
International Standard



5502

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Oilseed residues — Preparation of test samples

Tourteaux de graines oléagineuses — Préparation des échantillons pour essai

First edition — 1983-11-01

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UDC 633.85 : 620.11

Ref. No. ISO 5502-1983 (E)

Descriptors: agricultural products, oilseeds, oilseed residues, sampling, sampling equipment, storage.

Price based on 3 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (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 authorized 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 5502 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in September 1982.

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

Australia	Iraq	Romania
Austria	Israel	South Africa, Rep. of
Egypt, Arab Rep. of	Italy	Spain
Ethiopia	Kenya	Sri Lanka
France	Korea, Dem. P. Rep. of	Thailand
Germany, F.R.	Malaysia	Turkey
Hungary	Netherlands	United Kingdom
India	Philippines	USSR
Iran	Portugal	Yugoslavia

No member body expressed disapproval of the document.

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

Oilseed residues — Preparation of test samples

1 Scope and field of application

This International Standard specifies methods for the preparation of test samples of oilseed residues by the reduction of laboratory (contract) samples.

For the purpose of this International Standard, the term **oilseed residues** includes meals, extractions, expeller cakes or slab cakes¹⁾ resulting from the production of crude vegetable oils from oilseeds by pressure or solvent extraction. It does not include compounded products.

NOTE — The sampling of oilseed residues for the preparation of laboratory (contract) samples will form the subject of ISO 5500.

2 Reference

ISO 771, *Oilseed residues — Determination of moisture and volatile matter content*.

3 Principle

Grinding of the laboratory sample, with or without preliminary breaking, crushing, grinding or drying. Division of the ground sample by suitable means, taking care that the test sample, from which the test portion(s) will be taken, truly represents the bulk of the laboratory sample.

4 Apparatus

4.1 Mechanical mill, easy to clean and allowing the oilseed residue to be ground, without heating and without appreciable change in its moisture and volatile matter and oil contents, until it passes completely through a sieve of aperture size 1,00 mm [or 2,80 mm (see 5.1.4.1)].

4.2 Crushing apparatus, if required, for example an iron pestle and mortar, or other means for breaking or crushing pieces of oilseed residues to a size suitable for introduction into the mechanical mill (4.1).

4.3 Sieves, of aperture sizes 1,00 and 2,80 mm, made from woven metal wire cloth, and complying with the requirements of ISO 565.

4.4 Dividing apparatus: quartering apparatus, conical divider (see figure 1), multiple slot divider with a sorting system (see figure 2) or other dividing apparatus, which will ensure uniform distribution of the components of the laboratory sample in the test sample.

4.5 Sample container, suitable for protecting the test sample from change in composition, and of such a size that it will be almost completely filled by the test sample.

5 Procedure

5.1 Grinding

5.1.1 General

With some mechanical mills, fine grinding may lead to a loss or gain of moisture and volatile matter, and allowance for this should be made as indicated in clause 6. Grinding should be as rapid as possible and unnecessary exposure to the atmosphere should be avoided. If necessary, first break or crush the pieces to a suitable size for grinding. Use the first twentieth of the laboratory sample to complete the cleaning of the mechanical mill (4.1) and to establish the fineness of grinding and then reject it. It is essential that the samples are mixed before each operation.

5.1.2 Fine samples

If the laboratory sample passes the 1,00 mm sieve (4.3) completely, mix it thoroughly. Divide the mixture successively using appropriate dividing apparatus (4.4), or by quartering with the aid of a spatula 25 cm in length, until a sample, of at least 100 g, and of suitable mass for all the determinations required, is obtained.

5.1.3 Coarse samples

5.1.3.1 If the laboratory sample does not pass the 1,00 mm sieve completely, but passes the 2,80 mm sieve completely, mix it thoroughly.

5.1.3.2 Carefully grind a portion of at least 100 g, and of suitable mass for all the determinations required, in the previously well cleaned mechanical mill (4.1), until it passes the 1,00 mm sieve completely.

1) In this context, **slab cakes** are cakes of oilseed residues produced by hydraulic presses, a typical mass being about 10 kg.

5.1.4 Very coarse samples

5.1.4.1 If the laboratory sample is very coarse, carefully grind it in the previously well cleaned mechanical mill until it passes the 2,80 mm sieve completely. Mix it thoroughly.

5.1.4.2 Divide the ground laboratory sample successively by means of appropriate dividing apparatus (4.4) until a sample of not less than 100 g, and of suitable mass for all the determinations required, is obtained. Grind this sample in the previously well cleaned mechanical mill (4.1) until it passes the 1,00 mm sieve completely.

5.2 Moist samples

Except for fine samples (5.1.2), if the laboratory sample is appreciably moist, or if, for any reason, the mixing and grinding operations are likely to result in a loss or gain of moisture and volatile matter, take a sample for the determination of the moisture and volatile matter contents immediately after the preliminary procedure described in 5.1.3.1, or after the preliminary grinding procedure described in 5.1.4.1.

Determine the moisture and volatile matter content by the method described in ISO 771. Also determine the moisture and volatile matter content of the prepared test sample by the same method, so that the results of analyses may be corrected to relate to the sample in its original condition as regards moisture and volatile matter content (see clause 6).

5.3 Samples difficult to grind

If the physical condition of the sample makes grinding difficult, take a portion immediately after the preliminary mixing described in 5.1.3.1, or after the preliminary grinding procedure described in 5.1.4.1.

Determine the moisture and volatile matter content by the method described in ISO 771. Dry the sample until grinding with the iron pestle and mortar (4.2), or by other means, enables the sample to pass the 1,00 mm sieve completely. Then determine the moisture and volatile matter content of the prepared test sample by the same method, so that the results of analyses may be corrected to relate to the sample in its original condition as regards moisture and volatile matter content (see clause 6).

5.4 Samples for which there are special requirements

For determinations requiring special degrees of fineness of grinding (for example, determination of urease activity), further grinding may be necessary. In such cases, prepare another test sample as described in 5.1, 5.2 or 5.3, but having the required degree of fineness.

For the preparation of test samples for the determination of residual extraction solvent content (volatile hydrocarbons), see the relevant International Standard.

6 Correction factor

6.1 General

If the grinding or mixing operations are likely to result in a loss or gain of moisture and volatile matter, it is necessary to use a correction factor to relate the results of analyses to the sample in its original condition as regards moisture and volatile matter content.

6.2 Calculation

The correction factor *C* is given by the equation

$$C = \frac{100 - U_0}{100 - U_1}$$

where

*U*₀ is the moisture and volatile matter content, expressed as a percentage by mass, of the sample after the preliminary treatment described in 5.1.3.1 or 5.1.4.1;

*U*₁ is the moisture and volatile matter content, expressed as a percentage by mass, of the prepared test sample.

6.3 Use of the correction

Multiply the results of analyses, expressed as percentages, by the correction factor *C*.

7 Storage of the test sample

Transfer the test sample without delay to the sample container (4.5) and close it.

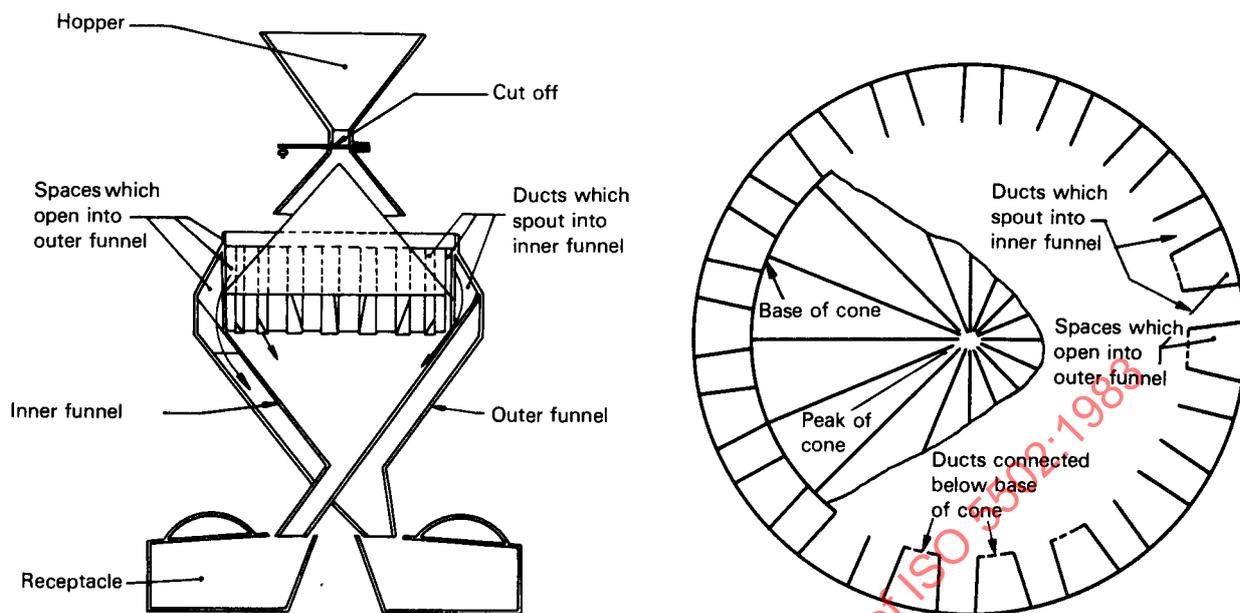


Figure 1 – Conical divider

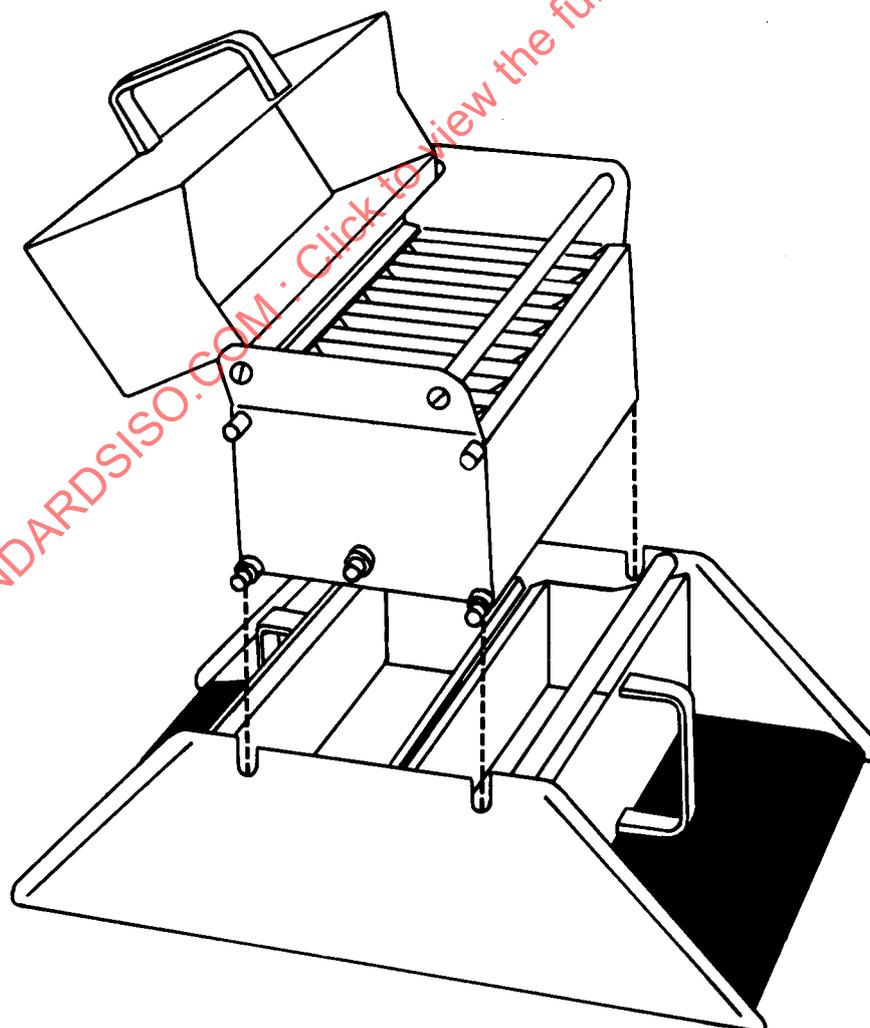


Figure 2 – Multiple slot divider with sorting system

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