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Industrijska ģiļ na pletiva - Tehniļ ne zahteve in preskuģanje

Industrial woven wire cloth -- Technical requirements and tests

Tissus métalliques industriels -- Exigences techniques et vérifications

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INTERNATIONAL STANDARD

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Industrial woven wire cloth — Technical requirements and testing

Tissus métalliques industriels — Exigences techniques et vérifications

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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.

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 9044 was prepared by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods*, Subcommittee SC 3, *Industrial wire screens*.

This second edition cancels and replaces the first edition (ISO 9044:1990) of which it constitutes a technical revision.

Annex A of this International Standard is for information only.

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Industrial woven wire cloth — Technical requirements and testing

1 Scope

This International Standard defines terms regarding industrial woven wire cloth for screening purposes and specifies tolerances, requirements and test methods.

It applies to industrial woven wire cloth with square apertures, made of steel, stainless steel or non-ferrous metals, (see ISO 4783-2). It does not apply to woven wire cloth coated after weaving nor does it apply to pre-crimped and welded wire screens which are covered in ISO 4783-3 and ISO 14315.

It is of limited application to woven wire cloth used for purposes other than screening which may necessitate other requirements. The alternative requirements may be agreed between the purchaser and the supplier at the time of placing the order.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. 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 the ISO/IEC Directives 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 the IEC and ISO maintain registers of currently valid International Standards.

ISO 2194:1991, *Industrial screens — Woven wire cloth, perforated plate and electroformed sheet — Designation and nominal sizes of openings.*

ISO 4782:1987, *Metal wire for industrial wire screens and woven wire cloth.*

ISO 4783-1:1989, *Industrial wire screens and woven wire cloth — Guide to the choice of aperture size and wire diameter combinations — Part 1: Generalities.*

ISO 4783-2:1989, *Industrial wire screens and woven wire cloth — Guide to the choice of aperture size and wire diameter combinations — Part 2: Preferred combinations for woven wire cloth.*

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

3.1
aperture width
w
distance between two adjacent warp or weft wires, measured in the projected plane at the mid-positions

NOTE See Figure 1.

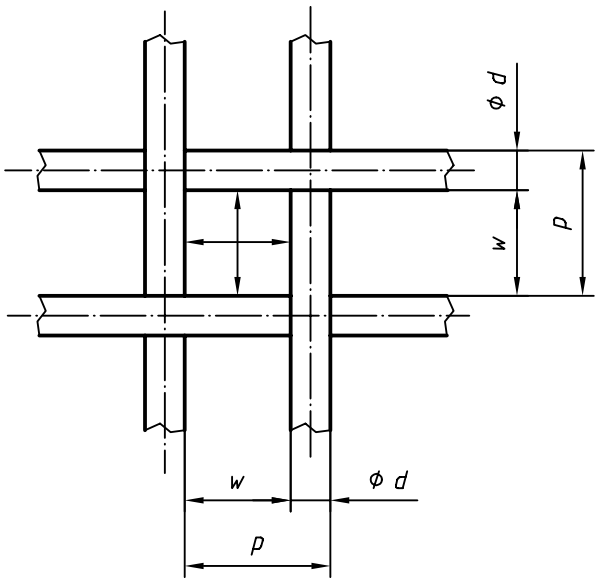


Figure 1 — Aperture width, wire diameter and pitch

3.2
wire diameter
d
diameter of the wire in the wire screen

NOTE The wire diameter may be altered slightly during the weaving process. See Figure 1.

3.3
pitch
p
distance between the mid-points of two adjacent wires

NOTE The pitch is the sum of the aperture width w and the wire diameter d . See Figure 1.

3.4
warp
all wires running lengthwise in the cloth as woven

3.5
weft
all wires running crosswise in the cloth as woven

3.6
number of apertures per unit length
n
number of apertures which are counted in a row one behind the other on a given unit length

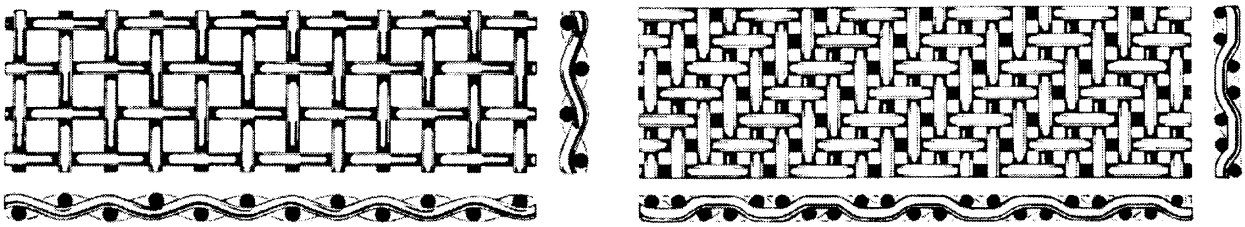
3.7
open screening area
A_0
percentage of the surface of all the apertures in the total screening surface

NOTE The open screening area is calculated as the ratio of the square of the nominal aperture width w and the square of the nominal pitch $p = w + d$, rounded to a full percentage value:

$$A_0 = 100 \frac{w^2}{(w+d)^2} \quad (1)$$

3.8
type of weave
way in which the warp and weft wires cross each other

NOTE Industrial woven wire cloth is manufactured with square apertures in plain or twilled weave (see Figure 2).



a) Plain weave **b) Twilled weave**

Figure 2 — Types of weave

3.9
firmness of woven wire cloth
tension existing between the crossing warp and weft wires and which determines the firmness of the wire cloth

NOTE It is affected by the relationship of w to d and by the type of weave.

3.10
mass per unit area
ρ_A
quantity calculated using the following equation:

$$\rho_A = \frac{d^2 \rho}{618{,}1(w + d)} \qquad (2)$$

where

d is the wire diameter, in millimetres;

w is the aperture width, in millimetres;

ρ is the material density, in kilograms per cubic metre;

ρ_A is the mass per unit area, in kilograms per square metre.

Equation (2) gives the calculated mass per unit area, although the actual value can be up to 3 % lower.

NOTE Typical values of ρ for various materials are given in ISO 4783-2:1989, Table 2. For example, the mass per unit area for plain or carbon steel with a density of 7 850 kg/m^3 can be calculated using equation (2) as follows:

$$\rho_A = \frac{d^2 \times 7\,850}{618{,}1(w + d)} = \frac{12{,}7\, d^2}{w + d}$$

Equation (2) can also be used to calculate the wire diameter d when the pitch p, or $(w + d)$, and the mass per unit area ρ_A are known. In the case of plain or carbon steel (ρ = 7 850 kg/m^3), see equation (3).

$$d = \sqrt{\frac{\rho_A \times p}{12{,}7}} \qquad (3)$$

3.11
major blemishes
production defects which significantly affect the aperture width or surface quality of the wire cloth

NOTE See annex A for information.

4 Requirements

4.1 Aperture width and wire diameter combination

Unless otherwise agreed between the supplier and the purchaser, the aperture width and wire diameter combination shall be selected from ISO 2194, ISO 4782, ISO 4783-1 or ISO 4783-2, as appropriate.

4.2 Percentage tolerances on aperture width

The tolerances on aperture width are given in Table 1.

In Table 1 and equations (4) to (6), the suffix "i", used with the symbols denotes "industrial wire cloth". In equations (4) to (6), X_i, Y_i, Z_i and w are expressed in micrometres.

Table 1 — Percentage tolerances on aperture width

Nominal aperture width, w	Tolerances on aperture width, w for woven wire cloth made of					
	stainless steel or non-ferrous metals (except copper and aluminium)			steel, copper or aluminium		
mm	$\pm Y_i$	$+ Z_i$	$+ X_i$	$\pm Y_i$	$+ Z_i$	$+ X_i$
16	5	9	12	6	10	14
12,5	5	9	13	6	10	15
10	5	9	14	6	11	16
8	5	10	15	6	12	18
6,3	5	10	16	6	12	19
5	5	11	17	6	13	20
4	5	12	18	6	14	22
3,15	5	12	20	6	14	23
2,5	5	13	21	6	15	25
2	5	14	23	6	16	27
1,6	5	15	24	6	17	29
1,25	5	16	26	6	18	31
1	5	17	28	6	19	33
0,8	5	18	30	6	21	36
0,63	5	19	33	6	22	39
0,5	5	21	36	7	24	42
0,4	6	22	39	7	26	46
0,315	6	24	42	7	28	50
0,25	6	26	46	7	31	55

Nominal aperture width, w	Tolerances on aperture width, w for woven wire cloth made of					
	stainless steel or non-ferrous metals (except copper and aluminium)			steel, copper or aluminium		
mm	$\pm Y_i$	$+ Z_i$	$+ X_i$	$\pm Y_i$	$+ Z_i$	$+ X_i$
0,2	6	28	50	8	34	60
0,16	7	31	55	8	37	66
0,125	7	34	61	9	41	73
0,1	7	37	67	9	45	80
0,08	8	41	74	9	49	89
0,063	9	46	83	10	55	99
0,05	10	51	93	—	—	—
0,04	11	56	100	—	—	—
0,032	13	56	100	—	—	—
0,025	15	57	100	—	—	—
0,02	17	59	100	—	—	—

4.2.1 Y_i is the tolerance of the arithmetical mean value of the aperture widths measured and calculated separately in both warp and weft directions. The arithmetical average aperture width shall not deviate from the nominal size by more than $\pm Y_i$, where

$$Y_i = \left[\frac{w^{0,98}}{27} + 1,6\right] \times 1,5 \quad (4)$$

4.2.2 Z_i is the arithmetical mean of X_i and Y_i:

$$Z_i = \frac{X_i + Y_i}{2} \quad (5)$$

Not more than 6 % of the total number of apertures measured shall have sizes between

"nominal + X_i" and "nominal + Z_i".

4.2.3 No aperture width shall exceed the nominal size by more than the value X_i. It is the maximum permissible deviation of a single aperture measured in one direction (warp or weft) and is calculated using the formula:

$$X_i = \left[\frac{2w^{0,75}}{3} + 4w^{0,25}\right] \times 2 \quad (6)$$

but with a maximum value of $X_i = w$.

A line of apertures exceeding the value X_i is deemed to be a major blemish (see annex A).

As, on the basis of experience, negative deviations of single aperture widths do not affect the screening process, values for Z_i and X_i have only positive deviations.