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Milk and milk products — Sensory analysis —

Part 2: Recommended methods for sensory evaluation

Lait et produits laitiers — Analyse sensorielle —

Partie 2: Méthodes recommandées pour l'évaluation sensorielle

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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.

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 22935-2 | IDF 99-2 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products*, and the International Dairy Federation (IDF). It is being published jointly by ISO and IDF.

ISO 22935 | IDF 99 consists of the following parts, under the general title *Milk and milk products — Sensory analysis*:

— *Part 1: General guidance for the recruitment, selection, training and monitoring of assessors*

— *Part 2: Recommended methods for sensory evaluation*

— *Part 3: Guidance on a method for evaluation of compliance with product specifications for sensory properties by scoring*

Foreword

IDF (the International Dairy Federation) is a non-profit organization representing the dairy sector worldwide. IDF membership comprises National Committees in every member country as well as regional dairy associations having signed a formal agreement on cooperation with IDF. All members of IDF have the right to be represented on the IDF Standing Committees carrying out the technical work. IDF collaborates with ISO in the development of standard methods of analysis and sampling for milk and milk products.

Draft International Standards adopted by the Action Teams and Standing Committees are circulated to the National Committees for voting. Publication as an International Standard requires approval by at least 50 % of the IDF National Committees casting a vote.

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All work was carried out by the Joint ISO-IDF Action Team on *Statistics and sampling* of the Standing Committee on *Quality assurance, statistics of analytical data & sampling* under the aegis of its project leader: Ms. V. Jones (NZ).

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This edition of ISO 22935-2 | IDF 99-2, together with ISO 22935-1 | IDF 99-1 and ISO 22935-3 | IDF 99-3, cancels and replaces IDF 99C:1997, which has been technically revised.

Introduction

The purpose of ISO 22935|IDF 99 (all parts) is to give guidance on methodology for sensory analysis and the use of a common nomenclature of terms for milk and milk products.

To achieve that, ISO 22935|IDF 99 has been divided into the three parts listed in the forewords.

ISO 6658 [1] should be consulted for an overview of sensory methods other than the one provided in ISO 22935-3|IDF 99-3.

Evaluation of labelling and packaging is not covered by ISO 22935|IDF 99 (all parts).

The principles described are largely derived from various International Standards on the topic.

Milk and milk products — Sensory analysis —

Part 2:
Recommended methods for sensory evaluation

1 Scope

This part of ISO 22935|IDF 99 specifies recommended methods for the sensory evaluation of specific milk and milk products. It specifies criteria for the sampling and preparation of samples and the assessment of the samples.

This part of ISO 22935|IDF 99 is suitable for application in conjunction with the sensory methodologies outlined in ISO 22935-1|IDF 99-1 and other ISO or IDF sensory methodologies for specific situations and products.

NOTE In addition to terms used in English and French, two of the three official ISO languages, Annex A gives equivalent terms in German and Spanish; these are published under the responsibility of the member bodies for Germany (DIN) and Spain (AENOR), respectively, and are given for information only. Only the terms given in the official languages can be considered as ISO terms.

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 707|IDF 50, *Milk and milk products — Guidance on sampling*

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

ISO 22935-3|IDF 99-3, *Milk and milk products — Sensory analysis — Part 3: Guidance on a method for evaluation of compliance with product specifications for sensory properties by scoring*

3 Principle

General practices are specified for the sensory evaluation of dairy products by trained evaluators. These practices can be used with the scoring methodology outlined in ISO 22935-3|IDF 99-3, profiling and discrimination tests.

4 Supervision

4.1 Panel leader responsibilities

A panel leader, who is familiar with sensory evaluation of the products, should be responsible for the entire evaluation, and in particular should ensure that:

a) testing conditions are appropriate;

b) correct evaluation forms are supplied;

c) correct sensory protocols are used;

d) panel results are monitored;

e) good records are maintained of panel attendance, panel performance, session objectives, samples and sample preparation methods, response forms used, session results, comments on results, attribute definitions and references;

f) communication is maintained with the site manager or appropriate personnel.

4.2 Panel leader requirements

The panel leader should:

a) understand sensory evaluation principles;

b) understand and have experience with the specific products being evaluated;

c) be committed to a sensory quality assurance programme.

5 Preparing for a panel

General steps for the preparation of a panel include:

a) the invitation of panellists to the panel, informing them of the date, time, and location of the session;

b) the choice of samples for assessment in the panel session, and their preparation using specified standard procedures;

c) labelling of samples with three-digit random numbers to disguise the sample origin (including the assignment of random codes, using a random number table or computer program, to each sample and then labelling report forms and sample containers);

d) the performance of panel evaluations (assessments) in booths or another suitable environment and ensuring that pens, palate cleansers, and spittoons are available in readiness for evaluations;

e) checking that data are complete once assessors have completed their evaluations.

6 Documents

Necessary documents for the sensory evaluation of the various products should be available, e.g. the following:

a) recommended methods;

b) product attributes and attribute definitions;

c) product specifications;

d) food safety documentation.

7 Test room

Refer to ISO 8589 for more detailed information on the requirements for a sensory evaluation area. Some general suggestions include provision in the test room of:

a) walls and ceilings preferably of light (off-white or light neutral grey) and matt colours, avoiding unnecessary decorations;

b) dividers between the places for each assessor for seated assessments;

c) tabletops and dividers of a matt, light neutral grey colour;

d) lighting free from strong shadows, with a colour temperature of 6 500 K, of constant and uniform intensity with illuminance between 800 lx and 1 500 lx;

e) constant temperature;

f) an environment free from foreign odours;

g) a noise level maintained at a minimum during assessments;

h) sheltering of any sample preparation area from the assessors, when it is necessary for sample preparation to take place in the assessment room;

i) maximum convenience to assessors, especially with respect to temperature and humidity;

j) regular monitoring of equipment and environmental conditions.

8 Recommended method for sensory evaluation of butter

8.1 Applicability

This method is intended to provide a general basis for the sensory evaluation of butter.

The provisions in the method specified in this clause are applicable to butter; however, they can be adapted to include anhydrous milk fat, milk fat, anhydrous butter oil and butter oil.

8.2 Sampling and preparation of the sample

Follow accepted standard preparation methods, except where a customer requires an alternative preparation methodology to test a product for their specific use.

For bulk butter, take a test sample with a butter trier (see ISO 707|IDF 50) for sensory evaluation. For butter in retail packaging, make an adequate number of packages available.

Before an evaluation, it is recommended that test samples be kept at the temperature mentioned on the packages or laid down by the customer or in national legislation and product specifications.

During the evaluation, the butter should have a temperature of 14 °C ± 2 °C. Temperatures outside this range prevent a reliable evaluation of butter.

8.3 Apparatus and materials

Apparatus as specified in the evaluation method chosen, and in particular the following.

8.3.1 Butter trier.

8.3.2 Incubator or **chiller**.

8.3.3 Thermometer.

8.3.4 Container/crease.

8.3.5 Proof paper.

8.3.6 Knives or **cutting wire** of stainless steel.

8.3.7 Spatulas.

8.3.8 Indicator paper for determination of water.

8.3.9 Palate cleansers.

EXAMPLE Water at 30 °C to 40 °C.

8.3.10 Glasses.

8.3.11 Sampling cups.

8.4 Assessment

8.4.1 Appearance

Examine the following main features: colour, visible purity, mould growth, and water dispersion.

8.4.2 Odour and flavour

Carry out a sensory evaluation of odour and flavour by smelling and tasting the product.

8.4.3 Consistency

Carry out a sensory evaluation of the following main features: firmness and spreadability.

It is not always easy to distinguish clearly between “appearance” (8.4.1) and “consistency”. In this respect, consider a “loose” grainy structure resulting from under-working or a salve-like structure resulting from overworking: these features relate to both “appearance” and “consistency”.

8.5 Attributes

Attributes that can be utilized for the sensory analysis of butter are listed in the 7th columns from the right of Tables A.1 to A.3. These attributes can be used for scoring (see ISO 22935-3 | IDF 99-3) or profiling methodologies.

9 Recommended method for sensory evaluation of milk powder

9.1 Applicability

This method is intended to provide a general basis for the sensory evaluation of milk powder.

The provisions in the method specified in this clause are applicable to milk powder.

9.2 Sampling and preparation of the test sample

Follow accepted standard preparation methods, except where a customer requires an alternative preparation methodology to test a product for their specific use.

For bulk powder, a test sample of at least 250 g (see ISO 707 | IDF 50) should be made available for sensory evaluation. For powder in retail packages, an adequate number should be supplied.

The available test samples should be adequate for the preparation of reconstituted milk for evaluation, possible re-evaluation by the panel, and an appropriate quantity of undissolved powder to follow the reconstituted product for evaluation.

Reconstitute a test portion, drawn from the test sample, by dissolving it in 90 g of water which is microbiologically pure and filtered, with neutral sensory properties at 22 °C ± 2 °C. For whole milk powder (not claimed to be soluble in cold water), adjust the water temperature to 40 °C ± 2 °C. Ensure a proper solution by use of an electric mixer. During reconstitution, all test portions should be mixed at the same speed for the same length of time.

The mass, m, of the test portion is given by:

$$m = \frac{1\,000}{100 - w_f}$$

where w_f is the mass fraction, as a percentage, of fat in the milk powder.

Cover the glasses containing the reconstituted milk, as well as the remaining powder test sample, until the evaluation takes place. Keep reconstituted milk under conditions which minimize the influence of light, cool (if necessary) under frequent gentle stirring, and evaluate within 1 h of preparation. During the evaluation, maintain the reconstituted milk at a temperature of 22 °C ± 2 °C.

9.3 Apparatus and materials

Apparatus as specified in the evaluation method chosen, and in particular the following.

9.3.1 Balance.

9.3.2 Weighing dishes.

9.3.3 Electric mixer.

9.3.4 Thermometer.

9.3.5 Beakers.

9.3.6 Spoons.

9.3.7 Timer.

9.3.8 Measuring cylinder.

9.3.9 Palate cleansers.

EXAMPLE Water at 30 °C to 40 °C.

9.3.10 Glasses.

9.3.11 Sampling cups.

9.4 Assessment

9.4.1 Appearance

Examine the reconstituted milk as well as its powder in relation to the following main features: colour, visible purity, and presence of lumps, flakes or hard granules.

9.4.2 Odour and flavour

Carry out a sensory evaluation of reconstituted milk as well as its powder in relation to odour and flavour by smelling and tasting the product.

9.4.3 Consistency

Carry out a sensory evaluation of reconstituted milk as well as its powder in relation to the perception of particles in the mouth or the thickness/thinness of the product.

9.5 Attributes

Attributes that can be utilized for the sensory analysis of reconstituted milk as well as its powder are listed in the 6th columns from the right of Tables A.1 to A.3. These attributes can be used for scoring (see ISO 22935-3 | IDF 99-3) or profiling methodologies.

10 Recommended method for sensory evaluation of cheese

10.1 Applicability

This method is intended to provide a general basis for the sensory evaluation of cheese.

The provisions in the method specified in this clause are applicable to cheese.

10.2 Sampling and preparation of the sample

For large cheeses, take an adequate sample with a cheese trier or by cutting a sector (see ISO 707 | IDF 50) for sensory evaluation. For cheese in retail packaging, make an adequate number of packages available.

Before an evaluation, it is recommended that the test samples be kept at the temperature mentioned on the packages or laid down in national legislation and product specifications.

During the evaluation, the test samples should have a temperature of 14 °C ± 2 °C. For special cheeses other temperatures may be chosen, with a tolerance of ± 2 °C.