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Second edition
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Meat and meat products — Sampling and preparation of test samples —

Part 1: Sampling

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*Viandes et produits à base de viande — Échantillonnage et préparation
des échantillons pour essai —*

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Partie 1: Échantillonnage



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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.

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.

International Standard ISO 3100-1 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

This second edition cancels and replaces the first edition (ISO 3100-1:1975), of which it constitutes a technical revision.

ISO 3100 consists of the following parts, under the general title *Meat and meat products — Sampling and preparation of test samples*:

- *Part 1: Sampling*
- *Part 2: Preparation of test samples for microbiological examination*

Meat and meat products — Sampling and preparation of test samples —

Part 1: Sampling

1 Scope

1.1 This part of ISO 3100 gives general instructions and specifies procedures to be followed for taking primary samples from meat and meat products.

1.2 A distinction is made between sampling procedures for the following categories of products:

- a) consignments or lots of meat or meat products prepared or packed as individual units of any size (for example sausages, vacuum-packed minced meat, sliced sausages, canned cooked ham), or meat in pieces not exceeding 2 kg in mass;
- b) carcasses, cuts of carcasses, or cured meat in pieces exceeding 2 kg in mass (for example bacon joints, sides of bacon, fresh or frozen joints of meat, fresh or frozen boneless meat, beef sides or quarters, pork sides, lamb carcasses, venison), and mechanically separated meat or dried meat.

1.3 The size and commercial value of such products may make it necessary to take secondary samples, using only part(s) of each primary sample, taking into account the purpose for which those samples are required.

1.4 These sampling procedures are generally intended for commercial purposes. In special cases, for example in the case of official food inspection, it may be necessary to follow other procedures.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 3100. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3100 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7002:1986, *Agricultural food products — Layout for a standard method of sampling from a lot.*

3 Definitions

For the purposes of this part of ISO 3100, the definitions given in ISO 7002 apply.

4 Administrative arrangements

4.1 Sampling agent

Sampling shall be performed by a sampling agent authorized by the parties concerned and properly trained in the appropriate technique. He or she shall act independently and not accept interference by third parties. The sampling agent may be assisted, under his/her responsibility, by other persons. The sampling agent and his/her assistants shall take appropriate measures to prevent contamination of both the consignment [or lot(s)] and the sampling units (for example by washing the hands before handling the material to be sampled).

4.2 Representatives of parties concerned

If possible, representatives of the parties concerned shall be given the opportunity to be present when sampling is performed.

4.3 Sampling report

Laboratory samples shall be accompanied by a report signed by the sampling agent and countersigned by the representatives of the parties concerned, if present. This report shall give the following information:

- a) name and address of the sampling agent;
- b) names and addresses of the representatives of the parties concerned;
- c) place, date, point and time of sampling;
- d) nature and origin of the consignment or lot(s);
- e) quantity and number of units constituting the consignment or lot(s);
- f) marks and lot number(s);
- g) identification of the ship, railway wagon(s) or lorry(ies), as applicable;
- h) place of shipment;
- i) destination;
- j) date of arrival of the consignment or lot(s);
- k) name and address of seller;
- l) name and address of buyer;
- m) number and date of bill of lading or contract;
- n) method of sampling;
- o) number of sampling units for each lot;
- p) designation of the seals of sampling units;
- q) number and marking of the lot(s) from which the sampling units were taken;
- r) mass of the sampling units;
- s) place to which the sampling units are to be sent.

The report shall also include details of any relevant conditions or circumstances that may have influenced sampling, for example the state of the packages and the condition of their surroundings (temperature and humidity of the atmosphere), tem-

perature of the product and of the sampling units, methods of sterilization of the apparatus and sampling containers, and any other special information relating to the material being sampled.

5 Seals and labels

Laboratory samples shall each be sealed and labelled. The seal shall be fitted in a manner making it impossible for the contents, or the label, to be removed without disturbing the seal.

The labels shall be of suitable quality and size for the purpose (for example light-coloured, grease-proof, waterproof board with a reinforced eyelet hole). The label shall be marked indelibly with all the information necessary for the identification of the sampling unit, including at least the following:

- a) nature and origin of the consignment or lot(s);
- b) quantity and number of units constituting the consignment or lot(s);
- c) place and date of sampling;
- d) names of buyer and seller;
- e) number and marking of the lot(s) from which the sampling units were taken;
- f) temperature of the air immediately around the sampling units at the moment of sampling.

6 Methods of sampling

6.1 Sampling equipment and sampling unit containers

6.1.1 General requirements

Container materials coming directly into contact with the sampling units shall be waterproof, greaseproof, insoluble and non-absorbent.

Containers shall be of a capacity and shape suited to the size of the sampling units to be taken. They shall be securely closed, in the case of bottles by means of a suitable rubber or plastic stopper or a new cork stopper or by a screw cap made of metal or plastic. Stoppers shall be covered with a foil made of inert material before being pressed into the sample container. Screw caps shall have a liquid-tight liner made of inert material.

Materials and equipment shall not influence the results of the examinations to be carried out and, in particular, shall meet the appropriate requirements specified in 6.1.2 to 6.1.4. It may be necessary to minimize the effect(s) of light and/or oxygen.

6.1.2 Equipment and containers for sampling units intended for chemical analysis

The sampling equipment and sampling unit containers shall be dry and clean, and shall not influence the chemical composition of the product.

6.1.3 Equipment and containers for sampling units intended for sensory examination

The sampling equipment and sampling unit containers shall be dry and clean, and shall not impart any flavour or odour to the product.

6.1.4 Equipment and containers for sampling units intended for microbiological examination and for other purposes (for example biological, parasitological, serological, histological or toxicological examination and for incubation tests)

The sampling equipment and sampling unit containers shall be clean and sterile, and shall not influence the microflora of the product.

If necessary, sterilization of sampling equipment and sampling unit containers shall be performed by one of the following methods:

- a) wet sterilization at not less than 121 °C for not less than 20 min;
- b) dry sterilization at not less than 170 °C for not less than 1 h, using an oven with efficient air circulation to ensure that the stated temperature is maintained in all parts of the oven.

If the use of either method a) or method b) is impossible, and if the equipment is to be used immediately after sterilization, one of the following methods may be used:

- c) exposure to steam at 100 °C for 1 h;
- d) immersion in 96 % (V/V) ethanol and flaming to burn off the ethanol;
- e) exposure to a hydrocarbon (e.g. propane or butane) torch flame so that all working surfaces contact the flame.

6.2 Number of sampling units to be taken

The number of sampling units to be taken in order to obtain a primary sample which is as representative as possible of the consignment or lot(s) shall be in accordance with the sampling plan specified in the contract or otherwise agreed between the parties concerned.

If different types of test (e.g. chemical, microbiological, physical and sensory) are to be carried out,

separate sampling units shall be taken for each type of test.

6.3 Sampling procedure

6.3.1 Meat or meat products prepared or packed as individual units of any size, or meat in pieces not exceeding 2 kg in mass [see 1.2 a)]

Take units or whole pieces as primary sampling units. Take the required number of primary sampling units from each lot according to the sampling plan mentioned in 6.2.

6.3.2 Carcasses, cuts of carcasses or cured meat in pieces exceeding 2 kg in mass, and mechanically separated meat or dried meat [see 1.2 b)]

Take the required number of primary sampling units from each lot according to the sampling plan mentioned in 6.2 and isolate them either for the removal of secondary sampling units for destructive examination in the laboratory (for example chemical or microbiological examination) or for non-destructive examination (for example visual inspection, sensory assessment, microbiological tests using the swab technique).

No single sample taken from a carcass or other large piece of meat can be truly representative of the whole but, equally, it is impracticable to analyse the entire meat unit. Therefore, in taking primary or secondary samples, the purpose for which they are being taken will determine the procedure to be followed.

Thus, in general, samples shall be taken as follows:

- a) surface sampling units (for example for the detection of coliforms or *Salmonellae*) shall be taken by wiping over the entire meat unit (or selected areas) with large moist swabs or (for making microbiological counts) by defining areas using a template and excising or, in the case of frozen meat, scraping those areas;
- b) excised secondary sampling units having a mass between 500 g and 1 kg for chemical or microbiological examination in the laboratory shall be taken, wherever possible, from an existing cut surface and in such a way as to cause minimum damage;
- c) deep muscle sampling units for microbiological examination [for example for the determination of the causes of deep putrefaction at bone level ("bone taint")] shall be taken from the affected part of the carcass with a sterile stainless steel myectome or, in the case of frozen meat, with a brace and bit;

- d) fat sampling units (for example for the estimation of fat-soluble compounds such as certain pesticides) shall, wherever possible, be taken from the kidney fat;
- e) drip sampling units, for example from vacuum-packed refrigerated meat, shall be taken aseptically through the foil or after opening the package, using sterile syringes and/or flasks or bottles. If the meat is returned to the lot, this shall be done after repacking under vacuum.

6.3.3 Temperature

Where practicable, record the temperature of each lot sampled.

6.4 Packaging sampling units

6.4.1 Meat or meat products prepared or packed as individual units of any size, or meat in pieces not exceeding 2 kg in mass [see 1.2 a)]

If the units are packed in an airtight container, no further packing is required. If the units are not so packed, pack each sampling unit in a suitable sample container, close it securely, seal it and label it (see clause 5 and 6.1).

6.4.2 Carcasses, cuts of carcasses or cured meat in pieces exceeding 2 kg in mass, and mechanically separated meat or dried meat [see 1.2 b)]

Pack each sampling unit in a bag of suitable plastic

material, close it securely, seal it and label it (see clause 5 and 6.1).

Pack swabs for microbiological examination in sterilized containers and drip samples in sterile flasks or bottles.

NOTE 1 If it is feasible to pack the different sampling units together in one or more containers, sealing and labelling of each unit is not required if these containers are sealed and labelled in accordance with clause 5 and 6.1.

6.5 Transport and storage of sampling units

Sampling units shall be sent to the laboratory as quickly as possible after sampling, during which time they shall be maintained at the temperature at which the product concerned should be stored. However, in the case of products that are refrigerated, transport the sampling units

- a) at 0 °C to 2 °C, if it is expected that they will be examined within 24 h, or
- b) frozen at a temperature not exceeding – 24 °C, in other cases; however, samples that are to be subjected to physical or sensory tests shall not, in general, be frozen.

Take precautions to prevent exposure of the sampling units to direct sunlight during transport. Sampling units shall arrive in the laboratory in an undamaged state and with undisturbed seals.

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