INTERNATIONAL STANDARD

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5223

Third edition
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Test sieves for cereals

Tamis de contrôle pour céréales

Reference number
ISO 5223:1995(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 5223 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 4, *Cereals and pulses*, in collaboration with the International Association for Cereal Science and Technology (ICC).

This third edition cancels and replaces the second edition (ISO 5223:1983), which has been technically revised.

Introduction

The commercial value of a batch of cereals is affected by the presence of undesirable substances. The amount of these substances in a sample is measured by carrying out various separating processes, of which the principal one is test sieving.

The test sieving procedure is carried out under conditions determined by commercial practice, contracts or official regulations, with low accuracy. Consequently, more often than not, the only dimensions given for test sieves are the diameter or the width of the apertures in the perforated plate. The other features of test sieves are not normally specified, despite their effect on the results.

Therefore, this international Standard describes those test sieves most frequently used in commerce.

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Test sieves for cereals

1 Scope

This International Standard specifies requirements for test sieves to be used for the laboratory determination of undesirable substances in a sample of cereals and which pass through test sieves of the following nominal sizes:

a) test sieves with long rounded apertures:

    1,00 mm × 20,0 mm
    1,70 mm × 20,0 mm
    1,80 mm × 20,0 mm
    1,90 mm × 20,0 mm
    2,00 mm × 20,0 mm
    2,20 mm × 20,0 mm
    2,50 mm × 20,0 mm
    2,80 mm × 20,0 mm
    3,55 mm × 20,0 mm

b) test sieves with round apertures:

    diameter 4,50 mm

Test sieves with long rounded apertures listed in a) are used in particular for separating "shrivelled" kernels from rye, durum wheat, common wheat and barley, with the exception of those with apertures of diameters 2,50 mm and 2,80 mm, which are usually used for the calibration of malting barley.

Test sieves with round apertures of diameter 4,50 mm are used for separating broken grains from maize.

This International Standard does not apply to test sieves used for testing grain for insect infestation.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2395:1990, *Test sieves and test sieving — Vocabulary*.

ISO 3310-2:1990, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 2395 apply.

4 Requirements

4.1 General

All parts shall be made of metal. A cover and a receiver, made of the same metal and gauge as the sieve frame, shall be used.

In the case of test sieves with long rounded apertures, test sieving is carried out using one or more test sieves. In the latter case, the test sieves shall have different nominal aperture sizes and shall constitute a regular or irregular set of test sieves.

4.2 Sieving medium

The sieving medium shall consist of stainless steel, plated mild steel, or other suitable material [1]. It shall be attached to the frame by welding or by other methods so that it cannot become detached from the frame. it is recommended that the same type of sieving medium be used for all test sieves in one analysis.

Holes in perforated plates shall be cleanly formed. The plates shall be mounted punch-side uppermost.

4.2.1 Test sieves with long rounded apertures

The characteristics of test sieves are given in table 1.

The apertures shall be arranged in lines as shown in figure 1.

There shall be no part-slots at the junction of the sieving medium with sieve frame.

4.2.2 Test sieves with round apertures

Unless otherwise specified in this International Standard, test sieves with round apertures shall comply with the requirements of ISO 3310-2 and, in particular, shall have the following characteristics:

— nominal diameter of aperture (w): 4,50 mm;

— aperture tolerance: $\pm$ 0,14 mm;

— pitch (centres) (p): 6,3 mm nominal; 7,2 mm max.; 5,3 mm min.

The apertures shall be arranged in staggered rows as shown in figure 2.

Table 1 — Characteristics of test sieves with long rounded apertures and linear perforations

Dimensions in millimetres

Dimensions of apertures				Pitches [1]					Plate thickness
Width	Tolerance on width	Length	Tolerance on length		Normal tolerance	Reduced tolerance		Tolerance	
w_1	$\pm \Delta w_1$	w_2	$\pm \Delta w_2$	p_1	$\pm \Delta p_1$	$\pm \Delta p_1$	p_2	$\pm \Delta p_2$	
1,00	0,03	20,0	0,2	3,0	0,20	0,10	25,0	0,5	0,5 to 0,6
1,70	0,04	20,0	0,2	4,0	0,24	0,12	25,0	0,5	0,8 to 0,9
1,80	0,04	20,0	0,2	4,2	0,24	0,12	25,0	0,5	0,8 to 0,9
1,90	0,04	20,0	0,2	4,3	0,24	0,12	25,0	0,5	0,8 to 0,9
2,00	0,04	20,0	0,2	4,5	0,26	0,13	25,0	0,5	0,8 to 0,9
2,20	0,05	20,0	0,2	4,9	0,26	0,13	25,0	0,5	0,8 to 0,9
2,50	0,05	20,0	0,2	4,9	0,26	0,13	25,0	0,5	0,8 to 0,9
2,80	0,05	20,0	0,2	4,9	0,26	0,13	25,0	0,5	0,8 to 0,9
3,55	0,06	20,0	0,2	6,8	0,34	0,17	25,0	0,5	0,8 to 0,9
1) See figure 1.									

1) For further details, see ISO 683-13:1986, *Heat-treatable steels, alloy steels and free-cutting steels — Part 13: Wrought stainless steels.*
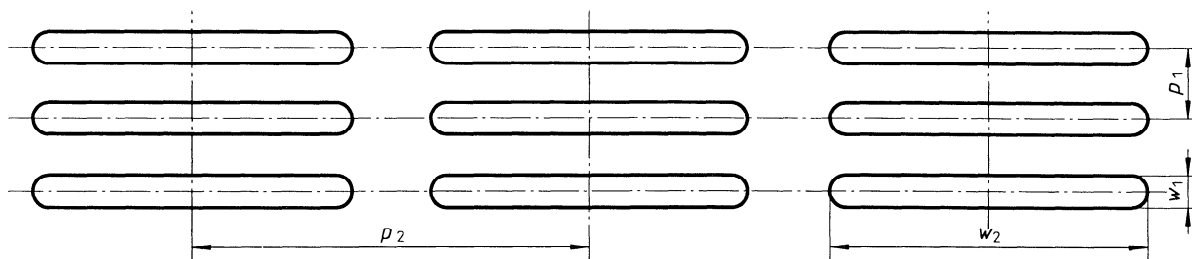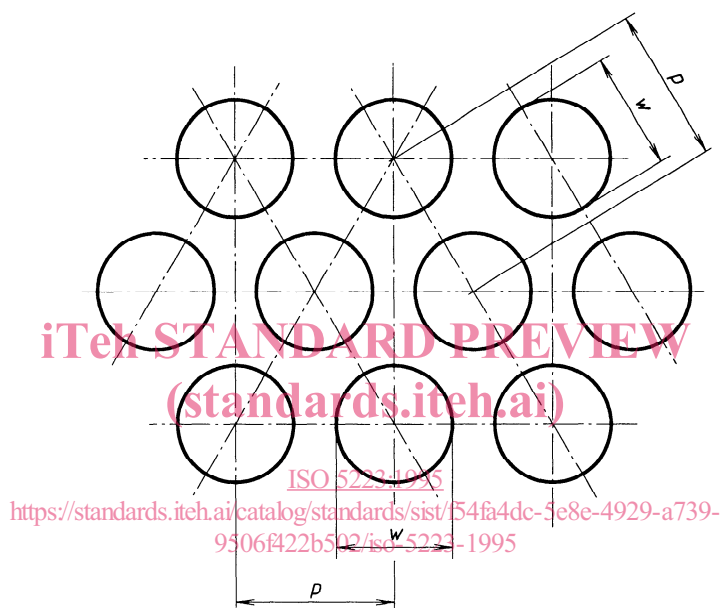
Figure 1 — Apertures of test sieves with long rounded apertures — Linear arrangement

NOTE — The centres of the apertures are arranged at the apexes of equilateral triangles.

Figure 2 — Apertures of test sieves with round apertures — Staggered arrangement

4.3 Frame

4.3.1 Shape and size

The test sieves shall be round and have a nominal internal diameter of 200 mm $\pm$ 1,0 mm.

The depth of the frame (i.e. the distance between two successive sieving media or between the sieving medium and the lid or the base of the receiver) shall be between 25 mm and 55 mm.

Test sieves with a frame depth of between 25 mm and 35 mm are often used for manual sieving operations on site.

4.3.2 Construction of the test sieve frame, lid and receiver

The frame of each test sieve shall permit a smooth connection with other frames, the lid and receiver of the same type, without being too loose but without requiring force for insertion or removal. The surface shall be smooth.

A flange positioned directly above the sieving medium shall prevent grains or impurities being deposited between the sieving medium and the frame itself.

4.3.3 Marking

An identification label attached to the sieve shall give the following details:

a) reference to this International Standard;

b) size and identification number;

c) the nominal aperture size;

d) the name of the firm (manufacturer or supplier) responsible for the sieve.

The characters shall be bold, preferably at least 5 mm high, on the left side of the identification plate.

If the sieve has been tested by an official testing body, a mark (label or stamp) giving at least the name or initials of the testing body shall be placed on the frame.

5   Test report

The test report shall record all the data measured, the sieve number(s) and any other information necessary to relate the test report to the sieve(s) which were used.

6   Verification

The apertures shall be tested using a cross-section projector with a minimum magnification of × 50.

6.1   Checking the aperture sizes

The dimensions of the apertures shall be checked over any selected area of the sieve plate along two straight lines in different directions each at least 10 cm long and including at least 5 apertures in each direction. The angle between the two straight lines shall be

— for long rounded apertures: 90° (see figure 3);

— for round apertures: 60° (see figure 3).

If one single aperture exceeds the permitted tolerances (see table 1), the sieve shall be rejected.

6.2   Checking the aperture pitch

The pitch of the apertures shall also be checked to see that they comply with the requirements of table 1 and the dimensions given in 4.2.2, and this can be done at the same time and under the same conditions as described in 6.1.

6.3   Measuring the plate thickness

The thickness of the plate shall be measured to check that it complies with the requirements of table 1.
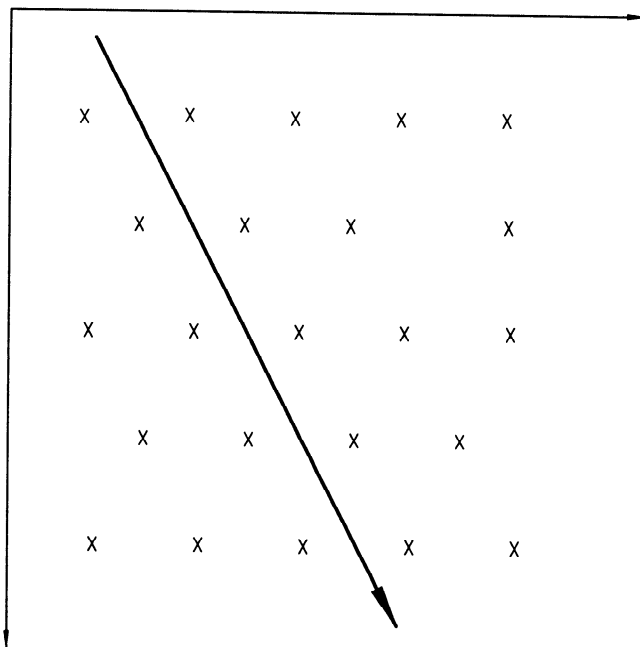
Figure 3 — Checking the aperture sizes

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