
International Standard



6644

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Cereals and milled cereal products — Automatic sampling by mechanical means

Céréales et produits de mouture des céréales — Échantillonnage automatique par des moyens mécaniques

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Descriptors : agricultural products, food products, cereal products, grains (food), sampling, sampling equipment.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6644 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in December 1979.

It has been approved by the member bodies of the following countries:

Austria	India	Romania
Brazil	Israel	South Africa, Rep. of
Bulgaria	Kenya	Spain
Canada	Korea, Rep. of	Turkey
Cyprus	Netherlands	United Kingdom
Czechoslovakia	New Zealand	USA
Ethiopia	Peru	USSR
France	Philippines	Yugoslavia
Germany, F. R.	Poland	
Hungary	Portugal	

The member body of the following country expressed disapproval of the document on technical grounds :

Australia

This International Standard has also been approved by the International Union of Pure and Applied Chemistry (IUPAC).

This International Standard is based on Standard No. 120 of the International Association for Cereal Chemistry (ICC).

Cereals and milled cereal products — Automatic sampling by mechanical means

0 Introduction

Correct sampling is an operation that requires most careful attention. Emphasis cannot therefore be too strongly laid on the necessity of obtaining a properly representative sample of cereal grain or milled product. Careless or inaccurate sampling could lead to misunderstanding and to unwarranted financial adjustment.

The procedures given in this International Standard are recognized as good practice and it is strongly recommended that they be followed whenever practicable. It is difficult to lay down fixed rules to be followed in every case, and particular circumstances may render some modification of the method desirable, for example if it is desired to check the uniformity of a consignment by the examination of individual increments.

In certain areas there are widely recognized trade associations which prescribe rules for the sampling procedures to be used in contracts under their auspices. In no case should the methods described in the International Standard be regarded as overriding the rules laid down in such contracts or the rules of official inspecting organizations.

1 Scope and field of application

This International Standard specifies general conditions relating to the automatic sampling, by mechanical means, for assessment of quality, of cereals (as grain) or of milled cereal products moving in bulk, intended for human consumption.

It is not applicable to commodities in sacks or in packages, to static bulks in wagons, ships, bulk tankers¹⁾, silos or warehouses, nor does it apply to seed grain.

2 Definitions

For the purpose of this International Standard, the following definitions apply.

2.1 consignment : The quantity of product dispatched or received at one time and covered by a particular contract or shipping document. It may be composed of one or more lots.

2.2 lot : A stated quantity, presumed to be of uniform characteristics, taken from the consignment, and allowing the quality to be assessed.

2.3 increment; primary sample : A small quantity of product taken from one point in the lot at a single point in time or during a stated short period of time.

A series of increments, taken at a number of points in time or during a series of short periods of time, is considered, when bulked, to be representative of the lot.

2.4 bulk sample : The quantity of product formed by combining and mixing the increments taken from a specific lot.

2.5 laboratory sample; final lot sample : The quantity of product removed from the bulk sample and intended for analysis or other examination.

3 General

3.1 Arrangements for automatic sampling shall be made jointly by sampling superintendents appointed by the interested parties, or by a sampling superintendent appointed jointly.

1) For the sampling of cereals as grain, see ISO 950, *Cereals — Sampling (as grain)*. For the sampling of cereals and pulses as milled products, see ISO 2170, *Cereals and pulses — Sampling of milled products*.

3.2 The purpose of automatic sampling is to obtain a sample corresponding in characteristics and composition with the lot from which it was taken. Therefore, the mechanical sampling device, having been installed, suitably adjusted and set in operation, shall automatically take an increment or a series of increments from a lot, without human intervention, such increment or increments being taken continuously, or intermittently and repeatedly.

3.3 It is essential that a product which is sea-damaged or otherwise damaged in transit or out of condition is kept separate from the sound product and sampled separately. Samples of the unsound material shall not be mixed with samples of the sound material.

3.4 Special care is necessary to ensure that all parts of the automatic sampler are clean, dry and free from foreign odours.

Sampling shall be carried out in such a manner as to protect the samples, the automatic sampler, and the containers in which the samples are placed, from adventitious contamination such as rain, dust, etc.

4 Apparatus

Automatic sampling equipment shall meet the following requirements (an example of an automatic spout sampler is illustrated in the figure).

4.1 Duty

The equipment shall be capable of taking a sample from the entire cross-section of the flowing bulk material (lot).

4.2 Adjustment

The equipment shall be capable of adjustment so that the proportion of the bulk flow which is continuously taken can be varied over a desirably wide range, and so that the size of increments and the frequency at which they are taken, in the case of intermittently-taken samples, can be varied over desirably wide ranges. In addition, the automatic sampler, having been suitably adjusted, shall be capable of maintaining constant the proportion of the bulk flow that is continuously taken, or, in the case of intermittently-taken samples, the size of the increments and the frequency at which they are taken.

4.3 Model description

Automatic samplers described by the manufacturer as being of the same model shall be identical in design and dimensions within the limitations of manufacturing tolerance.

4.4 Inspection doors

Each automatic sampler shall be provided with suitable access for convenient inspection, cleaning, maintenance, and repair of all wearing surfaces.

4.5 Electrical overload protection

Overload protection shall be provided by the manufacturer.

4.6 Maintenance manual

Instructions for maintenance, measurement of, for example, the velocity of moving parts through the grain stream, and lubrication, together with drawings and a parts list, shall be supplied with the automatic sampler.

4.7 Mechanical reliability

The automatic sampler shall be capable of operating within the performance requirements of this International Standard under all conditions of humidity and temperature which may occur at the location where the unit is installed.

5 Installation

Automatic sampling equipment shall be installed in accordance with the following requirements.

5.1 Access

Adequate space shall be provided to allow convenient and safe access to the automatic sampler.

5.2 Power supply

The power supply shall be adequate to meet the minimum requirements of the manufacturer and shall be constant and unaffected by other equipment.

5.3 Illumination

Illumination shall be permanent and adequate for inspection, operation and maintenance of the automatic sampler.

5.4 Location of operating controls

Operating controls shall be conveniently accessible to the sampling superintendents responsible for the validity of the sample.

5.5 Safety

The installation shall comply with all applicable safety requirements.

6 Location and time of sampling

6.1 Automatic sampling shall be carried out at a sampling point sited in such a position that increments may be taken from the lot when the latter is moving.

6.2 Cereal grains and milled cereal products moving in bulk may be sampled :

- a) when falling freely, under gravity, for example grain falling from a spout, from the end of a conveyor belt, or in an inclined conduit;

b) when moving in air currents, for example milled products in a pneumatic lift or conveyor;

c) when moving horizontally, on a conveyor belt, for example grain on an open conveyor belt.

6.2.1 If a spout sampler is used, it shall be installed within 4 m of the weighing machine, bin, head of bucket elevator, or discharge point of a pneumatic elevator cyclone, so that the high velocity of the grain stream does not cause breakage of the grains. The slope of the spout shall be not less than 35° from horizontal.

6.2.2 If a belt or band sampler is used, it shall be installed 1,5 to 15 m from the nearest feeder, turnhead, or place where the grain is fed onto the conveyor belt or band.

7 Taking increments

7.1 The increments shall be taken from the entire cross-section of the flowing bulk material (lot) in such a way that every part of the lot has an equal opportunity of entering the inlet of the automatic sampler.

7.2 As the characteristics and composition of a lot may vary from time to time in a regular, periodic or random way, the increment or series of increments shall be taken during the whole time that the lot is flowing past the sampling point.

7.3 Automatic sampling may be continuous or intermittent.

7.3.1 Continuous automatic sampling

A small constant proportion of the lot shall be taken during the entire time of its flow past the sampling point (see 4.2).

7.3.2 Intermittent automatic sampling

A series of increments of fixed size shall be taken at predetermined intervals of time during the entire time of flow of the lot past the sampling point (see 4.2).

8 Bulk sample

8.1 A continuously-taken sample may be allowed to accumulate, so as to form a bulk sample, during the entire time of sampling a particular lot. If desired, the sample may be intermittently divided into increments so that each increment represents a given proportion of the lot flowing past the sampling point during a given time interval.

8.2 A series of intermittently-taken samples may be retained as separate increments so that the fluctuations in characteristics and composition of the lot may be assessed; alternatively, they may be blended together and well mixed to provide a bulk sample.

9 Laboratory samples

The bulk sample shall be divided down to the required number of laboratory samples of the required size by use of the apparatus described in ISO 2170.

10 Size of samples

The size of a continuously-taken sample, and the size of intermittently-taken increments and the frequency at which they are taken, is determined by the characteristics and adjustment of the automatic sampler employed. The automatic sampler shall be adjusted so that the sizes of sample given in the table, which are usually suitable, are obtained.

Larger or smaller laboratory samples may be required in some cases, according to the tests to be carried out.

11 Packaging and labelling of samples

11.1 Packaging of samples

11.1.1 The samples shall be packed in containers made of a material which has no action on the product, for example glass bottles or jars, tins with close-fitting lids, unglazed, unbleached, insewn bags of very close texture, or paper bags.

Table — Sizes of samples

Type of sampling	Lot size ¹⁾	Increment max.	Bulk sample max.	Laboratory sample	
				Grain	Milled products
Continuous	Up to 500 t	—	100 kg	5 kg	3 kg
Intermittent	Up to 500 t	1 kg			

1) Metric tonnes. 1 t = 1 000 kg.

11.1.2 Samples for the determination of moisture, or for other tests in which it is important to avoid the loss of volatile matter (for example, examination for evidence of chemical treatment), shall be packed in air-tight and vapour-tight containers with air-tight and vapour-tight closures, for example with chemically inert foil inserts. The containers shall be completely filled and the closures shall be sealed to prevent loosening or tampering.

11.1.3 The bags and other containers shall carry the seal of each sampler.

11.2 Labels for samples

If paper labels are used for the samples, they shall be of a suitably high quality for the purpose. The eyelet hole of the label shall be reinforced. The label shall be sealed to the container holding the sample and shall carry the seal of each sampler; these seals shall be arranged in such a way as to guarantee the inviolability of the sample.

The information on the label shall include such of the following items as are required by the terms of the contract :

- 1) Ship, wagon or freight container
- 2) From
- 3) To
- 4) Date of arrival
- 5) Quantity
- 6) Bulk
- 7) Goods
- 8) Identification mark or lot number

- 9) Name of seller
- 10) Name of buyer
- 11) Contract number and date
- 12) Date of sampling
- 13) Date of final discharge
- 14) Place and point of sampling
- 15) Name of sampler

The information recorded on the label shall be indelibly marked.

By agreement between seller and buyer, a duplicate label may be included inside the sample container, unless the sample is intended for moisture determination.

12 Dispatch of samples

Samples shall be dispatched as soon as possible, and only in exceptional circumstances more than 48 h after sampling has been completed, non-business days excluded.

13 Sampling report

The sampling report, besides giving the usual information, shall refer to the sampling technique applied, and to any special circumstances that may have influenced sampling. The report may also make reference to the condition of the product sampled, including signs of insect, mite, rodent or other infestation visible in the warehouse, silo, mill, or during working the vessel or other carrier. This infestation is not always readily apparent in the sample except on close inspection or sieving.

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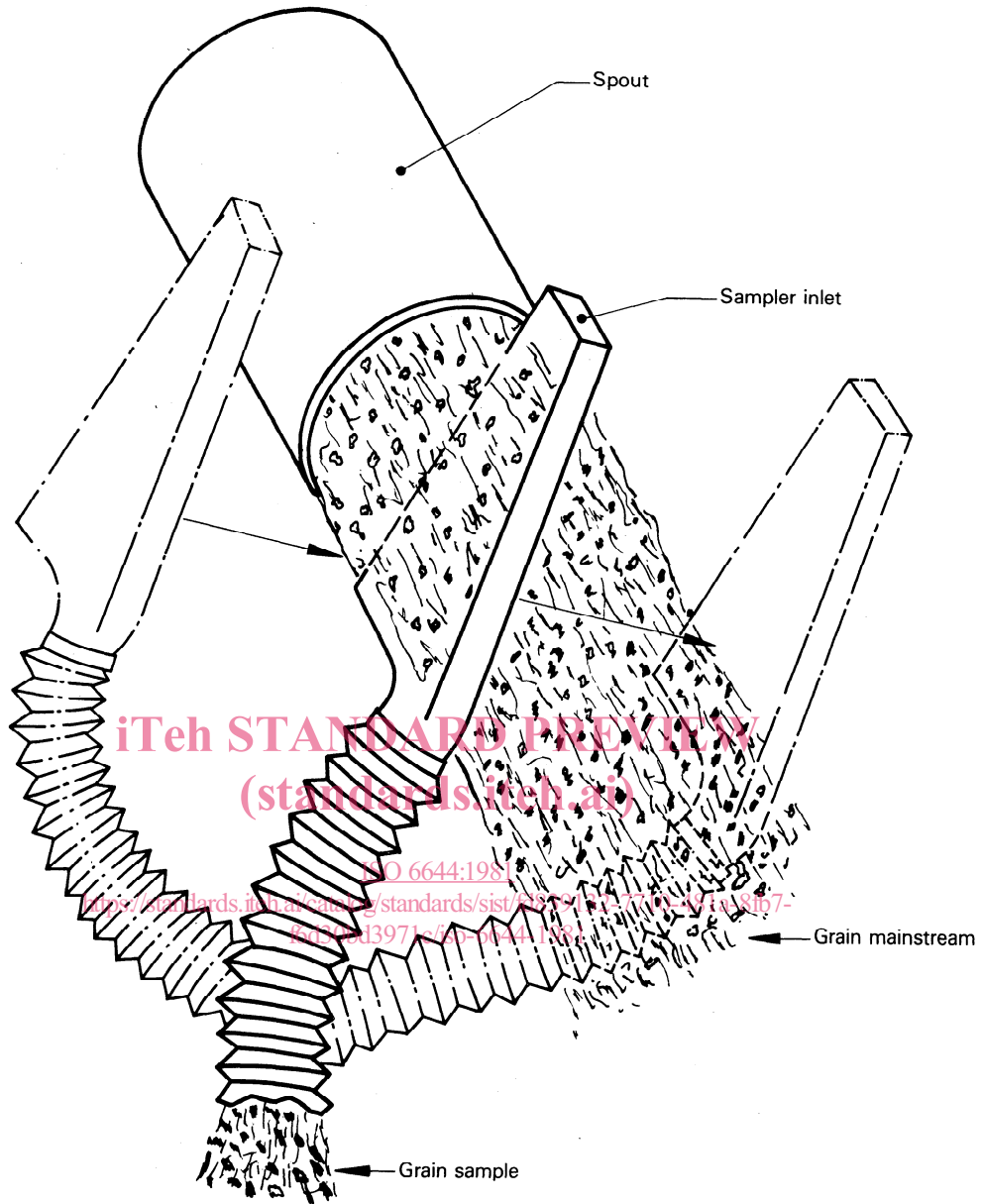


Figure — Diverter-type automatic spout sampler, providing intermittent and repeated sampling

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