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CEREALS

SAMPLING (AS GRAIN)

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CEREALS

SAMPLING (AS GRAIN)

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 grain. Careless or inaccurate sampling could lead to misunderstanding and unwarranted financial adjustments.

The procedures given in this ISO Recommendation are recognized as good practice and it is strongly recommended that they be followed whenever practicable. It is recognized that 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 primary samples.

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 will this ISO Recommendation override the rules laid down in such contracts.

1. SCOPE

1.1 This ISO Recommendation specifies general conditions relating to sampling for the assessment of the quality of cereal grains.

1.2 **Field of application**

This ISO Recommendation does not apply to seed grain.

2. DEFINITIONS

Terms used in this ISO Recommendation have the following definitions.

2.1 *Consignment.* The quantity of grain dispatched or received at one time and covered by a particular contract or shipping document.

2.2 *Lot.* A stated portion of the consignment which will allow the quality to be assessed.

2.3 *Primary sample.* A small quantity of grain taken from a single position in the lot.

A series of primary samples should be drawn, from different positions in the lot, which when bulked will be representative of the lot.

2.4 *Bulk sample.* The quantity of grain formed by combining and mixing the primary samples drawn from any one particular lot.

2.5 *Final lot sample (laboratory sample).* A sample representing the quality of the lot, obtained by reduction of the bulk sample and intended for analysis or other examination.

3. GENERAL

3.1 Samples should be drawn jointly by sampling superintendents appointed by buyers and sellers or by a sampling superintendent appointed jointly.

3.2 Samples should be fully representative of the lots from which they are drawn. Therefore, as the composition of the lot is seldom uniform, a sufficient number of primary samples should be drawn and carefully mixed, thus giving a bulk sample from which are obtained, by successive divisions, the final lot samples.

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

3.4 Special care is necessary to ensure that all sampling apparatus is clean, dry and free from foreign odours.

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

4. APPARATUS

The apparatus required falls under the following headings. Examples are given under each heading. (See also Fig. 1 to 9 in Annex A.)

4.1 **Sampling from bulk**

Shovels, hand-scoops, cylindrical samplers and apparatus for drawing primary samples periodically from a flow of grain.

4.2 **Sampling from bags**

Sack-type spears or triers.

4.3 **Mixing and dividing**

Shovels and dividing apparatus.

5. LOCATION OF SAMPLING

The location and time of sampling should be determined by the agreements between the parties concerned. Particular recommendations applying to loading and discharge are given below.

5.1 **Loading**

It is important that grain which is to be dispatched by vessel should be sampled during loading, or immediately before, at the place of loading.

5.2 **Discharge**

Most grain is received from ocean-going vessels or river transport. In both cases, sampling should be carried out during discharge from the vessel.

6. METHOD OF DRAWING SAMPLES FROM CEREALS CARRIED IN BULK

6.1 Carriage by sea or inland waterway

6.1.1 Unless otherwise specified in the contract, consignments should be considered in lots of 500 tonnes* or such part thereof as constitutes a single consignment or balance.

6.1.2 When sampling takes place while the product is in motion, primary samples should be drawn at time intervals dependent on the rate of flow.

6.1.3 When bulk grain is sampled in the hold during discharge, primary samples should be drawn from as many places as possible, excluding the run, and at intervals determined by the rate of discharge.

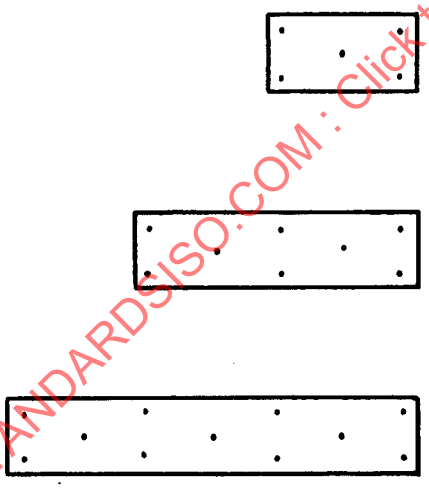
6.1.4 If sampling takes place from weigh hoppers, primary samples should be drawn by means of cylindrical samplers, shovels, or mechanical samplers in accordance with the practice of the port.

6.1.5 The procedure for silos or warehouses is necessarily dependent on local conditions.

6.2 Carriage by rail or road

6.2.1 Unless otherwise specified in the contract, each laden wagon or lorry should be sampled.

6.2.2 If sampling takes place from laden wagons or lorries, the primary samples should be drawn throughout the whole depth of the layer, by means of a cylindrical sampler and at the following points :



Wagons or lorries up to 15 tonnes : five sampling points (middle and approximately 50 cm from sides).

Wagons from 15 to 30 tonnes : eight sampling points.

Wagons from 30 to 50 tonnes : eleven sampling points.

6.2.3 If the type of wagon does not allow samples to be drawn in this manner, or by agreement between buyer and seller, the method of sampling should be as described in clause 6.1.2.

* Metric tonnes. 1t = 1000 kg.

7. METHOD OF DRAWING SAMPLES FROM CEREALS CARRIED IN BAGS

Unless otherwise specified in the contract or unless the practice at a port requires otherwise, primary samples should be drawn from different parts of the bag (for example, top, middle and bottom) by means of a sack-type spear from the following numbers of bags :

Number of bags	
in consignment	to be sampled
Up to 10	Each bag
10 to 100	10, drawn at random
More than 100	Square root (approximately) of total number, drawn according to a suitable sampling scheme*

8. BULK SAMPLE

The bulk sample should be formed by bringing together the primary samples and mixing them well.

9. FINAL LOT SAMPLES

The bulk sample should be divided down to the required number of final lot samples by use of apparatus mentioned in section 4. The number of final lot samples to be drawn for analysis and arbitration should be specified in the contract or otherwise agreed between buyer and seller.

10. SIZE OF SAMPLES

The following sizes of samples are usually suitable:

Grain	Lot	Primary sample	Bulk sample	Final lot sample
All grains	Up to 500 tonnes	1 kg (max.)	100 kg	5 kg

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

* See, for example, Annex B.

11. PACKAGING AND LABELLING OF SAMPLES

11.1 Packaging of samples

11.1.1 The final lot samples should be packed in unglazed, unbleached, insewn, cotton bags of very close texture.*

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), should be packed in air-tight and moisture-tight containers fitted with air-tight and moisture-tight closures. The containers should be completely filled and the closures should be sealed to prevent loosening or tampering.

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

11.2 Labels for samples

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

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

1. Ship or wagon . . . . . .
2. From . . . . . .
3. To . . . . . .
4. Arrived . . . . . .
5. Quantity . . . . . .
6. Bulk/Bags/Number/ . . . . . .
7. Goods . . . . . .
8. Identification mark or Lot No. . . . . .
9. Name of seller . . . . . .
10. Name of buyer . . . . . .
11. Contract No. and Date . . . . . .
12. Date of sampling . . . . . .
13. Date of final discharge . . . . . .
14. Place and point of sampling . . . . . .
15. Sampled by { . . . . . / . . . . . }

The information recorded on the label should be permanent.

By agreement between seller and buyer, a duplicate label may be included inside the sample container, unless the sample is intended for moisture determination. Also by agreement between seller and buyer, the above information may also be recorded indelibly on the bags containing the samples.

* It is recognized that jute, though not as satisfactory as cotton, is sometimes used.

12. DISPATCH OF SAMPLES

Final lot samples should be dispatched as soon as possible, and only in exceptional circumstances more than 48 hours after sampling has been completed, non-business days excluded.

13. SAMPLING REPORT

If a sampling report is prepared, besides giving the usual information it should make reference to the condition of the grain sampled, including signs of insect infestation visible in the warehouse or silo, or during working the vessel or other carrier. This infestation is not always readily apparent in the sample except on close inspection or sieving. The report should also refer to the technique applied, if this is other than that described in this ISO Recommendation, and all the circumstances that may have influenced sampling.

ANNEX A

EXAMPLES OF SAMPLING APPARATUS

NOTE. – Many different types and variations of apparatus are available, and dimensions are included solely as a guide.

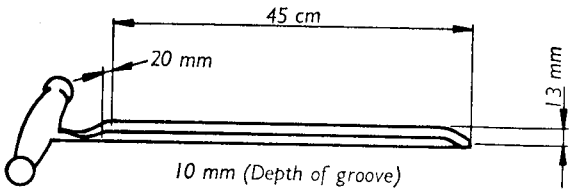


FIG. 1 — **Sampling spear (open trier)**

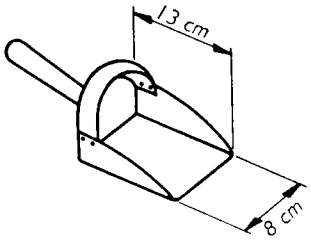


FIG. 2 — **Hand-scoop**

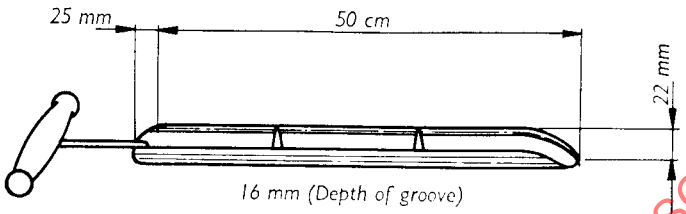


FIG. 3 — **Divided sampling spear (open trier)**

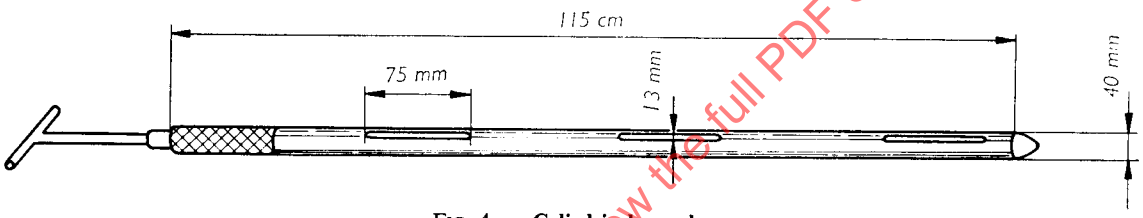


FIG. 4 — **Cylindrical sampler (divided bulk probe)**

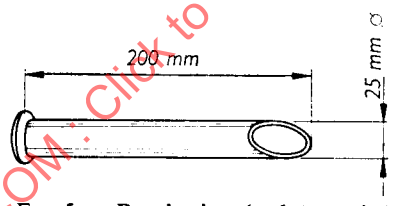


FIG. 5 — **Running iron (sack-type trier)**

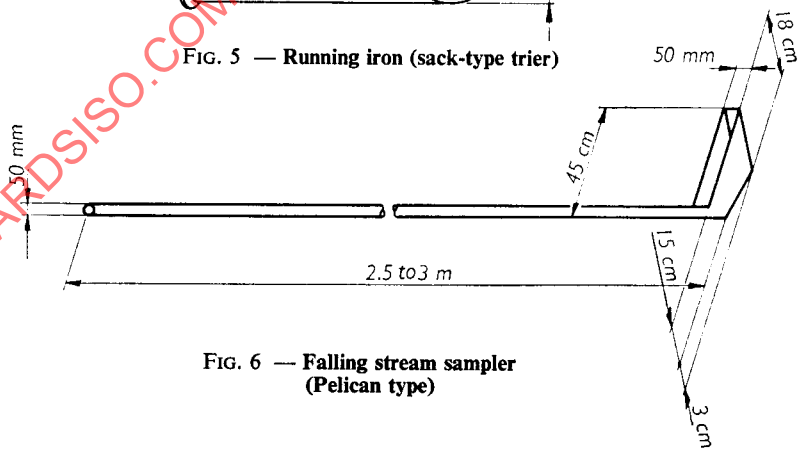


FIG. 6 — **Falling stream sampler (Pelican type)**

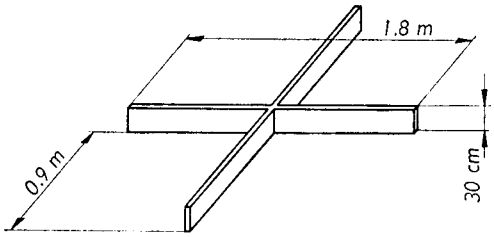


FIG. 7 — **Quartering irons**

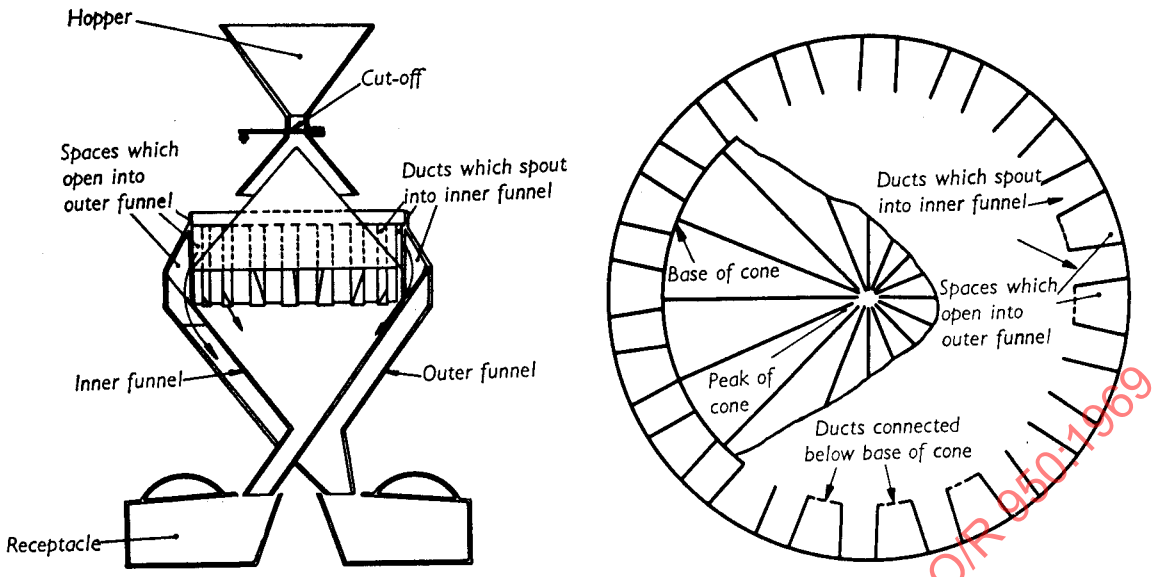


FIG. 8 — **Conical divider (Boerner type)**

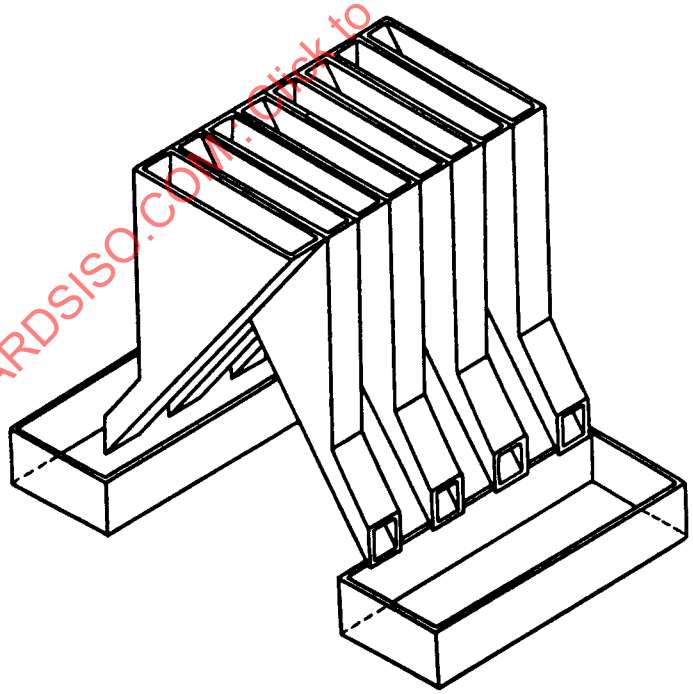


FIG. 9 — **Multiple-slot divider**