# INTERNATIONAL STANDARD

First edition 1997-11-01

# Industrial wire screens — Technical requirements and testing

Tissus métalliques préformés ou soudés — Exigences techniques et vérifications

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<u>ISO 14315:1997</u> https://standards.iteh.ai/catalog/standards/sist/a21dd498-6e48-42a2-9244fbc13f7d5705/iso-14315-1997



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X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

### 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 14315 was prepared by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods,* Subcommittee SC 3, *Industrial wire screens.* 

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# Industrial wire screens – Technical requirements and testing

#### 1 Scope

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

It is applicable to pre-crimped or pressure-welded wire screens in accordance with ISO 4783-3, made of high-tensile steel, stainless steel or other metal wires.

This International Standard is not applicable to industrial wire cloth in accordance with ISO 4783-2 (see ISO 9044:—<sup>1</sup>), *Industrial woven wire cloth* — *Technical requirements and testing*).

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#### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publications 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 listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2194:1972, Wire screens and plate screens for industrial purposes — Nominal sizes of apertures.

ISO 4782:1989, Metal wire for wire screens and industrial wire cloth.

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

ISO 4783-3:1981, Industrial wire screens and industrial wire cloth — Guide to the choice of aperture size and wire diameter combinations — Part 3: Preferred combinations for pre-crimped or pressure-welded wire screens.

<sup>1)</sup> To be published. (Revision of ISO 9044:1990)



Figure 1 — Aperture width, wire diameter and pitch

## **3 Definitions**

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

#### 3.1 aperture width, w

distance between two adjacent warp or weft wires, measured in the projected plane at mid positions (see figure 1) **Teh STANDARD PREVIEW** 

#### **3.2** wire diameter, d

diameter of the wire in the wire screen (see figure 1)

NOTE — The wire diameter may be altered slightly during the manufacturing process of the wire screen.

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1) distance between the middle points of two adjacent wires

2) nominally the sum of the aperture width w and the wire diameter d (see figure 1)

#### 3.4 warp

3.3

all wires running lengthwise in the screen as manufactured

#### 3.5 weft

all wires running crosswise in the screen as manufactured

#### **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, $A_0$

1) percentage of the surface of all the apertures in the total screening surface

2) ratio of the square of the nominal aperture width w and the square of the nominal pitch p

p = (w+d), rounded to a full percentage value:

$$A_{\rm o} = 100 \ \frac{w^2}{(w+d)^2} \tag{1}$$

#### 3.8 type of screen

way in which the warp and weft wires are pre-crimped or connected to each other to form the screen (see ISO 4783-3:1981, table 1)

#### 3.9 firmness of industrial wire screen

tension existing between the crossing warp and weft wires and which, together with the interlocking, determines the firmness of the wire screen

NOTE — It is affected by the tensile strength of the material, by the relationship of w to d, and by the type and the depth of the crimp.

#### 3.10 mass per unit area, $ho_{\scriptscriptstyle A}$

That quantity calculated using the following equation:

$$\rho_{\rm A} = \frac{d^2 \cdot \rho \cdot f}{618, 1 \cdot (w+d)} \tag{2}$$

where

- d is the wire diameter, in millimetres;
- is the aperture width, in millimetres; w
- is the type conversion factor (see ISO 4783-3:1981, table 1); f
- is the material density, in kilograms per cubic metre (see ISO 4783-1:1989, table 2). ρ

NOTE — Equation (2) gives the calculated mass per unit area (kg/m<sup>2</sup>), although the actual value can be up to 3 % lower.

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#### 3.11 major blemishes

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production defects which significantly affect the aperture size or surface quality of the wire screen

### **4** Requirements

For requirements on aperture widths, on the metal wire and on aperture width/wire diameter combinations for wire screens, see ISO 2194, ISO 4782, ISO 4783-1 and ISO 4783-3.

#### 4.1 Tolerance on wire diameter

Prior to weaving, the tolerance on wire diameter shall be as specified in ISO 4782. The weaving process normally distorts the wire and affects its diameter. After weaving, the diameter of the wire is untoleranced. The wire diameter shall be measured as specified in 5.1.

#### 4.2 Tolerances on aperture width

The tolerances on aperture width shall be as given in table 1.

NOTE In the following, the suffix "s" used with the symbols denotes "industrial wire screens".

#### 4.2.1 Tolerance $Y_s$ : Average aperture size

 $Y_{\rm s}$  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 size shall not deviate from the nominal size by more than  $\pm Y_{\rm s}$ .

## **4.2.2** Tolerance $X_{s}$ : Maximum aperture size

No aperture size shall exceed the nominal size by more than the value  $X_s$ . This is the maximum permissible deviation of a single aperture measured separately in both warp and weft directions.

Since, on the basis of experience, negative deviations of single aperture widths do not affect the screening process, values for  $X_s$  have only positive deviations.

Nominal aperture width w	Tolerances on aperture width		
	$\pm Y_{\rm S}$	$+X_{s}$	
mm	%	%	
125 ≥ <i>w</i> > 63	2,5	5	
63 ≥ <b>I</b> w>31,5S		RD PRE	VIEW
31,5 ≥ <i>w</i> > 16	3,5	<b>S.Iten.a</b>	)
$16 \ge w > 8$ https://standards.iteh	<u>JSO 143</u> ai/catalog/standar	<u>5:1997</u> 10 ds/sist/a21dd498-	6e48-42a2-924
$8 \ge w > 4$	10c131/d5/05/18 5	<sup>5-14315-1997</sup> 13	
$4 \ge w > 2$	5	16	
$2 \ge w \ge 1$	5	20	

Table 1 — Tolerances on aperture width

#### 4.3 Permissible number of major blemishes

**4.3.1** Wire screens cannot be produced commercially without there being some manufacturing blemishes. The manufacturer and the customer shall agree upon the number and nature of major blemishes which are permissible per unit area of the wire screen. The percentage of yield of the screen shall be agreed on with the customer and will vary according to the size of the piece of wire screen.

**4.3.2** Unless otherwise agreed, the number of major blemishes as given in table 2 shall not be exceeded.

Nominal aperture width <i>w</i>	Maximum number of major blemishes per 10 m <sup>2</sup>
mm	
125 ≥ <i>w</i> > 63	2
63 ≥ <i>w</i> > 31,5	3
31,5 ≥ <i>w</i> > 16	4
16 ≥ <i>w</i> > 8	5
$8 \ge w > 4$	6
$4 \ge w > 2$	8
2 ≥ <i>w</i> ≥ 1	10

Table 2 — Permissible number of major blemishes

4.3.3 For cut-to-size pieces, the permissible number of major blemishes and their positions shall be agreed with the customer. Otherwise, the permissible number of major blemishes in cut-to-size pieces shall be as given in table 2. iTeh STANDARD PREVIEW

4.3.4 Minor manufacturing blemishes which do not produce oversize apertures or significantly affect the surface quality of the wire screen shall be acceptable unless otherwise specified.

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4.4 Flatness of wire screens.dards.iteh.ai/catalog/standards/sist/a21dd498-6e48-42a2-9244-

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Wire screens may be curled in the warp and/or weft direction; the absolute flatness of the screen cannot be guaranteed.

#### 4.5 Surface conditions

Wire screens may be covered with a film of oil as a result of the manufacturing process.

The wires may show traces of auxiliary materials used in the drawing process. Depending on the wire material, there may be traces of corrosion.

The surface may show markings caused by drawing, crimping or other processes of manufacture.

NOTE — The depth of crimp may differ between warp and weft wires.

#### 4.6 Rectangular screening surfaces from wire screens

#### 4.6.1 General

Rectangular screening surfaces can be manufactured from wire screens as cut-to-size pieces with or without hook strips for fixing in a screen frame with optimum tension.

The overall dimensions of screening surfaces are designated as

- in the direction parallel to the flow of the material to be screened, and a)
- b) in the direction across the flow of the material to be screened (see figure 2).