INTERNATIONAL STANDARD

ISO 3310-2

Third edition
1990-11-01

Test sieves — Technical requirements and testing —

Part 2: Test sieves of perforated metal plate

Tamis de contrôle — Exigences techniques et vérifications —
Partie 2: Tamis de contrôle en tôles métalliques perforées

Reference number
ISO 3310-2:1990(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 3310-2 was prepared by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods*.

This third edition cancels and replaces the second edition (ISO 3310-2:1982), of which it constitutes a technical revision.

ISO 3310 consists of the following parts, under the general title *Test sieves — Technical requirements and testing*:

— *Part 1: Test sieves of metal wire cloth*

— *Part 2: Test sieves of perforated metal plate*

— *Part 3: Test sieves of electroformed sheets*

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Introduction

As the accuracy of test sieving depends on the dimensional accuracy of the test sieve openings, it was considered necessary in this part of ISO 3310 to keep the tolerances on the holes in perforated metal plate as close as possible.

Requirements other than tolerances on the holes, such as requirements for the pitch of holes and plate thickness, have not been limited more closely than necessary, since the influence of these criteria on test sieving is of minor importance, and excessively strict requirements may make manufacturing unnecessarily difficult.

This page intentionally left blank

Test sieves — Technical requirements and testing —

Part 2:
Test sieves of perforated metal plate

1 Scope

This part of ISO 3310 specifies the technical requirements and corresponding test methods for test sieves of perforated metal plate.

It applies to test sieves having

— round holes, with sizes from 125 mm down to 1 mm, or

— square holes, with sizes from 125 mm down to 4 mm,

in accordance with ISO 565.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3310. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3310 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 565:1990, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings.*

ISO 2395:—[1], *Test sieves and test sieving — Vocabulary.*

3 Definitions

For the purposes of this part of ISO 3310, the definitions given in ISO 2395 apply.

4 Designation

Test sieves of perforated metal plate shall be designated by the nominal size of the holes, expressed in millimetres, and by the shape of the holes.

5 Perforated metal plate

5.1 Requirements

The tolerances on individual size of holes and the selection of pitches shall be as specified in table 1.

5.1.1 Tolerances on individual size of holes

The tolerances on the individual size of holes as given in table 1, column 4, apply to the widths of the mid-sections of square holes, and to the diameters of round holes.

1) To be published. (Revision of ISO 2395:1972)

Table 1 — Tolerances on individual size of holes and selection of pitches

Dimensions in millimetres

Nominal sizes of holes w [1]			Tolerances on individual size of hole	Pitch p		
Principal sizes	Supplementary sizes			Preferred sizes	Permissible range of choice	
R 20/3	R 20	R 40/3	±	p_{nom}	p_{max}	p_{min}
(1)	(2)	(3)	(4)	(5)	(6)	(7)
125	125	125	1	160	184	143
	112		0,95	140	161	126
		106	0,9	132	152	119
	100		0,85	125	144	113
90	90	90	0,8	112	129	101
	80		0,7	100	115	90
		75	0,7	95	109	85
	71		0,65	90	103	81
63	63	63	0,6	80	92	72
	56		0,55	71	82	63,5
		53	0,55	67	77	60
	50		0,55	63	72,5	56,5
45	45	45	0,5	56	64,5	50,5
	40		0,45	50	57,5	45
		37,5	0,45	47,5	54,6	42,5
	35,5		0,4	45	51,7	40,5
31,5	31,5	31,5	0,4	40	46	36
	28		0,35	35,5	40,8	31,8
		26,5	0,35	33,5	38,5	30
	25		0,35	31,5	36	28,5
22,4	22,4	22,4	0,3	28	32,2	25,5
	20		0,3	25	29	22,5
		19	0,29	23,6	27,1	21,3
	18		0,28	22,4	25,8	20,2
16	16	16	0,27	20	23	18
	14		0,26	18	20,7	16
		13,2	0,25	17	19,5	15,1
	12,5		0,24	16	18,4	14,3
11,2	11,2	11,2	0,23	14	16,1	12,6
	10		0,21	12,6	14,5	11,3
		9,5	0,21	12,1	13,8	10,2
	9		0,2	11,6	13,3	9,8
8	8	8	0,19	10,4	12	9,2
	7,1		0,18	9,4	10,8	8
		6,7	0,17	8,9	10,2	7,5
	6,3		0,17	8,5	9,8	7,2
5,6	5,6	5,6	0,15	7,7	8,9	6,6
	5		0,14	6,9	7,9	5,9
		4,75	0,14	6,6	7,6	5,6
	4,5		0,14	6,3	7,2	5,3
4	4	4	0,13	5,8	6,7	4,9

Nominal sizes of holes w [1]			Tolerances on individual size of hole	Pitch p		
Principal sizes	Supplementary sizes			Preferred sizes	Permissible range of choice	
R 20/3	R 20	R 40/3	±	p_{nom}	p_{max}	p_{min}
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	3,55		0,12	5,2	6	4,4
		3,35	0,11	5	5,7	4,2
	3,15		0,11	4,7	5,3	3,9
2,8	2,8	2,8	0,11	4,35	5	3,6
	2,5		0,11	3,9	4,5	3,3
		2,36	0,11	3,75	4,3	3,2
	2,24		0,1	3,6	4,1	3,1
2	2	2	0,09	3,3	3,8	2,8
	1,8		0,08	3,1	3,6	2,7
		1,7	0,08	3	3,4	2,5
	1,6		0,08	2,75	3,2	2,3
1,4	1,4	1,4	0,08	2,6	3	2,2
	1,25		0,08	2,45	2,9	2,1
		1,18	0,07	2,4	2,7	2
	1,12		0,07	2,22	2,5	1,8
1	1	1	0,07	2	2,3	1,7

1) In accordance with ISO 565, the lower limit of the nominal size of square holes is 4 mm.

5.1.2 Pitch p

5.1.2.1 The pitches given in table 1 apply to both round and square holes.

5.1.2.2 The nominal pitches given in table 1, column 5, are preferred.

The nominal pitches specified in national standards should be within the limits of p_{max} and p_{min} as given in table 1, columns 6 and 7. These are defined by a permissible range of choice of approximately ± 15 % of the preferred nominal pitch, provided that the minimum width of any bridge is not less than one-half of the value calculated from the nominal size of holes and the preferred pitch.

5.1.3 Plate thickness

The nominal thicknesses given in table 2, column 2, are preferred. The nominal thicknesses specified in national standards may, however, depart from these values within the range given in table 2, columns 3 and 4.

Table 2 — Plate thicknesses

Dimensions in millimetres

Nominal sizes of holes	Plate thickness		
	Preferred thickness	Permissible range of choice	
w		max.	min.
(1)	(2)	(3)	(4)
$125 \geqslant w \geqslant 50$	3	4	2,5
$45 \geqslant w \geqslant 16$	2	2,5	1,5
$14 \geqslant w \geqslant 8$	1,5	2	1
$7,1 \geqslant w \geqslant 2$	1	1,25	0,8
$w < 2$	0,5	0,63	0,4

5.1.4 Arrangement of holes

The arrangement of holes in perforated metal plates in test sieves shall be as follows:

a) round holes shall be arranged with their centres at the apices of equilateral triangles (see figure 1, T-arrangement according to ISO 7806[2]),

b) square holes shall be arranged in line, with their mid-points at the vertices of squares (see figure 2, U-arrangement according to ISO 7806[2]).

The corners of square holes may be rounded with a maximum permissible radius of rounding given by the formula

$$r_{max} = 0{,}05w + 0{,}3 \quad \ldots (1)$$

where

r_{max} is the maximum radius of rounding, in millimetres;

w is the nominal size of the hole, in millimetres.

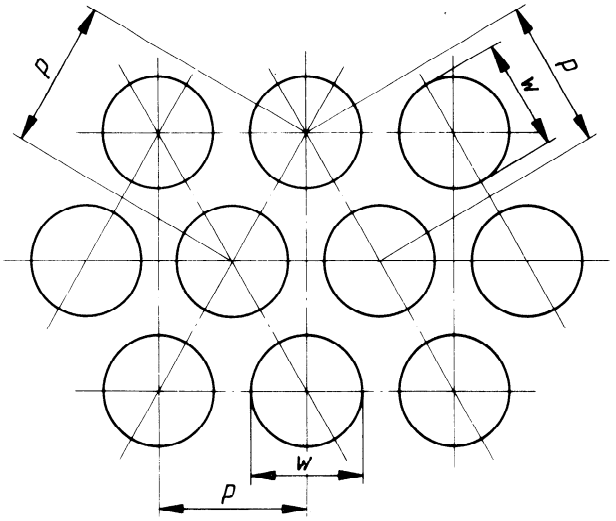

Figure 1 — Round holes in a T-arrangement

5.2 Test methods

Every hole of the perforated metal plate shall have the same probability of being inspected for compliance with the requirements listed in 5.1.

Test 1 — Examination of general condition

View the perforated metal plate against a uniformly illuminated background. If obvious deviations from uniformity of the appearance of the holes are found, the sieve is unacceptable.

Test 2 — Examination of size of hole and pitch

For round holes and for square holes (but see below) measure the dimensions of the holes and the pitches over any selected area of the plate, along two straight lines in different directions, each line being at least 10 cm in length and including at least five holes in each direction.

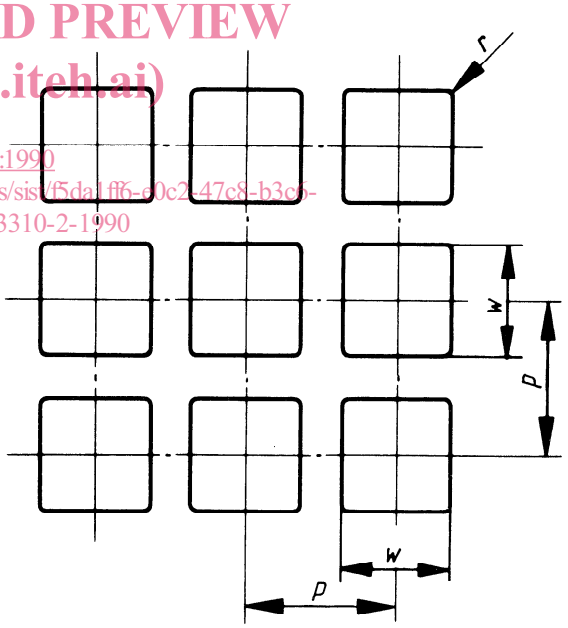

Figure 2 — Square holes in a U-arrangement

2) ISO 7806:1983, *Industrial plate screens — Codification for designating perforations.*

The angle between the two straight lines shall be

a) 90° or 60° for round holes [see figure 3a)], and

b) 90° for square holes [see figure 3b)].

Alternatively, for square holes, measure the dimensions of the holes and the pitches in a single direction following the diagonal, but in this case the length of the diagonal shall be at least 15 cm and shall include at least eight holes [see figure 3c)].

If the minimum number of holes prescribed for examination in the one or two directions is not available in the plate, check all the holes in the sieve.

6 Test sieve frame

It is recommended that the 200 mm round frame be used as far as possible. A smaller round frame may be appropriate for very fine sieves and for very small quantities of material. For large hole sizes the 300 mm round or square frame may be required, and for sizes of holes greater than 25 mm and large sample quantities even larger frames may be required. The shape and the size of the test sieve frame have little effect on the results of the sieving operation.

According to manufacturing practice in different countries, the size of the 300 mm test sieves may be exceeded by 15 mm, but the diameter or the length of the effective sieving surface shall be within the limits indicated in table 3 (see also figure 4).

NOTE 1 It is recognized that in countries where the 203 mm (8 in) diameter test sieve has been established as a standard by long tradition, some considerable time may elapse before the transition can be made by users to employ exclusively the 200 mm test sieve.

Table 3 — Recommended shapes and sizes

Dimensions in millimetres

Test sieve		Diameter or length of effective sieving surface		Approximate depth
shape	nominal size D_1 , D_2	min.	max.	H_1
Round	200	185	200	50
Round	300	275	300	75
Square	300	275	300	75

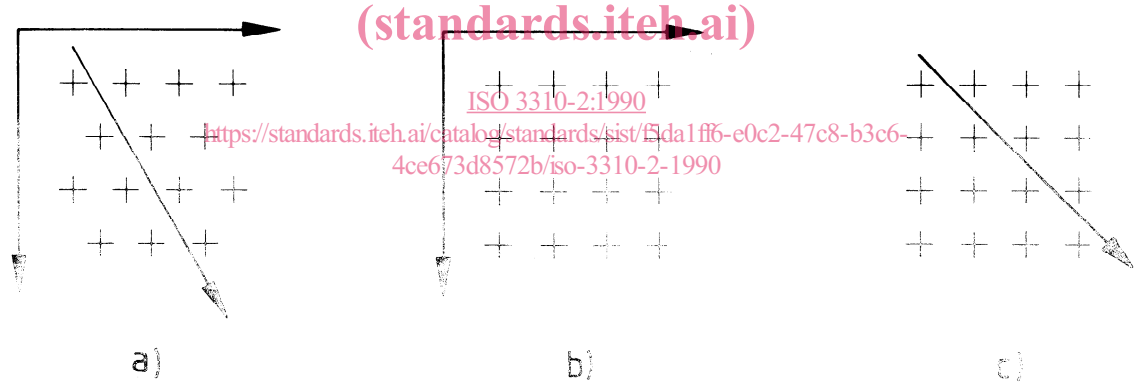

Figure 3 — Measurement directions