as competent and reliable evidence to support a claim can be done by:

a) qualified persons knowledgeable in the practice of science-based sensory and consumer testing;

b) those persons agreeing that best practices were followed.

In addition, good sensory practice means that the test data are analysed using sound statistical procedures. Product researchers designing such tests should be aware of, and follow, best practices in the sensory and consumer testing community.

Sensory analysis — Guidance on substantiation for sensory and consumer product claims

1 Scope

This document gives guidelines for substantiating sensory claims on food and non-food products and their packaging for advertising consumer-packaged goods.

This document differentiates sensory claims from other types of claims. It provides classification and examples of the different types of sensory claims. It highlights special issues associated with testing to substantiate sensory claims. It includes case studies and references.

This document does not apply to:

— specific or detailed requirements for different test methods that are used to support sensory claims;

— factual claims regarding a product's country of origin, ingredients, processing and nutritional components;

— factual claims regarding the technical features of the product;

— claims regarding a product's health, medical or therapeutic benefits, physiological effects, structure or function benefits when consumed or applied to the human body;

— claims based on instrumental assessments of the attributes or performance of a product (i.e. instrumental assessments; in this case, test methods are used in which no human participant evaluates the product and/or no human participant provides a response to a product);

— claims about services (e.g. a house cleaning service, airline services, automobile services);

— claims about large/slow moving consumer goods (autos, refrigerators, stoves, etc.).

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 5492, *Sensory analysis — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5492 and the following apply.

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

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

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

3.1
sensory claim
advertising message to the consumer about a product's sensory attributes (e.g. "now with roasted flavour"), its functionality (e.g. "removes grease") or performance (e.g. "keeps breath fresh longer") and/or the consumers' affective (e.g. "consumers prefer Brand X") or perceptual responses (e.g. "makes your skin look younger") to it before, during or after use

Note 1 to entry: A sensory claim can be any such message that is used in an advertisement, in any format. This advertising message is made in a public forum. It can appear on the product package, in print or in the media in any format (electronic, television or video). The aim of a sensory message is to inform the potential user/buyer of the product about the product's sensory characteristics, or to highlight what they will perceive while using, or after using, the product. This type of advertising message is to make the potential user/buyer aware of these attributes with the intent to influence purchase, consumption or usage.

3.2
affective claim
message about a user's/potential user's hedonic and/or emotional responses before, during or after using a product

Note 1 to entry: Responses include a consumer's hedonic, attitudinal, cognitive and/or emotional reactions elicited by the product before, during and/or after the use of a product. The most common hedonic responses measured are liking or preference. Attitudinal responses can be that the user is more willing to purchase the product in the future or that the consumer will agree to a statement that the product has the highlighted attribute or provides the specified affective experience.

3.3
perception/performance claim
message about a characteristic describing the perception elicited by the product or its intended effect

EXAMPLE Product XXX is thick (perception) and leaves no residue (performance).

3.4
puffery
extremely broad, vague and subjective statement that is so exaggerated that it is not likely to be believed and is not testable from the standpoint of measurement operations and/or from a practical standpoint

3.5
equivalence claim
message provided when two or more products are stated to be the same in one or several features

3.6
unsurpassed claim
message provided when a product is stated not to be exceeded by any other product in one or several features

3.7
superiority claim
specific type of comparative claim that states a higher level of a product/performance attribute or liking/preference relative to one or several products

3.8
risk
combination of the probability of an occurrence of harm and the severity of that harm

Note 1 to entry: The sensory scientist and the organization's stakeholders should consider the risks associated with making a claim based on sensory testing. Risk refers to the chances/likelihood that making the claim results in negative consequences. These negative consequences can be as ill-defined as consumers making negative posts on social media, or comments within the community of sensory, marketing or legal communities, or extend to a challenge from a competitor, or action taken by a self-policing, regulatory or governmental agency. Risks should be identified, discussed and understood before the claim is made publicly.

[SOURCE: ISO/IEC Guide 51:2014, 3.9, modified — Note 1 to entry has been replaced.]

3.9
sensory analysis methods
set of widely used, science-based methods of sensory analysis, including descriptive, discrimination and performance evaluations

Note 1 to entry: Internal validity and laboratory-type controls are the hallmarks of sensory test methods, especially when the goal is to measure products' attributes. In both product-focused and participant-focused sensory tests, blinding the product's brand identity and obtaining independent judgements are best practices. Test method sensitivity, effect size, and the number and type of assessors are all considerations in sensory test methods (see ISO 6658).

3.10
consumer methods
range of consumer quantitative product testing methods used by most practising sensory/consumer professionals engaged in product testing, which includes both affective testing and perception/performance testing

3.11
representative sample of consumers
set of people, being a smaller group than the larger population from which it is drawn, used in a test, which provides a test result that covers the range of responses that would be obtained if the entire larger population had been tested

Note 1 to entry: In consumer testing, where affective responses are recorded, the general requirement for sampling participants is usually the following: a) include a large enough number of consumers in order to cover the variability in affective responses present in the larger population; b) use qualified consumers that actually use or consume the product, purchase the product or are product-concept acceptors; c) have a sampling plan that includes relevant demographic, geographic, behavioural or psychological variables.

3.12
representative sample of products
set of products, drawn from the available products in the marketplace, used in a test, which is used when the desired claim is about a product's sensory attributes, performance attributes or the hedonic responses it elicits

Note 1 to entry: A recommended practice for researchers is to obtain products to test from a retail channel, after being factory-made and having gone through the usual distribution channels. The principle is that the products that serve in a claims test should be representative of what the consumer would get if they purchased the product in the marketplace. It is also a recommended good practice to include more than one lot, one batch or one factory in the product selection whenever there is a need to include the variability normally present in the product. Bench samples or prototypes developed before scaling up, distribution and market launch can be used to support a claim. If bench prototypes are tested and the results used for claims support, there should be some evidence to show the comparability of the bench sample and the in-market product. The number of products tested and the product variables included in the product selection depends on the extent to which the advertising message conveys that it applies to the entire set of products consumers would use.

3.13
objective test result
test result obtained by using procedures generally accepted in scientific fields as providing a result that did not depend on the experimenter's expectations or interference (and is verifiable)

Note 1 to entry: In objective studies, data are collected without interference by the experimenter, and the study design allows more than one possible outcome. Respondents in such studies also do not have information about the underlying study objectives that might affect their responses. Objective results come from studies that do not depend on the experimenter's or test administrator's opinions or desired outcomes, and where the relevant variables are included, best practices are followed and the results are not a foregone conclusion. Objective research results are usually obtained across different studies and can be corroborated with other related studies or converging test results.

4 General considerations

To substantiate a sensory claim, the following considerations should be taken into account.

a) Sensory claims are based on the recorded responses from the perceiver's direct experience with a product.

b) The product claims are designed to inform the audience of potential buyers about the product characteristics, differentiate the product from its competitors and influence the buying decision.

c) Claims directed at children or children's products are heavily regulated in different countries and are quite restricted.

d) What makes a claim supported by evidence is the proper use of scientific methods along with the weight and relevance of the supporting data.

NOTE 1 Researchers in companies usually test their products frequently. If there is frequent testing of a product, there is often a set of other results against which a single test result can be compared. The support for the claim is stronger when the multiple test results converge. A single test result can be used as the basis of a claim if it is within the range of previously obtained results. If there are no previous tests and no previous test results, other technical information or evidence that is consistent with the single finding can strengthen the support for the claim.

NOTE 2 If a vendor or testing organization performs the test and has no history of previous results and a comparison cannot be made, then it is incumbent upon the company making the claim to establish the risk in making a claim based on a single test.

e) Sensory claims can be based on standardized, scientifically based measurements of:

1) the properties of products/performance established via sensory analysis;

2) users' liking, preferences, feelings, attitudes, or perception of product properties or performance.

f) Claims requiring a clinical study are defined by the Helsinki document[5]: a clinical trial is "any systematic evaluation of medicinal products or devices in human subjects whether in patients or non-patient volunteers, to discover or verify the therapeutic effects of, and/or identify any adverse reactions to them, and/or to study their absorption, distribution, metabolism and excretion *in order to ascertain the efficacy and safety of products*". Claims requiring a clinical study are not sensory claims and are hence are out of scope for this document.

g) In contrast to studies that focus on the therapeutic effects of a product or effects a product might have on underlying structures or processes, a sensory study involves an evaluation of a sensory effect such as a specific mouthfeel, an aroma or an appearance.

EXAMPLE In the case of skincare products, if the main purpose of the sensory study is to demonstrate there is a change or improvement in the appearance of the skin, visually detectable by the unaided eye and evaluated by a human assessor, this is a sensory study. Demonstrating changes in the tactile properties of the skin, when measured by an external assessor without instrumentation, is also a sensory study.

If the skincare product claim is that there are changes in the underlying structure/function of the skin or in the overall health of the skin surface or underlying dermis, this is a clinical study and is not a sensory study.

NOTE 3 A fine line distinguishes these two types of studies. Undoubtedly, the types of studies that are called "sensory" and "clinical" in the cosmetic and personal care categories vary by country and company. In this document, claims describing a benefit due to underlying structure/function changes within the body are considered to require a clinical study and are hence out of scope.

h) Puffery claims or "hyperbolic claims" (defined by national legislation) are either so vague (e.g. "this perfume will give you wings") or are so exaggerated (e.g. "world's most comfortable shoes") that no one would take them as literally true. Puffery claims cannot be supported by data from science-based testing, either due to their vagueness or due to pragmatic considerations.

i) Researchers planning a sensory claims test must be knowledgeable about the regulatory, governmental, media or potential competitor responses that might be made to a sensory claim. Researchers should address relevant regulations and likely competitive responses in the study design and analyses.

5 Guiding principles for sensory claims substantiation

5.1 General

When performing a sensory claims substantiation by sensory and/or consumer methods, investigators should take into account the nine principles given in 5.2 to 5.10 to obtain test results robust enough to substantiate a claim.

5.2 Reviewing governmental legislation and regulations

The governmental, regulatory, advertising and media requirements and standards for the country(ies) in which the claims will be made should be consulted before beginning a claims test.

5.3 Defining the primary claim(s) and designing the test to address them

The research should be designed to support the primary claim(s) of interest. Determining the wording of the claim in advance of conducting the test is therefore recommended to design the study appropriately. Based on the intended claim(s), the primary endpoint(s) should be selected (e.g. descriptive attributes or consumer questions). These should ideally be limited to a few to avoid the multiplicity effect[7]. It should also be remembered that the more items evaluated in the study, the greater the chances of spurious or contradictory findings. See Annex B for a list of the changes in probabilities as a function of increases in the number of statistical tests in a study.

NOTE In some countries, it is necessary to state the type of sensory claims in advance of conducting research.

5.4 Determining the type of claim: single product or comparative testing

The type of claim should determine whether testing is monadic, paired or uses multiple products. Non-comparative claims should be carried out with monadic testing. Comparative claims should be carried out with product pairs or one product compared to multiple products if the claim refers to the product category in general.

NOTE If a comparative claim is being made, the researcher defines the number(s) and types of products that will serve as a comparison(s). See ASTM E1958 for specific guidance on selecting competitive products in comparative claims tests.

5.5 Defining the decision criteria

Decision criteria should be defined in advance and should be unambiguous.

5.6 Defining the set of relevant products

For comparative claims, the set of relevant products should be defined in advance.

5.7 Defining the population of relevant consumers or assessors

For consumer tests, the population of relevant users, current users, purchasers or potential consumers should be defined in advance of conducting the research. For product-focused tests, assessors with the relevant qualifications and training are defined in advance.