International Standard ISO 5061

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

Animal feeding stuffs — Determination of castor oil seed husks — Microscopical method

Aliments des animaux — Détermination des coques de graines de ricin — Méthode microscopique

First edition — 1983-07-01

UDC 636.085/.087 : 543.8 **Ref. No. ISO 5061-1983 (E)**

Descriptors : animal feeding products, oilseed residues, tests, determination of content, microscopic analysis.

Price based on 6 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 5061 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in June 1981.

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

Australia	Hungary	Poland
Austria	India	Romania
Brazil	Iran	South Africa, Rep. of
Canada	Iraq	Sri Lanka
Chile	Israel	Tanzania
Czechoslovakia	Korea, Rep. of	Thailand
Egypt, Arab Rep. of	Netherlands	Turkey
Ethiopia	New Zealand	United Kingdom
France	Philippines	Yugoslavia

No member body expressed disapproval of the document.

Printed in Switzerland

Animal feeding stuffs — Determination of castor oil seed husks — Microscopical method

1 Scope and field of application

This International Standard specifies a method for the determination of castor oil seed (*Ricinus communis*) husks in straight and compound animal feeding stuffs and, in particular, in oilseed residues.

The limit of detection is 5 mg/kg.[1)]

2 Principle

Boiling a test portion successively with nitric acid solution and sodium hydroxide solution. Washing and separation of the residue by decantation. Drying, microscopical identification of fragments of castor oil seed husks and weighing.

3 Reagents

All reagents shall be of recognized analytical quality and the water used shall be distilled water or water of at least equivalent purity.

3.1 Nitric acid, 10 % (*V*/*V*) solution.

3.2 Sodium hydroxide, 25 g/l solution.

4 Apparatus

Usual laboratory equipment and

4.1 Stereomicroscope or **binocular lens,** of magnification X 10 to 15.

4.2 Microscope, and accessories.

4.3 Oven, capable of being controlled at 103 ± 2 °C.

4.4 Nylon gauze, of mesh size 100 µm, resistant to dilute acids and alkalis.

4.5 Sieve, of aperture size 3 mm.

4.6 Porcelain dish, of capacity 1 000 to 2 000 ml.

4.7 Measuring cylinder, of capacity at least 1 000 ml.

4.8 Flat-bottomed dish, approximately 140 mm × 80 mm .

4.9 Desiccator.

4.10 Analytical balance.

5 Sampling

Take the laboratory sample in accordance with the International Standard appropriate to the product concerned, unless sampling for the purpose of determining castor oil seed husks is excluded from its field of application. If an appropriate International Standard does not exist, the parties concerned should reach agreement on this subject, taking into account the characteristics of the product to be sampled.

1) The method requires final microscopical identification of the isolated husks. This last phase therefore requires a specialist who has had sufficient experience in this type of identification and who is experienced in microscopical techniques.

6 Procedure

6.1 Preparation of the test sample

6.1.1 Powdered feeding stuffs

Thoroughly mix the laboratory sample.

6.1.2 Cakes or compressed feeding stuffs

Grind the laboratory sample coarsely so that it passes completely through the sieve (4.5). Mix well after sieving.

6.2 Test portion

Weigh, to the nearest 0,1 g, about 100 g of the test sample into the porcelain dish (4.6).

6.3 Determination

6.3.1 Add 500 to 700 ml of the nitric acid solution (3.1), bring to the boil, stirring continuously with a glass rod, and allow to boil for half a minute. Filter through the nylon gauze (4.4). Wash the residue with hot water and transfer back to the porcelain dish. Add 500 to 700 ml of the sodium hydroxide solution (3.2), bring to the boil, stirring continuously with a glass rod, and allow to boil for half a minute. Transfer the suspension into the measuring cylinder (4.7) and fill the measuring cylinder with water.

6.3.2 Pass a slight flow of water through the measuring cylinder by means of a glass tube immersed to a depth of two-thirds of the height of the measuring cylinder. Adjust the flow so that only the very finest particles remain in suspension and the husk fragments remain at the bottom. Continue this operation until the majority of the particles in suspension have been removed. Decant two-thirds of the liquid and filter the remainder through the nylon gauze (4.4).

6.3.3 Transfer the residue into the flat-bottomed dish (4.8). Examine under the stereomicroscope or the binocular lens (4.1) and isolate the husk fragments on a white background using tweezers. Dry for 4 h in the oven (4.3), controlled at 103 ± 2 °C, allow to cool to ambient temperature in the desiccator and identify the fragments using the microscope (4.2) by comparing them with castor oil seed husks which have been subjected to the same treatment.

Castor oil seed husks have a particular structure — the black or brown, acutely angled husk fragments have a characteristic pitted surface which can be seen when examined under low magnification (see the figures).

Collect the husks and weigh them to the nearest 0,1 mg.

6.4 Number of determinations

Carry out three determinations on test portions taken from the same test sample.

7 Expression of results

The castor oil seed husks content, expressed in milligrams per kilogram of the product as received, is equal to

$$m_1 \times 1{,}3 \times \frac{1\,000}{m_0}$$

where

m_0 is the mass, in grams, of the test portion;

m_1 is the mass, in milligrams, of dried castor oil seed husk fragments;

1,3 is the factor used to compensate the loss of mass experienced by the fragments during the course of the analysis.

Express the result to the nearest unit.

8 Test report

The test report shall show the method used and the results obtained. It shall also mention any operating conditions not specified in this International Standard, or regarded as optional, as well as any circumstances that may have influenced the results.

The test report shall include all the details required for the complete identification of the sample.

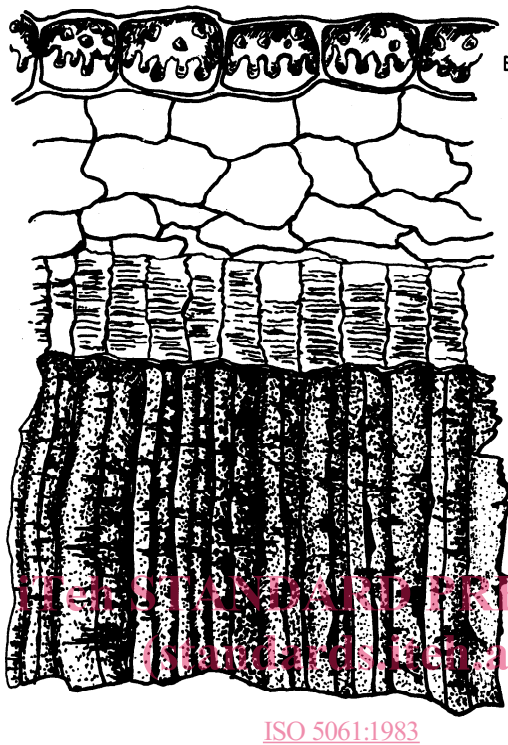

Figure 1 — *Ricinus communis* — Cross-section of testa

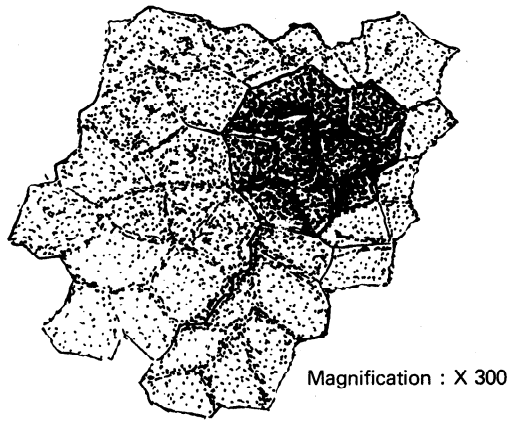

Figure 2 — *Ricinus communis* — Epidermal cells of testa

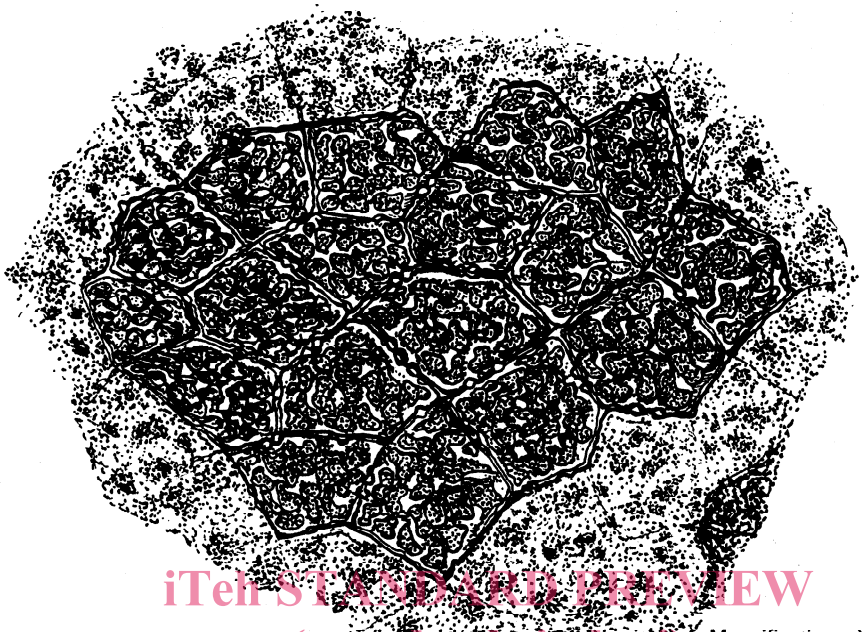

Figure 3 — *Ricinus communis* — **Epidermal cells of testa**

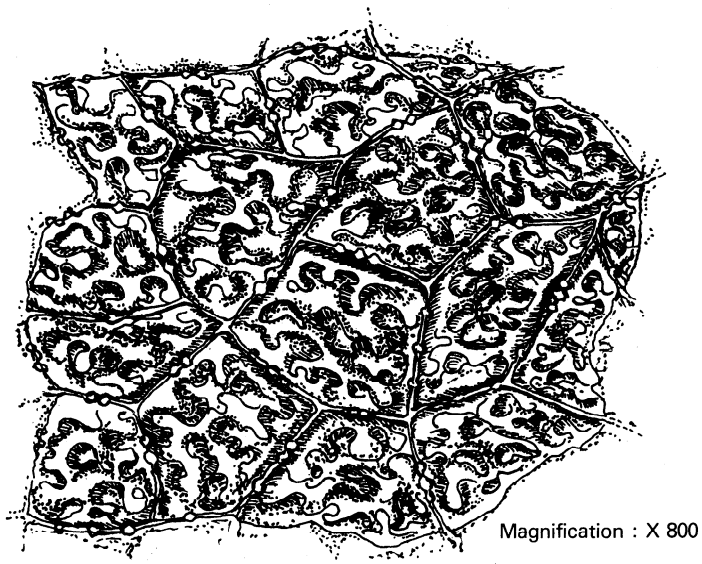

Figure 4 — *Ricinus communis* — **Epidermal cells of testa**

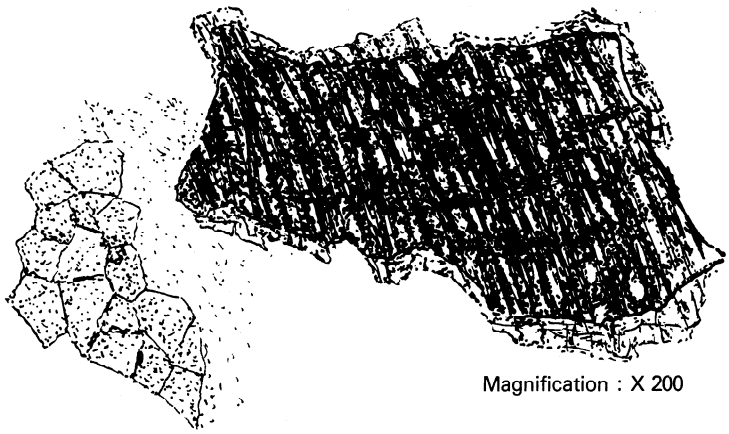

Figure 5 — *Ricinus communis* — Testa fibres

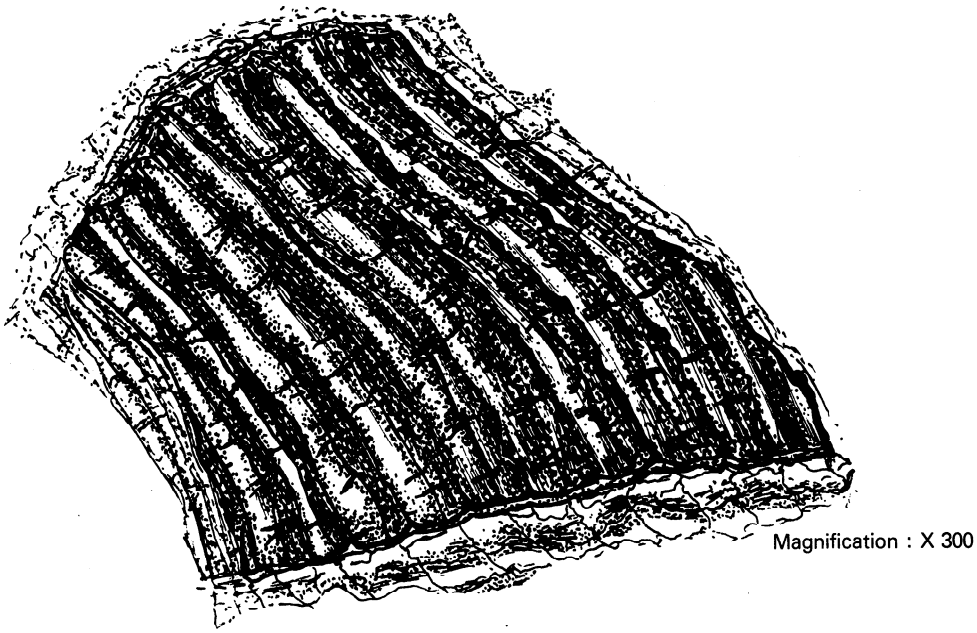

Figure 6 — *Ricinus communis* — Testa fibres

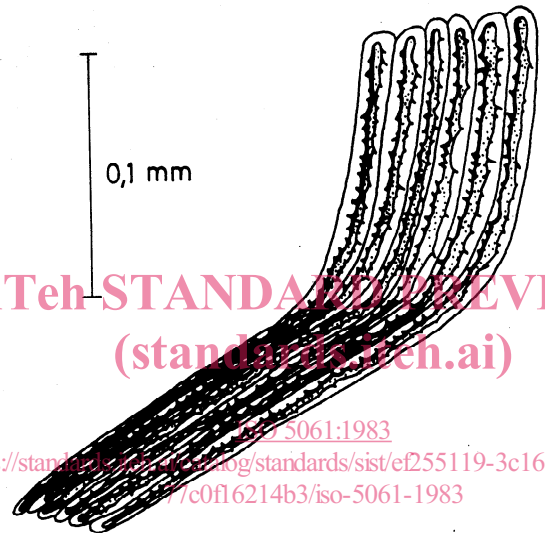

Figure 7 — *Ricinus communis* — **Testa fibres**