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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

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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*, Subcommittee SC 1, *Test sieves, test sieving.*

This fourth edition cancels and replaces the third edition (ISO 3310-2:1990), of which it constitutes a technical revision.

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

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

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

— *Part 3: Test sieves of electroformed sheets*

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Introduction

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

Requirements other than tolerances on the holes, such as requirements for the pitch of holes, any corner radii 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.

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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.

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2 Normative references

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The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 3310. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 3310 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC 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 2395:1990, *Test sieves and test sieving — Vocabulary.*

ISO 2591-1:1988, *Test sieving — Part 1: Methods using test sieves of woven wire cloth and perforated metal plate.*

3 Terms and definitions

For the purposes of this part of ISO 3310, the terms and 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.

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 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 value calculated from the nominal size of holes and the preferred pitch.

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

Dimensions in millimetres

Nominal sizes of holes, w [a]			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

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Dimensions in millimetres

Nominal sizes of holes, w[a]			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)
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
	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

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Dimensions in millimetres

Nominal sizes of holes, w [a]			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)
		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

[a] In accordance with ISO 565, the lower limit of the nominal size of square holes is 4 mm.

5.1.3 Plate thickness

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The nominal thicknesses given in Table 2, Column 2, are preferred. The nominal thickness may, however, depart from these values within the permissible range of choice given in Table 2, Columns 3 and 4.

Table 2 — Plate thicknesses

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Dimensions in millimetres

Nominal sizes of holes w	Plate thickness		
	Preferred thickness	Permissible range of choice	
		max.	min.
(1)	(2)	(3)	(4)
125 to 50	3	3,5	2
45 to 16	2	2,5	1,5
14 to 8	1,5	2	1
7,1 to 1,7	1	1,5	0,8
1,6 to 1,0	0,6	1	0,5

5.1.4 Arrangement of holes

Round and square holes in perforated metal plates in test sieves, see Figure 1, shall be arranged in straight or staggered rows, .

Sieves with hole sizes 4 mm and above shall have an unperforated margin. Partial holes are not permitted, see Figure 2. The unperforated margin is influenced by the hole size, pitch and manufacturing method resulting in different margin widths.

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

$$r_{max} = 0{,}15w$$

where

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

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

a) Round holes b) Square holes

Figure 1 — Arrangement of square and round holes in test sieves

5.1.5 Material of plate

Plated steel is usually supplied. At the lower end of the aperture range, brass may be used. The purchaser should state specific requirements in the enquiry such as stainless steel.

5.2 Test methods

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Every hole in the perforated metal plate in a test sieve shall have the same probability of being inspected for compliance with the requirements listed in 5.1, Table 1, Column 4.

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Measure the hole sizes using appropriate equipment with a precision of reading of 20 µm or 1/4 of the tolerance concerned (Table 1, Column 4), whichever is the greater.

Test 1 — Visual examination of general condition

View the perforated metal plate against a uniformly illuminated background. If obvious deviations from uniformity of appearance are found, for example partial holes (4 mm and larger), the sieve is unacceptable.

Test 2 — Measurement of size of hole and pitch

Measure the hole size on the centre-lines of square holes and on the diameter of round holes, according to Table 3.

Table 3 — Minimum number of holes to be measured in a 200 mm diameter test sieve

Nominal sizes of holes w mm	Process for compliance and inspection	Process for calibration
(1)	(2)	(3)
125 to 25	All (max. 25 in larger sieves with diameter more than 200 mm)	All (max. 50 in larger sieves with diameter more than 200 mm)
22,4 to 4	2 × 15	2 × 30
3,55 to 2,24	2 × 20	2 × 40
2 to 1,6	2 × 25	2 × 50
1,4 to 1	2 × 40	2 × 80