International Standard 951

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Pulses in bags — Sampling

Légumineuses en sacs — Échantillonnage

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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 951 was developed by Technical Committee ISO/TC 34, *Agricultural food products*.

It was submitted directly to the ISO Council, in accordance with clause 6.13.1 of the Directives for the technical work of ISO. It cancels and replaces ISO Recommendation R 951-1969, which had been approved by the member bodies of the following countries :

Australia	Germany, F. R.	Poland
Brazil	Hungary	Portugal
Chile	India	Romania
Czechoslovakia	Iran	Thailand
Egypt, Arab Rep. of	Israel	Turkey
France	Netherlands	United Kingdom

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

USSR

This International Standard is based on Standard No. 101 of the International Association for Cereal Chemistry (ICC).

Pulses in bags — Sampling

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

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 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 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 will this International Standard override the rules laid down in such contracts.

Pulses are usually transported in bags, and this document does not cover sampling from bulk consignments, for which the general rules given in ISO 950, *Cereals — Sampling (as grain)*, are applicable.

1 Scope and field of application

This International Standard specifies general conditions relating to the sampling for assessment of quality of pulses transported in bags.

It does not apply to pulses intended for sowing.

2 Definitions

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

2.1 consignment : The quantity of pulse 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 : A small quantity of pulse taken from a single position in the lot.

A series of increments should be taken from different positions in the lot.

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

2.5 laboratory sample : The quantity of pulse removed from the bulk sample and intended for analysis or other examination.

3 General

3.1 Samples shall be taken jointly by sampling super intendents appointed by buyers and sellers or by a sampling superintendent appointed jointly.

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

3.3 It is essential that pulse which is sea-damaged or otherwise damaged in transit or out of condition is kept separate from sound pulse and sampled separately. Samples of unsound material shall 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 shall 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

Apparatus is required as follows (see figures 1 to 7 for examples).

NOTE — Many different types and variations of apparatus are available. The dimensions given in the figures are included, therefore, solely as a guide.

4.1 Sampling

Sack-type spears or triers.

4.2 Mixing and dividing

Shovels and dividing apparatus.

5 Location of sampling

The location and time of sampling shall be determined by agreement between the parties concerned. Particular requirements applying to loading and discharge of the bags are given below.

5.1 Loading

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

5.2 Discharge

Most pulses are received from ocean-going vessels or river transport. In both cases, sampling shall be carried out during discharge of the bags from the vessel.

6 Method of taking samples

6.1 Size of lot

Consignments shall be considered in lots of 200 tonnes[1], or such part thereof as constitutes a single consignment.

6.2 Increments

Unless otherwise specified in the contract or unless the practice at a port requires otherwise, increments shall be taken from different parts of a bag (for example top, middle and bottom) by means of a sack-type spear, from the number of bags specified in table 1.

Table 1 — Number of bags to be sampled

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

* See for example; the annex.

6.3 Bulk sample

The bulk sample shall be formed by combining the increments and mixing them well.

6.4 Laboratory samples

The bulk sample shall be mixed and divided to obtain the required number of laboratory samples by use of the apparatus mentioned in clause 4. The number of laboratory samples to be taken for analysis and arbitration shall be specified in the contract or otherwise agreed between the buyer and the seller.

6.5 Size of samples

Samples of the sizes given in table 2 are usually suitable for all types of pulses.

Table 2 — Sizes of samples

Lot	Increment	Bulk sample	Laboratory sample
Up to 200 tonnes	1,5 kg (max.)	150 kg (max.)	2,5 kg

Larger samples may be necessary in certain cases, for example, if it is necessary to examine the pulse for infestation.

7 Packaging and labelling of samples

7.1 Packaging of samples

7.1.1 The laboratory samples shall be packed in unglazed, unbleached, insewn, cotton bags of very close texture.[2]

7.1.2 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 moisture-tight containers fitted with air-tight and moisture-tight closures. The containers shall be completely filled and the closures shall be sealed to prevent loosening or tampering.

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

7.2 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 on 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.

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

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

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

1) Ship or wagon

2) From

3) To

4) Date of arrival

5) Quantity

6) No. of bags

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 shall 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.

8 Dispatch of samples

Laboratory 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.

9 Sampling report

If a sampling report is prepared, besides giving the usual information, it shall make reference to the condition of the pulse 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 shall also refer to the technique applied, if this is other than that described in this International Standard, and all the circumstances that may have influenced sampling.

Dimensions in millimetres

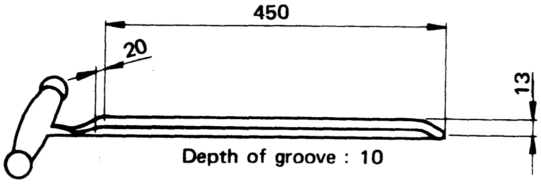

Figure 1 — Sampling spear (open trier)

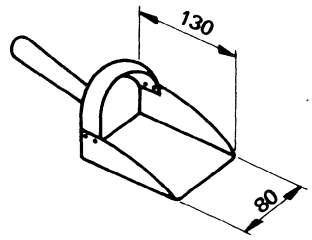

Figure 2 — Hand-scoop

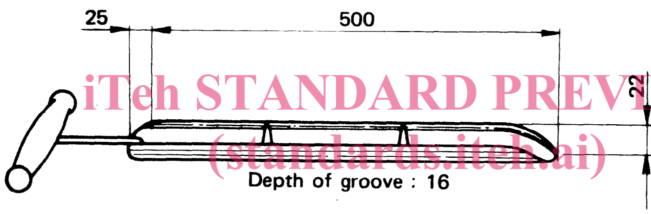

Figure 3 — Divided sampling spear (open trier)

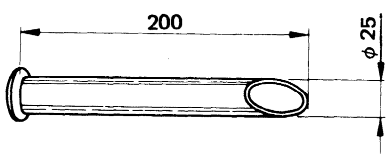

Figure 4 — Running iron (sack-type trier)

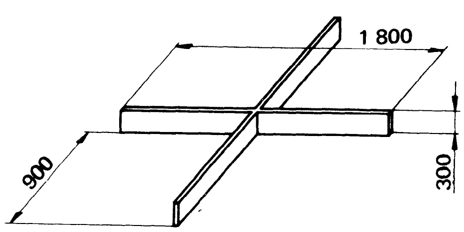

Figure 5 — Quartering irons

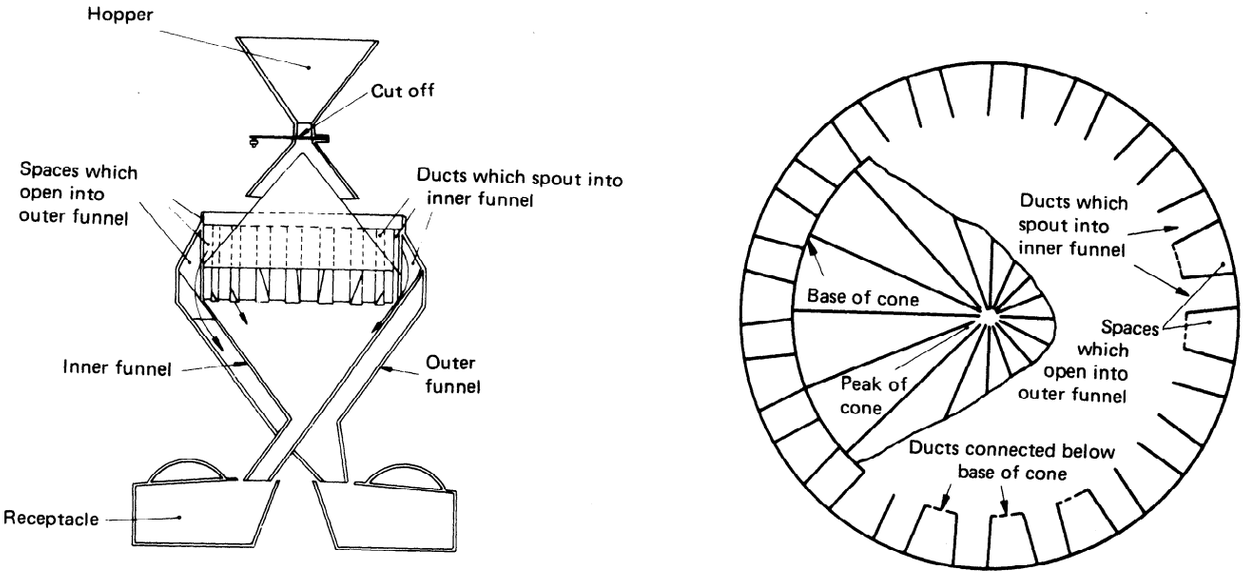

Figure 6 — Conical divider (Boerner type)

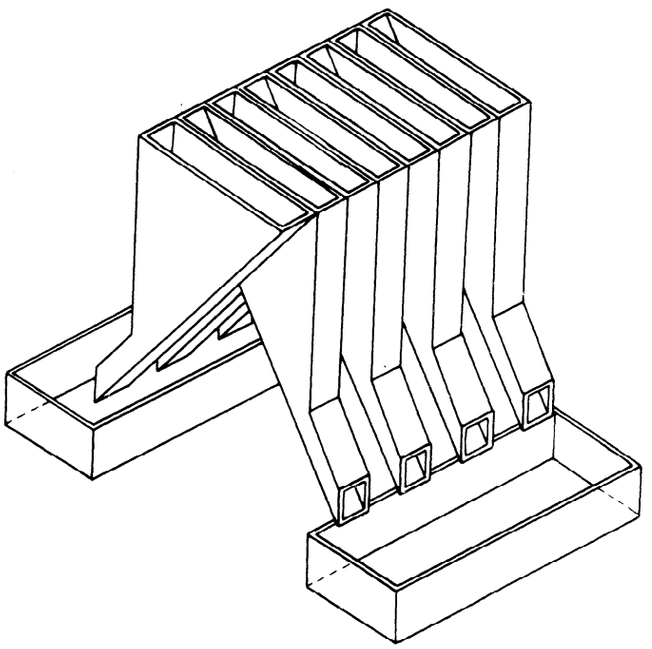

Figure 7 — Multiple-slot divider

Annex

Sampling scheme for consignments of more than 100 bags

For consignments larger than 100 bags, the number of bags to be sampled is approximately the square root of the number of bags in the consignment. The consignment shall be mentally divided into a number of groups, each including a number n of bags corresponding with the square root of the number of bags in the consignment (rounded upwards). For sizes N of 101 . . . 10 000 bags, the number n of bags forming one group has been indicated in table 3. For each of these groups, one bag shall be selected at random for sampling.

If there is a remainder after dividing the consignment into a number n of bags, one bag from this remainder shall be also taken for sampling.

In order to be sure that in the groups the sampler obtains a division at random of the bags to be sampled, it is recommended that he notes the numbers 1 . . . n and each time crosses out one number before choosing out of the group of n bags and sampling the bag that corresponds with this number.

Example :

The consignment contains 200 bags (N). For N equal to 197 . . . 225, the size n of each group equals 15 bags. Note the numbers 1, 2, 3 . . ., 14, 15. Cross out one number, for example 7. Take from the first group of 15 bags the seventh bag and sample it. Cross out another number, for example 3. Take from the second group of 15 bags the third bag and sample it. Continue in this way until 13 groups of 15 bags (a total of 195 bags) have been sampled. The remaining group is smaller than 15 bags; still take one bag at random out of it. A total of 14 bags ($= n - 1$) has therefore been sampled out of a consignment of 200 bags.

Table 3 — Sampling scheme for consignments of more than 100 bags

N = Number of bags in consignment; n = Number of bags in group

N	n	N	n	N	n
101 . . . 121	11	1 601 . . . 1 681	41	4 901 . . . 5 041	71
122 . . . 144	12	1 682 . . . 1 764	42	5 042 . . . 5 184	72
145 . . . 169	13	1 765 . . . 1 849	43	5 185 . . . 5 329	73
170 . . . 196	14	1 850 . . . 1 936	44	5 330 . . . 5 476	74
197 . . . 225	15	1 937 . . . 2 025	45	5 477 . . . 5 625	75
226 . . . 256	16	2 026 . . . 2 116	46	5 626 . . . 5 776	76
257 . . . 289	17	2 117 . . . 2 209	47	5 777 . . . 5 929	77
290 . . . 324	18	2 210 . . . 2 304	48	5 930 . . . 6 084	78
325 . . . 361	19	2 305 . . . 2 401	49	6 085 . . . 6 241	79
362 . . . 400	20	2 402 . . . 2 500	50	6 242 . . . 6 400	80
401 . . . 441	21	2 501 . . . 2 601	51	6 401 . . . 6 561	81
442 . . . 484	22	2 602 . . . 2 704	52	6 562 . . . 6 724	82
485 . . . 529	23	2 705 . . . 2 809	53	6 725 . . . 6 889	83
530 . . . 576	24	2 810 . . . 2 916	54	6 890 . . . 7 056	84
577 . . . 625	25	2 917 . . . 3 025	55	7 057 . . . 7 225	85
626 . . . 676	26	3 026 . . . 3 136	56	7 226 . . . 7 396	86
677 . . . 729	27	3 137 . . . 3 249	57	7 397 . . . 7 569	87
730 . . . 784	28	3 250 . . . 3 364	58	7 570 . . . 7 744	88
785 . . . 841	29	3 365 . . . 3 481	59	7 745 . . . 7 921	89
842 . . . 900	30	3 482 . . . 3 600	60	7 922 . . . 8 100	90
901 . . . 961	31	3 601 . . . 3 721	61	8 101 . . . 8 281	91
962 . . . 1 024	32	3 722 . . . 3 844	62	8 282 . . . 8 464	92
1 025 . . . 1 089	33	3 845 . . . 3 969	63	8 465 . . . 8 649	93
1 090 . . . 1 156	34	3 970 . . . 4 096	64	8 650 . . . 8 836	94
1 157 . . . 1 225	35	4 097 . . . 4 225	65	8 837 . . . 9 025	95
1 226 . . . 1 296	36	4 226 . . . 4 356	66	9 026 . . . 9 216	96
1 297 . . . 1 369	37	4 357 . . . 4 489	67	9 217 . . . 9 409	97
1 370 . . . 1 444	38	4 490 . . . 4 624	68	9 410 . . . 9 604	98
1 445 . . . 1 521	39	4 625 . . . 4 761	69	9 605 . . . 9 801	99
1 522 . . . 1 600	40	4 762 . . . 4 900	70	9 802 . . . 10 000	100

For consignments larger than 10 000 bags, n equals the square root of N, rounded upwards.