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# International Standard



# 7805/1

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## **Industrial plate screens — Part 1: Thickness of 3 mm and above**

*Tôles perforées pour tamisage industriel — Partie 1: Épaisseur égale ou supérieure à 3 mm*

**First edition — 1984-04-15**

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**Ref. No. ISO 7805/1-1984 (E)**

**Descriptors :** sieves, sieve plates, sizing screens, hole size, designation.

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 7805/1 was developed by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods*, and was circulated to the member bodies in February 1983.

It has been approved by the member bodies of the following countries:

Australia	Italy	Romania
Canada	Japan	South Africa, Rep. of
France	Korea, Dem. P. Rep. of	Switzerland
Germany, F. R.	Netherlands	USSR
India	Portugal	

The member bodies of the following countries expressed disapproval of the document on technical grounds:

Belgium  
United Kingdom

# Industrial plate screens —

## Part 1: Thickness of 3 mm and above

### 0 Introduction

The purpose of this International Standard is to provide guidance for the development of national standards for industrial plate screens.

### 1 Scope and field of application

This part of ISO 7805 describes three patterns using round (circular) and square perforations in low carbon steel plate of 3 mm thickness and above; the sizes of holes ranging from 125 to 3,15 mm inclusive. Five ratios of pitch to hole are prescribed which result in nominal areas ranging from about 64 to 23 %. Tolerances for both hole and pitch are given.

As this part of ISO 7805 provides a diversity of choice, it is unlikely that every one of the many possible combinations of size of hole, pitch and plate thickness will be manufactured. The selection for national standards for industrial plate screens should be made from those combinations which suit the products and screening methods in the country concerned.

Industrial plate screens of thicknesses below 3 mm are dealt with in ISO 7805/2.

### 2 References

ISO 3, *Preferred numbers — Series of preferred numbers*.

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

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

ISO 3310/2, *Test sieves — Technical requirements and testing — Part 2: Metal perforated plate*.

ISO 7805/2, *Industrial plate screens — Part 2: Thickness below 3 mm*.<sup>1)</sup>

ISO 7806, *Industrial plate screens — Codification for designating perforations*.

### 3 Definitions

For the purpose of this International Standard the definitions given in ISO 2395 and the following definition apply.

**open area**: Ratio of the total area occupied by the holes to the overall area of the perforated part of the plate.

### 4 Material and design

#### 4.1 Material

The following requirements apply to perforated plates of low-carbon steel. Plates made of other steels and non-ferrous metals may require different specifications apart from sizes of holes.

#### 4.2 Design

##### 4.2.1 Arrangement of holes

Three permissible arrangements of holes are illustrated in figures 1 to 3; figure 1 for round holes in an equilateral triangle (60° staggered) arrangement; figures 2 and 3 for square holes in line or at half pitch stagger.

##### 4.2.2 Size of holes $w$

The nominal sizes of round or square holes in industrial plate screens are tabulated in ISO 2194.

First choice shall be made from the R 10 series of preferred numbers, the second choice from the R 20 series. If necessary, choice may be made from the R 40 series.

NOTE — The R 10 series of sizes is shown, by way of example, in tables 2 and 3.

1) At present at the stage of draft.

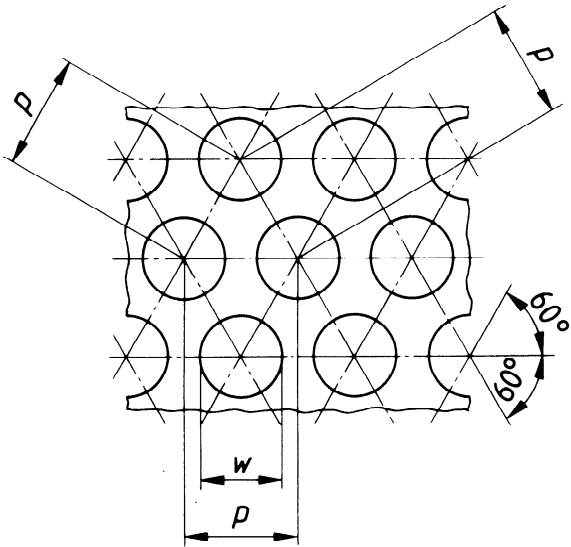


Figure 1 — Round holes: 60° staggered arrangement  
(i.e. at the apices of equilateral triangles)  
[Open area  $\approx 0,9 (w/p)^2$ ]

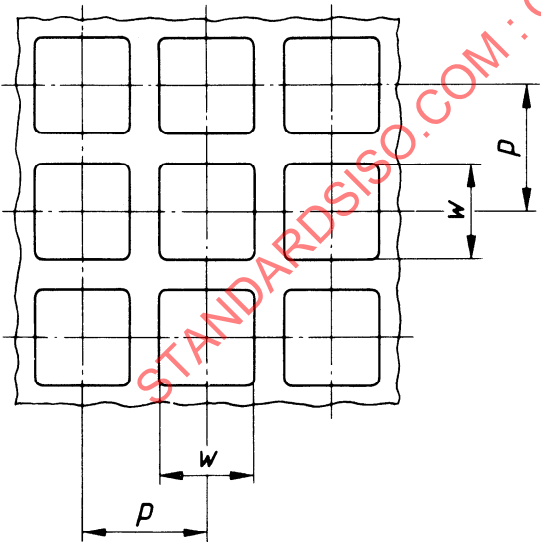


Figure 2 — Square holes: in-line arrangement  
[Open area =  $(w/p)^2$ ]

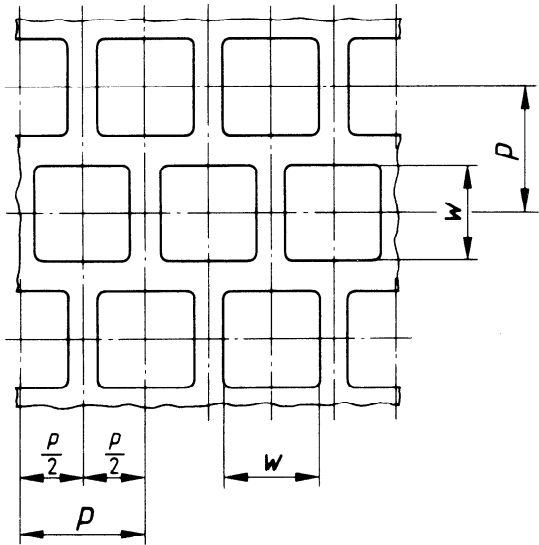


Figure 3 — Square holes: half-pitch staggered arrangement  
[Open area =  $(w/p)^2$ ]

### 4.2.3 Pitch $p$

Values for pitch shall be calculated from the five options of pitch/hole ratio given in table 1 which tabulates the approximate open area in percent for round and square hole perforations based on these ratios.

The calculated values shall be rounded to the nearest R 40 number according to ISO 3.

**Table 1 — Pitch/hole ratios and related open areas**

Pitch/hole ratio $p/w$	Approximate open area	
	round holes %	square holes %
1,25	58	64
1,4	46	51
1,6	35	39
1,8	28	31
2	23	25

NOTE — Examples in tables 2 and 3 include pitch selections.

### 4.2.4 Plate thickness

Plate thickness before perforation shall be agreed by purchaser and supplier. A chosen thickness shall normally be less than the size of holes and also less than the bridge width (bar).

## 5 Tolerances

Formulae for tolerances are given in 5.1 to 5.3; they apply to unused plate screens.

### 5.1 Tolerance on average size of hole $\Delta w$

The average measured size of hole shall not deviate from the nominal value by more than the value given by the formula

$$\Delta w = \pm \frac{w (4,5 - \lg w)}{100}, \quad \dots (1)$$

where  $\Delta w$  and  $w$  are given in millimetres.

### 5.2 Tolerance on average pitch $\Delta p$

The average measured pitch shall not deviate from the nominal value by more than the value given by the formula

$$\Delta p = \pm \frac{p (4 - \lg p)}{100}, \quad \dots (2)$$

where  $\Delta p$  and  $p$  are given in millimetres.

### 5.3 Tolerance on individual pitch

The measured value of any individual pitch shall not deviate from the nominal value by more than  $2 \Delta p$ .

NOTE — Examples are listed in table 2 and 3 for tolerances on average size of hole and in table 4 for tolerances on average pitch.

## 6 Testing

Measurements of size of holes and pitch in perforated plate shall be made at the punch side of the plate as described in tests 2 and 3 of ISO 3310/2.

## 7 Designation

Industrial plate screens shall be designated by

- shape of holes;
- size of holes;
- arrangement and orientation of holes;
- pitch of holes.

The above items of designation can be described by use of the code specified in ISO 7806.

NOTE — The customer's choice of plate thickness, shape and size of plate, and the required material should be clearly stated when ordering an industrial plate screen.

## Annex

## Examples

(This annex forms part of the Standard.)

Tables 2 and 3 are examples which list sizes of holes in the R 10 series and include hole/pitch combinations which have been manufactured or suggested. The criteria for selection made for national standards is described in clause 1.

Table 2 — Examples of round hole perforations at 60° stagger in industrial plate screens

Values in millimetres

nominal size $w$	Hole tolerance on average size $\Delta w$	Nominal pitch*				
		$p$ for an approximate open area of				
		58 %	46 %	35 %	28 %	23 %
125	$\pm 3$	160	—	—	—	—
100	$\pm 2,5$	125	—	—	—	—
80	$\pm 2,1$	100	—	—	—	—
63	$\pm 1,7$	80	90	100	—	—
50	$\pm 1,4$	63	71	80	—	—
40	$\pm 1,2$	50	56	63	—	—
31,5	$\pm 1$	40	45	50	—	—
25	$\pm 0,8$	31,5	35,5	40	—	—
20	$\pm 0,6$	25	28	31,5	—	—
16	$\pm 0,5$	20	22,4	25	—	—
12,5	$\pm 0,4$	16	18	20	22,4	—
10	$\pm 0,35$	—	14	16	18	—
8	$\pm 0,3$	—	11,2	12,5	14	16
6,3	$\pm 0,25$	—	—	10	11,2	12,5
5	$\pm 0,2$	—	—	8	9	10
4	$\pm 0,15$	—	—	—	7,1	8
3,15	$\pm 0,15$	—	—	—	—	6,3

\* For tolerances on pitch see table 4.

Table 3 — Examples of square hole perforations in industrial plate screens

Values in millimetres

nominal size $w$	Hole tolerance on average size $\Delta w$	Nominal pitch*				
		$p$ for an approximate open area of				
		64 %	51 %	39 %	31 %	25 %
125	$\pm 3$	160	—	—	—	—
100	$\pm 2,5$	125	—	—	—	—
80	$\pm 2,1$	100	—	—	—	—
63	$\pm 1,7$	80	90	100	—	—
50	$\pm 1,4$	63	71	80	—	—
40	$\pm 1,2$	50	56	63	—	—
31,5	$\pm 1$	40	45	50	—	—
25	$\pm 0,8$	31,5	35,5	40	—	—
20	$\pm 0,6$	25	28	31,5	—	—
16	$\pm 0,5$	20	22,4	25	—	—
12,5	$\pm 0,4$	16	18	20	—	—
10	$\pm 0,35$	—	14	16	18	—
8	$\pm 0,3$	—	11,2	12,5	14	—
6,3	$\pm 0,25$	—	—	10	11,2	—
5	$\pm 0,2$	—	—	—	9	10
4	$\pm 0,15$	—	—	—	7,1	8
3,15	$\pm 0,15$	—	—	—	—	6,3

\* For tolerances on pitch see table 4.