Designation: E674 – 12 (Reapproved 2016)

Standard Specification for Industrial Perforated Plate and Screens (Round Opening Series)[1]

This standard is issued under the fixed designation E674; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

Industrial perforated plate can be produced in many thousands of combinations of size and shape of opening, bar size, thickness of material, and type of metal. Such variety is often confusing and, to the vast majority of perforated plate users, unnecessary, since each usually requires only a very few specifications.

The purpose of this specification is to simplify this problem by a condensed table of recommended specifications covering a wide range of openings in which industrial perforated plate is made, with several recommended bar sizes and thicknesses of plate for each opening, for use in various grades of service.

By making selections from this specification, the user will be guided to specifications that are being regularly produced, thus avoiding inadvertent selection of specifications that, because of little or no demand, are unobtainable, except on special order (usually quite expensive unless the quantity ordered is sufficient to justify the cost of special tooling).

If a user has a specific application for industrial perforated plate that can not be solved by a selection from this specification, it is recommended that he consult his perforated plate supplier on the availability of an acceptable alternative specification.

1. Scope

1.1 This specification covers the sizes of round opening perforated plate and screens for general industrial uses, including the separating or grading of materials according to designated nominal particle size, and lists standards for openings from 5 in. (125 mm) to 0.020 in. (500 µm) punched with bar sizes and thicknesses of plate for various grades of service. Methods of checking industrial perforated plate and screens are included as information in Appendix X3.

1.2 This specification does not apply to perforated plate or screens with square, hexagon, slotted, or other shaped openings.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E323 Specification for Perforated-Plate Sieves for Testing Purposes

E1638 Terminology Relating to Sieves, Sieving Methods, and Screening Media

2.2 *ISO Standards:*[3]

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

[1] This specification is under the jurisdiction of ASTM Committee E29 on Particle and Spray Characterization and is the direct responsibility of Subcommittee E29.01 on Sieves, Sieving Methods, and Screening Media.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, Case postale 56, CH-1211, Geneva 20, Switzerland, http://www.iso.ch.

2.3 *Other Documents:*
Fed. Std. 123 Marking for Shipments (Civil Agencies)[4]
Mil-Std-129 Marking for Shipment and Storage[4]

3. Terminology

3.1 *Definitions*—For general terms related to sieves, sieving methods, and screening media, see Terminology E1638.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *aperture, n*—the opening in a screening or sieving medium.

3.2.2 *bar, n*—the metal between perforations.

3.2.3 *blank, n*—unperforated area located other than along the perimeter of a plate.

3.2.4 *break-out, n*—term applied to the action that occurs ahead of the punch in its going through the plate.

3.2.4.1 *Discussion*—The fracturing of the material results in a tapered hole with the small dimensions on the punch side.

3.2.5 *centers, n*—dimensional sum of one perforation and one bar or the dimensional distance from the center of one perforation to the center of an adjacent perforation.

3.2.6 *die side, n*—surface of the plate that was against the die during the punching operation.

3.2.7 *finished end pattern, n*—condition that occurs with some specifications of staggered pattern perforations as a result of tool design in which the pattern is completed on both ends of the plate (Fig. 1).

3.2.8 *gage* (also *gauge), n*—a number designating a specific thickness of metal sheet tabulated in a standardized series, each of which represents a decimal fraction of an inch.

3.2.9 *margin* or *border, n*—unperforated area located along the perimeter of a plate.

3.2.10 *percent open area, n*—the ratio of the total area of the apertures to the total area expressed in percentage.

3.2.11 *perforated pattern, n*—the patterns that the perforations are arranged in, usually in a staggered pattern with midpoints nominally at the vertices of isosceles triangles or square patterns arranged in line with their midpoints nominally at the vertices of squares.

3.2.12 *screen, n*—(*1*) surface provided with apertures of uniform size and shape; (*2*) another term used interchangeably for woven wire cloth; (*3*) machine provided with one or more screen surfaces.

3.2.13 *screening, v*—process of separating a mixture of different sizes by means of one or more screen surfaces.

3.2.14 *smooth side or punch side, n*—surface of the plate that was uppermost during the punching operation and through which the punch entered the plate.

3.2.15 *unfinished end pattern, n*—condition that occurs with some specifications of staggered pattern perforations as a result of tool design.

3.2.15.1 *Discussion*—On one end of the plate, the pattern will appear to be incomplete as a result of unperforated holes in the even numbered rows, while on the other end of the same plate, the pattern will appear to be incomplete because of unperforated holes in the odd numbered rows (Fig. 2).

4. Standard Specifications

4.1 Standard specifications for industrial perforated plate and screens are listed in Table 1.

4.2 *Openings*—The series of standard openings listed in Table 1 include those of the USA Standard Sieve Series, Specification E323, and those of the ISO apertures for industrial plate screens, ISO 2194, with the addition of those openings in common usage.

4.3 *Relationship of Grades*—The purpose of the several grades is to provide combinations of opening and bar size for various types of service, from medium-light to heavy. Since it is possible to vary the bar size independently from the plate thickness, each of the service grades lists up to three combinations of bar and gage for each opening. The entire standard series has been designed for a logical relationship of bar size to opening in each grade and between grades with the capability of also being able to vary the plate thickness.

[4] Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, http://dodssp.daps.dla.mil.

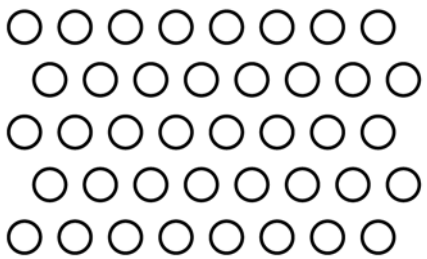

FIG. 1 Finished End Pattern

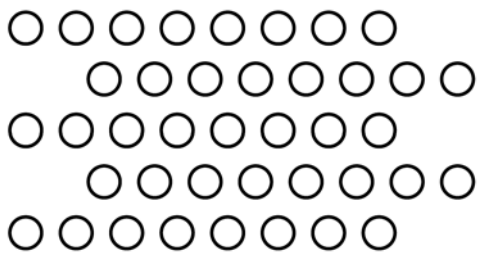

FIG. 2 Unfinished End Pattern

TABLE 1 USA Standard Specifications for Industrial Perforated Plate and Screens (Round Opening Series)—(U.S. Customary Units)

Perforated Opening		Medium Light				Medium				Medium Heavy				Heavy			
Standard (metric), mm	USA Industrial Standard, in.	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %
125	5	5	½	½	74.9	5	⅝	⅝	71.6	5	¾	¾	68.5	5	1	1	62.9
125	5	5	⅝	⅜	71.6	5	¾	½	68.5	5	⅞	⅝	65.6	5	1⅛	⅞	60.4
125	5	5	⅝	½	71.6	5	¾	⅝	68.5	5	⅞	¾	65.6	5	1⅛	1	60.4
...	...	4½	½	½	73.4	4½	⅝	⅝	69.9	4½	¾	¾	66.6	4½	1	1	60.7
...	...	4½	⅝	⅜	69.9	4½	¾	½	66.6	4½	⅞	⅝	63.5	4½	1⅛	⅞	58
...	...	4½	⅝	½	69.9	4½	¾	⅝	66.6	4½	⅞	¾	63.5	4½	1⅛	1	58
106	4¼	4¼	½	½	72.6	4¼	⅝	⅝	68.9	4¼	¾	¾	65.5	4¼	1	1	59.4
106	4¼	4¼	⅝	⅜	68.9	4¼	¾	½	65.5	4¼	⅞	⅝	62.3	4¼	1⅛	⅞	56.7
106	4¼	4¼	⅝	½	68.9	4¼	¾	⅝	65.5	4¼	⅞	¾	62.3	4¼	1⅛	1	56.7
100	4	4	½	½	71.6	4	⅝	⅝	67.8	4	¾	¾	64.3	4	1	1	58
100	4	4	⅝	⅜	67.8	4	¾	½	64.3	4	⅞	⅝	61	4	1⅛	⅞	55.2
100	4	4	⅝	½	67.8	4	¾	⅝	64.3	4	⅞	¾	61	4	1⅛	1	55.2
...	...	3¾	½	½	70.6	3¾	⅝	⅝	66.6	3¾	¾	¾	62.9	3¾	⅞	⅞	59.6
...	...	3¾	⅝	⅜	66.6	3¾	¾	½	62.9	3¾	⅞	⅝	59.6	3¾	1	¾	48.9
...	...	3¾	⅝	½	66.6	3¾	¾	⅝	62.9	3¾	⅞	¾	59.6	3¾	1	⅞	48.9
90	3½	3½	½	½	69.4	3½	⅝	⅝	65.2	3½	¾	¾	61.5	3½	⅞	⅞	58
90	3½	3½	⅝	⅜	65.2	3½	¾	½	61.5	3½	⅞	⅝	58	3½	1	¾	54.8
90	3½	3½	⅝	½	65.2	3½	¾	⅝	61.5	3½	⅞	¾	58	3½	1	⅞	54.8
...	...	3¼	⅜	⅜	72.8	3¼	½	½	68.1	3¼	⅝	⅝	63.8	3¼	¾	¾	59.8
...	...	3¼	½	5⁄16	68.1	3¼	⅝	⅜	63.7	3¼	¾	½	59.8	3¼	⅞	⅝	56.2
...	...	3¼	½	⅜	68.1	3¼	⅝	½	63.7	3¼	¾	⅝	59.8	3¼	⅞	¾	56.2
75	3	3	⅜	⅜	71.6	3	½	½	66.6	3	⅝	⅝	62.1	3	¾	¾	58
75	3	3	½	5⁄16	66.6	3	⅝	⅜	62.1	3	¾	½	58	3	⅞	⅝	54.3
75	3	3	½	⅜	66.6	3	⅝	½	62.1	3	¾	⅝	58	3	⅞	¾	54.3
...	...	2¾	⅜	⅜	70.2	2¾	½	½	64.9	2¾	⅝	⅝	60.2	2¾	¾	¾	55.9
...	...	2¾	½	5⁄16	64.9	2¾	⅝	⅜	60.2	2¾	¾	½	55.9	2¾	⅞	⅝	52.1
...	...	2¾	½	⅜	64.9	2¾	⅝	½	60.2	2¾	¾	⅝	55.9	2¾	⅞	¾	52.1
63	2½	2½	⅜	⅜	68.5	2½	½	½	62.9	2½	⅝	⅝	58	2½	¾	¾	53.6
63	2½	2½	½	5⁄16	62.9	2½	⅝	⅜	58	2½	¾	½	53.6	2½	⅞	⅝	49.7
63	2½	2½	½	⅜	62.9	2½	⅝	½	58	2½	¾	⅝	53.6	2½	⅞	¾	49.7
...	...	2¼	⅜	⅜	66.6	2¼	½	½	60.7	2¼	⅝	⅝	55.5	2¼	¾	¾	51
...	...	2¼	½	5⁄16	60.7	2¼	⅝	⅜	55.5	2¼	¾	½	51	2¼	⅞	⅝	47
...	...	2¼	½	⅜	60.7	2¼	⅝	½	55.5	2¼	¾	⅝	51	2¼	⅞	¾	47
53	2⅛	2⅛	5⁄16	5⁄16	68.9	2⅛	⅜	⅜	65.5	2⅛	½	½	59.4	2⅛	⅝	⅝	54.1
53	2⅛	2⅛	⅜	¼	65.5	2⅛	½	5⁄16	59.4	2⅛	⅝	⅜	54.1	2⅛	¾	½	49.5
53	2⅛	2⅛	⅜	5⁄16	65.5	2⅛	½	⅜	59.4	2⅛	⅝	½	54.1	2⅛	¾	⅝	49.5
50	2	2	5⁄16	5⁄16	67.8	2	⅜	⅜	64.3	2	½	½	58	2	⅝	⅝	52.6
50	2	2	⅜	¼	64.3	2	½	5⁄16	58	2	⅝	⅜	52.6	2	¾	½	47.9
50	2	2	⅜	5⁄16	64.3	2	½	⅜	58	2	⅝	½	52.6	2	¾	⅝	47.9
...	...	1⅞	5⁄16	5⁄16	66.6	1⅞	⅜	⅜	62.9	1⅞	½	½	56.5	1⅞	⅝	⅝	51
...	...	1⅞	⅜	¼	62.9	1⅞	½	5⁄16	56.5	1⅞	⅝	⅜	51	1⅞	¾	½	46.2
...	...	1⅞	⅜	5⁄16	62.9	1⅞	½	⅜	56.5	1⅞	⅝	½	51	1⅞	¾	⅝	46.2
45	1¾	1¾	5⁄16	5⁄16	65.2	1¾	⅜	⅜	61.5	1¾	½	½	54.8	1¾	⅝	⅝	49.2
45	1¾	1¾	⅜	¼	61.5	1¾	½	5⁄16	54.8	1¾	⅝	⅜	49.2	1¾	¾	½	44.4
45	1¾	1¾	⅜	5⁄16	61.5	1¾	½	⅜	54.8	1¾	⅝	½	49.2	1¾	¾	⅝	44.4
...	...	1⅝	¼	¼	68.1	1⅝	5⁄16	5⁄16	63.7	1⅝	⅜	⅜	59.8	1⅝	½	½	53
...	...	1⅝	5⁄16	3⁄16	63.7	1⅝	⅜	¼	59.8	1⅝	½	5⁄16	53	1⅝	⅝	⅜	47.3
...	...	1⅝	5⁄16	¼	63.7	1⅝	⅜	5⁄16	59.8	1⅝	½	⅜	53	1⅝	⅝	½	47.3
37.5	1½	1½	¼	¼	66.6	1½	5⁄16	5⁄16	62.1	1½	⅜	⅜	58	1½	½	½	51
37.5	1½	1½	5⁄16	3⁄16	62.1	1½	⅜	¼	58	1½	½	5⁄16	51	1½	⅝	⅜	45.1
37.5	1½	1½	5⁄16	¼	62.1	1½	⅜	5⁄16	58	1½	½	⅜	51	1½	⅝	½	45.1

TABLE 1 *Continued*

Perforated Opening		Medium Light				Medium				Medium Heavy				Heavy			
Standard (metric), mm	USA Industrial Standard, in.	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %
...	...	1⅜	¼	¼	64.9	1⅜	5⁄16	5⁄16	60.2	1⅜	⅜	⅜	55.9	1⅜	½	½	48.7
...	...	1⅜	5⁄16	3⁄16	60.2	1⅜	⅜	¼	55.9	1⅜	½	5⁄16	48.7	1⅜	⅝	⅜	42.8
...	...	1⅜	5⁄16	¼	60.2	1⅜	⅜	5⁄16	55.9	1⅜	½	⅜	48.7	1⅜	⅝	½	42.8
31.5	1¼	1¼	¼	¼	62.9	1¼	5⁄16	5⁄16	58	1¼	⅜	⅜	53.6	1¼	½	½	46.2
31.5	1¼	1¼	5⁄16	3⁄16	58	1¼	⅜	¼	53.6	1¼	½	5⁄16	46.2	1¼	⅝	⅜	40.3
31.5	1¼	1¼	5⁄16	¼	58	1¼	⅜	5⁄16	53.6	1¼	½	⅜	46.2	1¼	⅝	½	40.3
...	...	1⅜16	⅜16	⅜16	67.6	1⅜16	¼	¼	61.8	1⅜16	5⁄16	5⁄16	56.8	1⅜16	⅜	⅜	52.3
...	...	1⅜16	¼	8	61.8	1⅜16	5⁄16	⅜16	56.8	1⅜16	⅜	¼	52.3	1⅜16	½	5⁄16	44.9
...	...	1⅜16	¼	⅜16	61.8	1⅜16	5⁄16	¼	56.8	1⅜16	⅜	5⁄16	52.3	1⅜16	½	⅜	44.9
...	...	1⅛	⅜16	⅜16	66.6	1⅛	¼	¼	60.7	1⅛	5⁄16	5⁄16	55.5	1⅛	⅜	⅜	51
...	...	1⅛	¼	8	60.7	1⅛	5⁄16	⅜16	55.5	1⅛	⅜	¼	51	1⅛	½	5⁄16	43.4
...	...	1⅛	¼	⅜16	60.7	1⅛	5⁄16	¼	55.5	1⅛	⅜	5⁄16	51	1⅛	½	⅜	43.4
26.5	1⅛16	1⅛16	⅜16	⅜16	65.5	1⅛16	¼	¼	59.4	1⅛16	5⁄16	5⁄16	54.1	1⅛16	⅜	⅜	49.5
26.5	1⅛16	1⅛16	¼	8	59.4	1⅛16	5⁄16	⅜16	54.1	1⅛16	⅜	¼	49.5	1⅛16	½	5⁄16	41.9
26.5	1⅛16	1⅛16	¼	⅜16	59.4	1⅛16	5⁄16	¼	54.1	1⅛16	⅜	5⁄16	49.5	1⅛16	½	⅜	41.9
25	1	1	⅜16	⅜16	64.3	1	¼	¼	58	1	5⁄16	5⁄16	52.6	1	⅜	⅜	47.9
25	1	1	¼	8	58	1	5⁄16	⅜16	52.6	1	⅜	¼	47.9	1	½	5⁄16	40.3
25	1	1	¼	⅜16	58	1	5⁄16	¼	52.6	1	⅜	5⁄16	47.9	1	½	⅜	40.3
...	...	15⁄16	⅜16	⅜16	62.9	15⁄16	¼	¼	56.4	15⁄16	5⁄16	5⁄16	51	15⁄16	⅜	⅜	46.2
...	...	15⁄16	¼	8	56.4	15⁄16	5⁄16	⅜16	51	15⁄16	⅜	¼	46.2	15⁄16	½	5⁄16	38.5
...	...	15⁄16	¼	⅜16	56.4	15⁄16	5⁄16	¼	51	15⁄16	⅜	5⁄16	46.2	15⁄16	½	⅜	38.5
22.4	⅞	⅞	⅜16	⅜16	61.5	⅞	¼	¼	54.8	⅞	5⁄16	5⁄16	49.2	⅞	⅜	⅜	44.4
22.4	⅞	⅞	¼	8	54.8	⅞	5⁄16	⅜16	49.2	⅞	⅜	¼	44.4	⅞	½	5⁄16	36.7
22.4	⅞	⅞	¼	⅜16	54.8	⅞	5⁄16	¼	49.2	⅞	⅜	5⁄16	44.4	⅞	½	⅜	36.7
...	...	13⁄16	⅜16	⅜16	59.8	13⁄16	¼	¼	53	13⁄16	5⁄16	5⁄16	47.2	13⁄16	⅜	⅜	42.4
...	...	13⁄16	¼	8	53	13⁄16	5⁄16	⅜16	47.2	13⁄16	⅜	¼	42.4	13⁄16	½	5⁄16	34.7
...	...	13⁄16	¼	⅜16	53	13⁄16	5⁄16	¼	47.2	13⁄16	⅜	5⁄16	42.4	13⁄16	½	⅜	34.7
19	¾	¾	⅜16	⅜16	58	¾	¼	¼	51	¾	5⁄16	5⁄16	45.1	¾	⅜	⅜	40.3
19	¾	¾	¼	8	51	¾	5⁄16	⅜16	45.1	¾	⅜	¼	40.3	¾	½	5⁄16	32.6
19	¾	¾	¼	⅜16	51	¾	5⁄16	¼	45.1	¾	⅜	5⁄16	40.3	¾	½	⅜	32.6
...	...	11⁄16	⅜16	⅜16	55.9	11⁄16	¼	¼	48.7	11⁄16	5⁄16	5⁄16	42.8	11⁄16	⅜	⅜	37.9
...	...	11⁄16	¼	8	48.7	11⁄16	5⁄16	⅜16	42.8	11⁄16	⅜	¼	37.9	11⁄16	½	5⁄16	30.3
...	...	11⁄16	¼	⅜16	48.7	11⁄16	5⁄16	¼	42.8	11⁄16	⅜	5⁄16	37.9	11⁄16	½	⅜	30.3
16	⅝	⅝	5⁄32	8	58	⅝	⅜16	⅜16	53.6	⅝	¼	¼	46.2	⅝	5⁄16	5⁄16	40.3
16	⅝	⅝	⅜16	10	53.6	⅝	¼	8	46.2	⅝	5⁄16	⅜16	40.3	⅝	⅜	¼	35.4
16	⅝	⅝	⅜16	8	53.6	⅝	¼	⅜16	46.2	⅝	5⁄16	¼	40.3	⅝	⅜	5⁄16	35.4
...	...	9⁄16	5⁄32	8	55.5	9⁄16	⅜16	⅜16	51	9⁄16	¼	¼	43.4	9⁄16	5⁄16	5⁄16	37.4
...	...	9⁄16	⅜16	10	51	9⁄16	¼	8	43.4	9⁄16	5⁄16	⅜16	37.4	9⁄16	⅜	¼	32.6
...	...	9⁄16	⅜16	8	51	9⁄16	¼	⅜16	43.4	9⁄16	5⁄16	¼	37.4	9⁄16	⅜	5⁄16	32.6
13.2	17⁄32	...	...	...	...	...	...	...	...	17⁄32	5⁄32	⅜16	54.1	17⁄32	7⁄32	¼	45.4
13.2	17⁄32	...	...	...	...	17⁄32	5⁄32	10	54.1	17⁄32	7⁄32	8	45,4	17⁄32	11⁄32	⅜16	33.4
13.2	17⁄32	...	...	...	...	17⁄32	5⁄32	8	54.1	17⁄32	7⁄32	⅜16	45.4	17⁄32	11⁄32	¼	33.4
12.5	½	...	...	...	...	...	...	...	...	½	⅜16	⅜16	47.9	½	¼	¼	40.3
12.5	½	...	...	...	...	½	⅜16	10	47.9	½	¼	8	40.3	½	5⁄16	⅜16	34.3
12.5	½	...	...	...	...	½	⅜16	8	47.9	½	¼	⅜16	40.3	½	5⁄16	¼	34.3
...	...	...	...	...	...	15⁄32	⅛	8	56.5	15⁄32	5⁄32	⅜16	50.9	15⁄32	7⁄32	¼	42.1
...	...	15⁄32	⅛	11	56.5	15⁄32	5⁄32	10	50.9	15⁄32	7⁄32	8	42.1	15⁄32	9⁄32	⅜16	35.4
...	...	15⁄32	⅛	10	56.5	15⁄32	5⁄32	8	50.9	15⁄32	7⁄32	⅜16	42.1	15⁄32	9⁄32	¼	35.4
11.2	7⁄16	7⁄16	5⁄32	10	49.2	7⁄16	⅜16	8	44.4	7⁄16	¼	⅜16	36.7	7⁄16	5⁄16	¼	30.8
11.2	7⁄16	7⁄16	⅜16	11	44.4	7⁄16	¼	10	36.7	7⁄16	5⁄16	8	30.8	7⁄16	7⁄16	⅜16	22.6
11.2	7⁄16	7⁄16	⅜16	10	44.4	7⁄16	¼	8	36.7	7⁄16	5⁄16	⅜16	30.8	7⁄16	7⁄16	¼	22.6

TABLE 1 *Continued*

Perforated Opening		Medium Light				Medium				Medium Heavy				Heavy			
Standard (metric), mm	USA Industrial Standard, in.	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %
9.5	3/8	3/8	1/8	11	51	3/8	3/16	10	40.3	3/8	7/32	8	36.1	3/8	1/4	3/16	32.6
9.5	3/8	3/8	3/16	12	40.3	3/8	7/32	11	36.1	3/8	1/4	10	32.6	3/8	3/8	8	22.6
9.5	3/8	3/8	3/16	11	40.3	3/8	7/32	10	36.1	3/8	1/4	8	32.6	3/8	3/8	3/16	22.6
8	5/16	5/16	3/32	11	53.6	5/16	1/8	10	46.2	5/16	5/32	8	40.3	5/16	3/16	3/16	35.4
8	5/16	5/16	1/8	12	46.2	5/16	5/32	11	40.3	5/16	3/16	10	35.4	5/16	1/4	8	27.9
8	5/16	5/16	1/8	11	46.2	5/16	5/32	10	40.3	5/16	3/16	8	35.4	5/16	1/4	3/16	27.9
6.7	17/64	...	...	...	...	17/64	7/64	11	45.4	17/64	1/8	10	41.9	17/64	9/64	8	38.7
6.7	17/64	17/64	7/64	14	45.4	17/64	1/8	12	41.9	17/64	9/64	11	38.7	17/64	11/64	10	33.4
6.7	17/64	17/64	7/64	12	45.4	17/64	1/8	11	41.9	17/64	9/64	10	38.7	17/64	11/64	8	33.4
6.3	1/4	1/4	1/16	16	58	1/4	1/8	11	40.3	1/4	5/32	10	34.3	1/4	3/16	8	29.6
6.3	1/4	1/4	1/8	14	40.3	1/4	5/32	12	34.3	1/4	3/16	11	29.6	1/4	1/4	10	22.6
6.3	1/4	1/4	1/8	12	40.3	1/4	5/32	11	34.3	1/4	3/16	10	29.6	1/4	1/4	8	22.6
5.6	7/32	7/32	3/32	14	44.4	7/32	1/8	12	36.7	7/32	5/32	11	30.8	7/32	3/16	10	26.2
5.6	7/32	7/32	1/8	16	36.7	7/32	5/32	14	30.8	7/32	3/16	12	26.2	7/32	7/32	11	22.6
5.6	7/32	7/32	1/8	14	36.7	7/32	5/32	12	30.8	7/32	3/16	11	26.2	7/32	7/32	10	22.6
4.75	3/16	3/16	1/16	14	51	3/16	3/32	12	40.3	3/16	7/64	11	36.1	3/16	1/8	10	32.6
4.75	3/16	3/16	3/32	16	40.3	3/16	7/64	14	36.1	3/16	1/8	12	32.6	3/16	3/16	11	22.6
4.75	3/16	3/16	3/32	14	40.3	3/16	7/64	12	36.1	3/16	1/8	11	32.6	3/16	3/16	10	22.6
4	5/32	...	...	...	...	5/32	1/16	14	46.2	5/32	3/32	12	35.4	5/32	1/8	11	27.9
4	5/32	5/32	1/16	18	46.2	5/32	3/32	16	35.4	5/32	1/8	14	27.9	5/32	5/32	12	22.6
4	5/32	5/32	1/16	16	46.2	5/32	3/32	14	35.4	5/32	1/8	12	27.9	5/32	5/32	11	22.6
3.35	1/8	...	...	...	...	1/8	3/64	14	47.9	1/8	1/16	12	40.3	1/8	3/32	11	29.6
3.35	1/8	1/8	3/64	18	47.9	1/8	1/16	16	40.3	1/8	3/32	14	29.6	1/8	1/8	12	22.6
3.35	1/8	1/8	3/64	16	47.9	1/8	1/16	14	40.3	1/8	3/32	12	29.6	1/8	1/8	11	22.6
2.80	7/64	...	...	...	...	7/64	1/16	16	36.4	7/64	3/32	14	26.1	7/64	9/64	12	17.2
2.80	7/64	7/64	1/16	20	36.4	7/64	3/32	18	26.1	7/64	9/64	16	17.2	7/64	5/32	14	15.2
2.80	7/64	7/64	1/16	18	36.4	7/64	3/32	16	26.1	7/64	9/64	14	17.2	7/64	5/32	12	15.2
2.36	3/32	...	...	...	...	3/32	1/16	18	33.0	3/32	3/32	16	22.4	3/32	1/8	14	16.7
2.36	3/32	3/32	1/16	22	33.0	3/32	3/32	20	22.4	3/32	1/8	18	16.7	3/32	5/32	16	12.8
2.36	3/32	3/32	1/16	20	33.0	3/32	3/32	18	22.4	3/32	1/8	16	16.7	3/32	5/32	14	12.8
2.00	0.078	...	...	...	...	0.078	0.030	18	47.3	0.078	0.047	16	35.3	0.078	0.078	14	22.4
2.00	0.078	0.078	0.030	22	47.3	0.078	0.047	20	35.3	0.078	0.078	18	22.4	0.078	0.109	16	15.8
2.00	0.078	0.078	0.030	20	47.3	0.078	0.047	18	35.3	0.078	0.078	16	22.4	0.078	0.109	14	15.8
1.70	0.066	...	...	...	...	...	...	...	...	0.066	0.043	18	33.2	0.066	0.059	16	25.3
1.70	0.066	...	...	...	...	0.066	0.043	22	33.2	0.066	0.059	20	25.3	0.066	0.090	18	16.2
1.70	0.066	...	...	...	...	0.066	0.043	20	33.2	0.066	0.059	18	25.3	0.066	0.090	16	16.2
1.40	0.055	...	...	...	...	...	...	...	...	0.055	0.040	20	30.4	0.055	0.055	18	22.6
1.40	0.055	...	...	...	...	0.055	0.040	24	30.4	0.055	0.055	22	22.6	0.055	0.070	20	17.5
1.40	0.055	...	...	...	...	0.055	0.040	22	30.4	0.055	0.055	20	22.6	0.055	0.070	18	17.5
1.18	0.045	...	...	...	...	...	...	...	...	0.045	0.021	22	42.1	0.045	0.033	20	30.2
1.18	0.045	...	...	...	...	0.045	0.021	26	42.1	0.045	0.033	24	30.2	0.045	0.045	22	22.4
1.18	0.045	...	...	...	...	0.045	0.021	24	42.1	0.045	0.033	22	30.2	0.045	0.045	20	22.4
1.00	0.039	...	...	...	...	...	...	...	...	...	...	...	...	0.039	0.027	22	31.6
1.00	0.039	...	...	...	...	...	...	...	...	0.039	0.027	26	31.6	0.039	0.039	24	22.4
1.00	0.039	...	...	...	...	...	...	...	...	0.039	0.027	24	31.6	0.039	0.039	22	22.4
830	0.032	...	...	...	...	...	...	...	...	...	...	...	...	0.032	0.032	24	22.4
830	0.032	...	...	...	...	...	...	...	...	0.032	0.032	28	22.4	0.032	0.040	26	17.9
830	0.032	...	...	...	...	...	...	...	...	0.032	0.032	26	22.4	0.032	0.040	24	17.9
710	0.027	...	...	...	...	...	...	...	...	...	...	...	...	0.027	0.030	26	20.3
710	0.027	...	...	...	...	...	...	...	...	0.027	0.030	30	20.3	0.027	0.039	28	15.2
710	0.027	...	...	...	...	...	...	...	...	0.027	0.030	28	20.3	0.027	0.039	26	15.2

TABLE 1 *Continued*

Perforated Opening		Medium Light				Medium				Medium Heavy				Heavy			
Standard (metric), mm	USA Industrial Standard, in.	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %	Opening, in.	Bar, in.	Gage-Steel, in.	Open Area, %
600	0.023	...	...	...	...	...	...	...	...	...	...	...	...	0.023	...	...	...
600	0.023	...	...	...	...	...	...	...	...	...	...	...	...	0.023	0.032	30	15.8
600	0.023	...	...	...	...	...	...	...	...	...	...	...	...	0.023	0.032	28	15.8
500	0.020	...	...	...	...	...	...	...	...	...	...	...	...	0.020	...	...	...
500	0.020	...	...	...	...	...	...	...	...	...	...	...	...	0.020	0.025	30	17.9
500	0.020	...	...	...	...	...	...	...	...	...	...	...	...	0.020	0.025	28	17.9

4.4 *Bar*—A choice of several bars is shown for each standard opening from 5-in. (125-mm) to 0.078-in. (2-mm) opening, inclusive. For practical reasons, the number of bars or grades available for openings finer than 0.078 in. is progressively reduced.

4.5 *Gage*—A choice of several gages is shown for each standard opening for 5 in. (125 mm) to 0.078 in. (2 mm). For practical reasons, the number of gages or grades available for openings finer than 0.078 in. is progressively reduced.

NOTE 1—The gages shown in Table 1 are practical for a low-carbon steel plate. For other materials, consult your perforated plate supplier.

4.6 *Equivalent Metric Specification*—Table X1.1, in the Appendix X1, shows the equivalent metric specifications to the USA Standard.

5. Types of Perforated Pattern

5.1 This specification covers round openings arranged in a staggered 60° pattern with their centers nominally at the vertices of equilateral triangles (see Fig. 3).

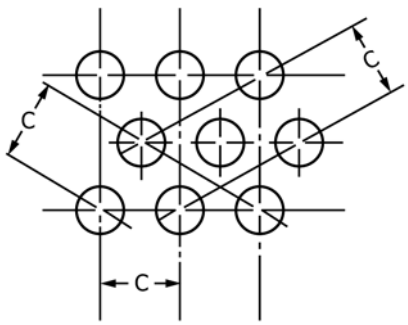

FIG. 3 Arrangement of Round Apertures

6. Metal Composition of Plate

6.1 Perforated plate can be punched from a great variety of metals and alloys, but the following are most commonly used:

Steel, low-carbon
Steel, high-carbon
Steel, heat-treated
Steel, galvanized
Stainless steel, Type 304
Stainless steel, Type 316
Stainless steel, Type 410
Brass (Cu 80, Zn 20)
Manganese bronze (Cu 61, Zn 37)
Monel (high nickel-copper alloy)
Aluminum (all grades)

7. Tolerances

7.1 *Openings*—Tolerances on openings in USA Standard Specifications for Industrial Perforated Plate and Screens (Table 1 and Table X1.1) shall be in accordance with those listed in Table 2.

7.2 *Bars*—Tolerances on bars used in USA Standard Specification for Industrial Perforated Plate and Screens (Table 1 and Table X1.1) shall be in accordance with those listed in Table 3.

7.3 *Gages*—Tolerances on gages used in USA Standard Specifications for Industrial Perforated Plate and Screens (Table 1 and Table X1.1) shall be in accordance with those listed in Table 4.

NOTE 2—The tolerances expressed in inch-pound units are taken from the current AISI[5] values.

8. Keywords

8.1 industrial perforated plate; industrial screens; openings; particle size; perforated openings; perforated plate; screens

[5] Available from American Iron and Steel Institute (AISI), 1140 Connecticut Ave., NW, Suite 705, Washington, DC 20036, http://www.steel.org.

TABLE 2 Tolerances on Openings of USA Standard Specifications for Industrial Perforated Plate and Screens

Perforated Opening			Tolerance on Openings	
Standard (metric), mm	USA Industrial Standard, in.	Additional Sizes, in.	Standard (metric), mm	USA Industrial Standard, in.
125.0	5	...	±2.5	±0.100
...	...	4½	...	±0.090
106.0	4¼	...	±2.1	±0.085
100.0	4	...	±2.0	±0.080
...	...	3¾	...	±0.075
90.0	3½	...	±1.8	±0.070
...	...	3¼	...	±0.065
75.0	3	...	±1.5	±0.060
...	...	2¾	...	±0.055
63.0	2½	...	±1.3	±0.050
...	...	2¼	...	±0.045
53.0	2⅛	...	±1.1	±0.043
50.0	2	...	±1.0	±0.040
...	...	1⅞	...	±0.038
45.0	1¾	...	±0.9	±0.035
...	...	1⅝	...	±0.033
38.1	1½	...	±0.8	±0.030
...	...	1⅜	...	±0.028
31.5	1¼	...	±0.6	±0.025
...	...	1 3/16	...	±0.024
...	...	1 1/16	...	±0.023
26.5	1 1/16	...	±0.5	±0.021
25.0	1	...	±0.5	±0.020
...	...	15/16	...	±0.019
22.4	⅞	...	±0.46	±0.018
...	...	13/16	...	±0.016
19.0	¾	...	±0.38	±0.015
...	...	11/16	...	±0.014
16.0	⅝	...	±0.32	±0.013
...	...	9/16	...	±0.012
13.2	17/32	...	±0.30	±0.012
12.5	½	...	±0.28	±0.011
...	...	15/32	...	±0.011
11.2	7/16	...	±0.28	±0.011
9.5	⅜	...	±0.28	±0.010
8.0	5/16	...	±0.26	±0.010
6.7	17/64	...	±0.25	±0.009
6.3	¼	...	±0.25	±0.009
5.6	7/32	...	±0.24	±0.009
4.75	3/16	...	±0.21	±0.008
4.00	5/32	...	±0.19	±0.007
3.35	0.127 (⅛)	...	±0.17	±0.006
2.80	7/64	...	±0.150	±0.006
2.36	3/32	...	±0.135	±0.005
2.00	0.078	...	±0.125	±0.005
1.70	0.066	...	±0.110	±0.004
1.40	0.055	...	±0.100	±0.004
1.18	0.045	...	±0.085	±0.003
1.00	0.039	...	±0.070	±0.003
830 µm	0.032	...	±60 µm	±0.002
710	0.027	...	±50 µm	±0.002
600	0.023	...	±45 µm	±0.002
500	0.020	...	±40 µm	±0.002

TABLE 3 Tolerances on Bars of USA Standard Specifications for Industrial Perforated Plate and Screens

Perforated Opening			Tolerance on Average Bar	
Standard (metric), mm	USA Industrial Standard, in.	Additional Sizes, in.	Standard (metric), mm	USA Industrial Standard, in.
125.0	5	...	±3.2	±0.125
...	...	4½	...	±0.122
106.0	4¼	...	±2.9	±0.113
100.0	4	...	±2.7	±0.107
...	...	3¾	...	±0.102
90.0	3½	...	±2.5	±0.097
...	...	3¼	...	±0.089
75.0	3	...	±2.1	±0.081
...	...	2¾	...	±0.076
63.0	2½	...	±1.8	±0.069
...	...	2¼	...	±0.063
53.0	2⅛	...	±1.5	±0.059
50.0	2	...	±1.4	±0.056
...	...	1⅞	...	±0.054
45.0	1¾	...	±1.3	±0.051
...	...	1⅝	...	±0.047
37.5	1½	...	±1.1	±0.043
...	...	1⅜	...	±0.040
31.5	1¼	...	±0.9	±0.037
...	...	1 3/16	...	±0.035
...	...	1⅛	...	±0.034
26.5	1 1/16	...	±0.8	±0.032
25.0	1	...	±0.8	±0.030
...	...	15/16	...	±0.029
22.4	⅞	...	±0.7	±0.028
...	...	13/16	...	±0.026
19.0	¾	...	±0.6	±0.024
...	...	11/16	...	±0.022
16.0	⅝	...	±0.5	±0.021
...	...	9/16	...	±0.019
13.2	17/32	...	±0.46	±0.018
12.5	½	...	±0.44	±0.017
...	...	15/32	...	±0.017
11.2	7/16	...	±0.41	±0.016
9.5	⅜	...	±0.36	±0.014
8.0	5/16	...	±0.32	±0.013
6.7	17/64	...	±0.29	±0.011
6.3	¼	...	±0.28	±0.011
5.6	7/32	...	±0.27	±0.011
4.75	3/16	...	±0.23	±0.009
4.00	5/32	...	±0.22	±0.009
3.35	0.127 (⅛)	...	±0.20	±0.008
2.80	7/64	...	±0.18	±0.007
2.36	3/32	...	±0.16	±0.006
2.00	0.078	...	±0.150	±0.006
1.70	0.066	...	±0.135	±0.005
1.40	0.055	...	±0.125	±0.005
1.18	0.045	...	±0.110	±0.004
1.00	0.039	...	±0.090	±0.004
830 µm	0.032	...	±80 µm	±0.003
710	0.027	...	±70 µm	±0.003
600	0.023	...	±65 µm	±0.003
500	0.020	...	±60 µm	±0.002

TABLE 4 Tolerance on Thickness of USA Standard Specifications for Industrial Perforated Plate and Screens

Gage	Steel		Tolerance on Gage	
Standard (metric), mm	USA Industrial Standard, in.	USA Industrial Decimal Equivalent, in.	Standard (metric), mm	USA Industrial Standard, in.
25.4	1		+ 1.00	+ 0.040
			–0.25	–0.010
22.4	7/8		–0.25	+ 0.035
			+ 0.89	–0.010
19.0	3/4		+ 0.84	+ 0.033
			–0.25	–0.010
16.0	5/8		+ 0.79	+ 0.031
			–0.25	–0.010
12.5	1/2		+ 0.76	+ 0.030
			–0.25	–0.010
9.50	3/8		+ 0.66	+ 0.026
			–0.25	–0.010
8.00	5/16		+ 0.64	+ 0.025
			–0.25	–0.010
6.30	1/4		+ 0.53	+ 0.021
			–0.25	–0.010
4.75	3/16		+ 0.51	+ 0.020
			–0.25	–0.010
4.25	No. 8 USS gage	0.1644	±0.25	±0.010
3.35	10	0.1345	±0.25	±0.010
3.00	11	0.1196	±0.25	±0.010
2.65	12	0.1046	±0.25	±0.010
1.90	14	0.0747	±0.18	±0.007
1.52	16	0.0598	±0.13	±0.005
1.21	18	0.0478	±0.10	±0.004
0.91	20	0.0359	±0.08	±0.003
0.76	22	0.0299	±0.08	±0.003
0.61	24	0.0239	±0.08	±0.003
0.45	26	0.0179	±0.05	±0.002
0.38	28	0.0149	±0.05	±0.002
0.30	30	0.0120	±0.05	±0.002

SUPPLEMENTARY REQUIREMENTS

The following sections shall be applicable when U.S. government contractual matters are involved.

S1. Responsibility for Inspection

S1.1 Unless otherwise specified in the contract or purchase order, the producer is responsible for the performance of all inspection and test requirements specified herein. Except as otherwise specified in the contract or order, the producer may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein unless disapproved by the purchaser. The purchaser shall have the right to perform any of the inspections and tests set forth in this specification where such inspections are deemed necessary to ensure that material conforms to prescribed requirements.

S2. Government Procurement

S2.1 Unless otherwise specified in the contract, the material shall be packaged in accordance with the suppliers' standard practice which will be acceptable to the carrier at lowest rates. Containers and packing shall comply with the Uniform Freight Classification rules or National Motor Freight Classification rules. Marking for shipment of such material shall be in accordance with Fed. Std. 123 for civil agencies and Mil-Std-129 for military agencies.

APPENDIXES

(Nonmandatory Information)

X1. EQUIVALENT METRIC SPECIFICATIONS

X1.1 The metric equivalent to the USA Standard Specification for Perforated Plate and Screens is shown in Table X1.1 and is published for the convenience of users in countries on full metric standard and to facilitate compar-ison of the USA Standard with national standards on locally available specifications.

X1.2 In the metric table, the standard opening designations and bar sizes are identical to those in the USA Standard (Table 1), but the thicknesses of material are the nearest Standard ISO metric plate gages to the one used in the corresponding specification in the USA Standard.

X1.3 The tolerances on openings, average bar, and thickness of material are as shown in the appropriate columns of Table 2, Table 3, and Table 4.

TABLE X1.1 USA Standard Specifications for Industrial Perforated Plate and Screens (Round Opening Series)—(Metric Equivalents)

Perforated Opening		Medium Light				Medium				Medium Heavy				Heavy			
Standard (metric), mm	USA Industrial Standard, in.	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %
125	5.0	125	12.50	12.50	74.9	125	16.00	16.00	71.3	125	19.00	19.00	68.3	125	25.40	25.40	62.6
125	5.0	125	16.00	9.50	71.3	125	19.00	12.50	68.3	125	22.40	16.00	65.2	125	28.50	22.40	60.1
125	5.0	125	16.00	12.50	71.3	125	19.00	16.00	68.3	125	22.40	19.00	65.2	125	28.50	25.40	60.1
106	4.25	106	12.50	12.50	72.5	106	16.00	16.00	68.4	106	19.00	19.00	65.2	106	25.40	25.40	59.0
106	4.25	106	16.00	9.50	68.4	106	19.00	12.50	65.2	106	22.40	16.00	61.8	106	28.50	22.40	56.3
106	4.25	106	16.00	12.50	68.4	106	19.00	16.00	65.2	106	22.40	19.00	61.8	106	28.50	25.40	56.3
100	4.0	100	12.50	12.50	71.7	100	16.00	16.00	67.4	100	19.00	19.00	67.4	100	25.40	25.40	57.7
100	4.0	100	16.00	9.50	67.4	100	19.00	12.50	64.0	100	22.40	16.00	60.5	100	28.50	22.40	54.9
100	4.0	100	16.00	12.50	67.4	100	19.00	16.00	64.0	100	22.40	19.00	60.5	100	28.50	25.40	54.9
90	3.5	90	12.50	12.50	69.9	90	16.00	16.00	65.4	90	19.00	19.00	61.8	90	22.40	22.40	58.1
90	3.5	90	16.00	9.50	65.4	90	19.00	12.50	61.8	90	22.40	16.00	58.1	90	25.40	19.00	55.2
90	3.5	90	16.00	12.50	65.4	90	19.00	16.00	61.8	90	22.40	19.00	58.1	90	25.40	22.40	55.2
75	3.0	75	9.50	9.50	71.4	75	12.50	12.50	66.6	75	16.00	16.00	61.6	75	19.00	19.00	57.7
75	3.0	75	12.50	8.00	66.6	75	16.00	9.50	61.6	75	19.00	12.50	57.7	75	22.40	16.00	53.8
75	3.0	75	12.50	9.50	66.6	75	16.00	12.50	61.6	75	19.00	16.00	57.7	75	22.40	19.00	53.8
63	2.5	63	9.50	9.50	68.5	63	12.50	12.50	63.1	63	16.00	16.00	57.7	63	19.00	19.00	53.5
63	2.5	63	12.50	8.00	63.1	63	16.00	9.50	57.7	63	19.00	12.50	53.5	63	22.40	16.00	49.4
63	2.5	63	12.50	9.50	63.1	63	16.00	12.50	57.7	63	19.00	16.00	53.5	63	22.40	19.00	49.4
53	2.125	53	8.00	8.00	68.5	53	9.50	9.50	65.2	53	12.50	12.50	59.4	53	16.00	16.00	53.5
53	2.125	53	9.50	6.30	65.2	53	12.50	8.00	59.4	53	16.00	9.50	53.5	53	19.00	12.50	49.1
53	2.125	53	9.50	8.00	65.2	53	12.50	9.50	59.4	53	16.00	12.50	53.5	53	19.00	16.00	49.1
50	2.0	50	8.00	8.00	67.4	50	9.50	9.50	64.0	50	12.50	12.50	58.0	50	16.00	16.00	52.1
50	2.0	50	9.50	6.30	64.0	50	12.50	8.00	58.0	50	16.00	9.50	52.1	50	19.00	12.50	47.6
50	2.0	50	9.50	8.00	64.0	50	12.50	9.50	58.0	50	16.00	12.50	52.1	50	19.00	16.00	47.6
45	1.75	45	8.00	8.00	65.4	45	9.50	9.50	61.8	45	12.50	12.50	55.5	45	16.00	16.00	49.4
45	1.75	45	9.50	6.30	61.8	45	12.50	8.00	55.5	45	16.00	9.50	49.4	45	19.00	12.50	44.8
45	1.75	45	9.50	8.00	61.8	45	12.50	9.50	55.5	45	16.00	12.50	49.4	45	19.00	16.00	44.8
37.5	1.5	37.5	6.30	6.30	66.5	37.5	8.00	8.00	61.6	37.5	9.50	9.50	57.7	37.5	12.50	12.50	51.0
37.5	1.5	37.5	8.00	4.75	61.6	37.5	9.50	6.30	57.7	37.5	12.50	8.00	51.0	37.5	16.00	9.50	44.6
37.5	1.5	37.5	8.00	6.30	61.6	37.5	9.50	8.00	57.7	37.5	12.50	9.50	51.0	37.5	16.00	12.50	44.6
31.5	1.25	31.5	6.30	6.30	63.0	31.5	8.00	8.00	57.7	31.5	9.50	9.50	53.5	31.5	12.50	12.50	46.5
31.5	1.25	31.5	8.00	4.75	57.7	31.5	9.50	6.30	53.5	31.5	12.50	8.00	46.5	31.5	16.00	9.50	39.9
31.5	1.25	31.5	8.00	6.30	57.7	31.5	9.50	8.00	53.5	31.5	12.50	9.50	46.5	31.5	16.00	12.50	39.9
26.5	1.06	26.5	4.75	4.75	65.2	26.5	6.30	6.30	59.2	26.5	8.00	8.00	53.5	26.5	9.50	9.50	49.1
26.5	1.06	26.5	6.30	4.25	59.2	26.5	8.00	4.75	53.5	26.5	9.50	6.30	49.1	26.5	12.50	8.00	41.9
26.5	1.06	26.5	6.30	4.75	59.2	26.5	8.00	6.30	53.5	26.5	9.50	8.00	49.1	26.5	12.50	9.50	41.9
25	1.0	25	4.75	4.75	64.0	25	6.30	6.30	57.9	25	8.00	8.00	52.1	25	9.50	9.50	47.6

TABLE X1.1 *Continued*

Perforated Opening		Medium Light				Medium				Medium Heavy				Heavy			
Standard (metric), mm	USA Industrial Standard, in.	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %
25	1.0	25	6.30	4.25	57.9	25	8.00	4.75	52.1	25	9.50	6.30	47.6	25	12.50	8.00	40.3
25	1.0	25	6.30	4.75	57.9	25	8.00	6.30	52.1	25	9.50	8.00	47.6	25	12.50	9.50	40.3
22.4	0.875	22.4	4.75	4.75	61.7	22.4	6.30	6.30	55.2	22.4	8.00	8.00	49.2	22.4	9.50	9.50	44.7
22.4	0.875	22.4	6.30	4.25	55.2	22.4	8.00	4.75	49.2	22.4	9.50	6.30	44.7	22.4	12.50	8.00	37.3
22.4	0.875	22.4	6.30	4.75	55.2	22.4	8.00	6.30	49.2	22.4	9.50	8.00	44.7	22.4	12.50	9.50	37.3
19	0.750	19	4.75	4.75	58.0	19	6.30	6.30	51.1	19	8.00	8.00	44.9	19	9.50	9.50	40.3
19	0.750	19	6.30	4.25	51.1	19	8.00	4.75	44.9	19	9.50	6.30	40.3	19	12.50	8.00	33.0
19	0.750	19	6.30	4.75	51.1	19	8.00	6.30	44.9	19	9.50	8.00	40.3	19	12.50	9.50	33.0
16	0.625	16	4.00	4.25	58.0	16	4.75	4.75	53.9	16	6.30	6.30	46.7	16	8.00	8.00	40.3
16	0.625	16	4.75	3.35	53.9	16	6.30	4.25	46.7	16	8.00	4.75	40.3	16	9.50	6.30	35.7
16	0.625	16	4.75	4.25	53.9	16	6.30	4.75	46.7	16	8.00	6.30	40.3	16	9.50	8.00	35.7
13.2	0.531	...	...	...	...	...	...	...	...	13.2	4.00	4.75	53.4	13.2	5.55	6.30	44.9
13.2	0.531	...	...	...	...	13.2	4.00	3.35	53.4	13.2	5.55	4.25	44.9	13.2	8.75	4.75	32.8
13.2	0.531	...	...	...	...	13.2	4.00	4.25	53.4	13.2	5.55	4.75	44.9	13.2	8.75	6.30	32.8
12.5	0.500	...	...	...	...	...	...	...	...	12.5	4.75	4.75	47.6	12.5	6.30	6.30	40.1
12.5	0.500	...	...	...	...	12.5	4.75	3.35	47.6	12.5	6.30	4.25	40.1	12.5	8.00	4.75	33.7
12.5	0.500	...	...	...	...	12.5	4.75	4.25	47.6	12.5	6.30	4.75	40.1	12.5	8.00	6.30	33.7
11.2	0.438	11.2	4.00	3.35	49.2	11.2	4.75	4.25	44.7	11.2	6.30	4.75	37.1	11.2	8.00	6.30	30.8
11.2	0.438	11.2	4.75	3.00	44.7	11.2	6.30	3.35	37.1	11.2	8.00	4.25	30.8	11.2	11.20	4.75	22.7
11.2	0.438	11.2	4.75	3.35	44.7	11.2	6.30	4.25	37.1	11.2	8.00	4.75	30.8	11.2	11.20	6.30	22.7
9.5	0.375	9.5	3.15	3.00	51.1	9.5	4.75	3.35	40.3	9.5	5.55	4.25	36.1	9.5	6.30	4.75	32.8
9.5	0.375	9.5	4.75	2.65	40.3	9.5	5.55	3.00	36.1	9.5	6.30	3.35	32.8	9.5	9.50	4.25	22.7
9.5	0.375	9.5	4.75	3.00	40.3	9.5	5.55	3.35	36.1	9.5	6.30	4.25	32.8	9.5	9.50	4.75	22.7
8	0.313	8	2.36	3.00	54.1	8	3.15	3.35	46.7	8	4.00	4.25	40.3	8	4.75	4.75	35.7
8	0.313	8	3.15	2.65	46.7	8	4.00	3.00	40.3	8	4.75	3.35	35.7	8	6.30	4.25	28.4
8	0.313	8	3.15	3.00	46.7	8	4.00	3.35	40.3	8	4.75	4.25	35.7	8	6.30	4.75	28.4
6.7	0.266	...	...	...	...	6.7	2.77	3.00	45.4	6.7	3.15	3.35	42.0	6.7	3.54	4.25	38.8
6.7	0.266	6.7	2.77	1.90	45.4	6.7	3.15	2.65	42.0	6.7	3.54	3.00	38.8	6.7	4.36	3.35	33.3
6.7	0.266	6.7	2.77	2.65	45.4	6.7	3.15	3.00	42.0	6.7	3.54	3.35	38.8	6.7	4.36	4.25	33.3
6.3	0.250	6.3	1.59	1.52	57.8	6.3	3.15	3.00	40.3	6.3	4.00	3.35	33.9	6.3	4.75	4.25	29.5
6.3	0.250	6.3	3.15	1.90	40.3	6.3	4.00	2.65	33.9	6.3	4.75	3.00	29.5	6.3	6.30	3.35	22.7
6.3	0.250	6.3	3.15	2.65	40.3	6.3	4.00	3.00	33.9	6.3	4.75	3.35	29.5	6.3	6.30	4.25	22.7
5.6	0.219	5.6	2.36	1.90	44.9	5.6	3.15	2.65	37.1	5.6	4.00	3.00	30.9	5.6	4.75	3.35	26.5
5.6	0.219	5.6	3.15	1.52	37.1	5.6	4.00	1.90	30.9	5.6	4.75	2.65	26.5	5.6	5.55	3.00	22.9
5.6	0.219	5.6	3.15	1.90	37.1	5.6	4.00	2.65	30.9	5.6	4.75	3.00	26.5	5.6	5.55	3.35	22.9
4.75	0.188	4.75	1.59	1.90	50.9	4.75	2.36	2.65	40.5	4.75	2.77	3.00	36.2	4.75	3.15	3.35	32.8
4.75	0.188	4.75	2.36	1.52	40.5	4.75	2.77	1.90	36.2	4.75	3.15	2.65	32.8	4.75	4.75	3.00	22.7
4.75	0.188	4.75	2.36	1.90	40.5	4.75	2.77	2.65	36.2	4.75	3.15	3.00	32.8	4.75	4.75	3.35	22.7
4	0.156	...	...	...	...	4	1.59	1.90	46.4	4	2.36	2.65	35.9	4	3.15	3.00	28.4
4	0.156	4	1.59	1.21	46.4	4	2.36	1.52	35.9	4	3.15	1.90	28.4	4	4.00	2.65	22.7
4	0.156	4	1.59	1.52	46.4	4	2.36	1.90	35.9	4	3.15	2.65	28.4	4	4.00	3.00	22.7
3.35	0.127	...	...	...	...	3.35	1.19	1.90	49.4	3.35	1.59	2.65	41.7	3.35	2.36	3.00	31.2
3.35	0.127	3.35	1.19	1.21	49.4	3.35	1.59	1.52	41.7	3.35	2.36	1.90	31.2	3.35	3.15	2.65	24.1
3.35	0.127	3.35	1.19	1.52	49.4	3.35	1.59	1.90	41.7	3.35	2.36	2.65	31.2	3.35	3.15	3.00	24.1
2.8	0.109	...	...	...	...	2.80	1.59	1.52	36.9	2.8	2.36	1.90	26.7	2.8	3.54	2.65	17.7
2.8	0.109	2.80	1.59	0.91	36.9	2.80	2.36	1.21	26.7	2.8	3.54	1.52	17.7	2.8	4.00	1.90	15.4
2.8	0.109	2.80	1.59	1.21	36.9	2.80	2.36	1.52	26.7	2.8	3.54	1.90	17.7	2.8	4.00	2.65	15.4
2.36	0.095	...	...	...	...	2.36	1.59	1.21	32.4	2.36	2.36	1.52	22.7	2.36	3.15	1.90	16.6
2.36	0.095	2.36	1.59	0.76	32.4	2.36	2.36	0.91	22.7	2.36	3.15	1.21	16.6	2.36	4.00	1.52	12.5
2.36	0.095	2.36	1.59	0.91	32.4	2.36	2.36	1.21	22.7	2.36	3.15	1.52	16.6	2.36	4.00	1.90	12.5
2	0.078	...	...	...	...	2	0.76	1.21	47.6	2	1.19	1.52	35.7	2	2.00	1.90	22.7

TABLE X1.1 *Continued*

Perforated Opening		Medium Light				Medium				Medium Heavy				Heavy			
Standard (metric), mm	USA Industrial Standard, in.	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %	Opening, mm	Bar, mm	Gage-Steel, mm	Open Area, %
2	0.078	2	0.76	0.76	47.6	2	1.19	0.91	35.7	2	2.00	1.21	22.7	2	2.77	1.52	16.0
2	0.078	2	0.76	0.91	47.6	2	1.19	1.21	35.7	2	2.00	1.52	22.7	2	2.77	1.90	16.0
1.7	0.066	...	...	...	...	...	...	...	...	1.7	1.09	1.21	33.7	1.7	1.50	1.52	25.6
1.7	0.066	...	...	...	...	1.7	1.09	0.76	33.7	1.7	1.50	0.91	25.6	1.7	2.29	1.21	16.4
1.7	0.066	...	...	...	...	1.7	1.09	0.91	33.7	1.7	1.50	1.21	25.6	1.7	2.29	1.52	16.4
1.4	0.055	...	...	...	...	...	...	...	...	1.4	1.02	0.91	30.4	1.4	1.40	1.21	22.7
1.4	0.055	...	...	...	...	1.4	1.02	0.61	30.4	1.4	1.40	0.76	22.7	1.4	1.78	0.91	17.6
1.4	0.055	...	...	...	...	1.4	1.02	0.76	30.4	1.4	1.40	0.91	22.7	1.4	1.78	1.21	17.6
1.18	0.045	...	...	...	...	...	...	...	...	1.18	0.53	0.76	43.1	1.18	0.84	0.91	30.9
1.18	0.045	...	...	...	...	1.18	0.53	0.45	43.1	1.18	0.84	0.61	30.9	1.18	1.14	0.76	23.4
1.18	0.045	...	...	...	...	1.18	0.53	0.61	43.1	1.18	0.84	0.76	30.9	1.18	1.14	0.91	23.4
1	0.039	...	...	...	...	...	...	...	...	...	...	...	...	1	0.68	0.76	32.1
1	0.039	...	...	...	...	...	...	...	...	1	0.68	0.45	32.1	1	1.00	0.61	22.7
1	0.039	...	...	...	...	...	...	...	...	1	0.68	0.61	32.1	1	1.00	0.76	22.7
830 µm	0.033	...	...	...	...	...	...	...	...	...	...	...	...	830 µm	0.81	0.61	23.2
830	0.033	...	...	...	...	...	...	...	...	830 µm	0.81	0.38	23.2	830	1.02	0.45	18.3
830	0.033	...	...	...	...	...	...	...	...	830	0.81	0.45	23.2	830	1.02	0.61	18.3
710	0.027	...	...	...	...	...	...	...	...	...	...	...	...	710	0.76	0.45	21.2
710	0.027	...	...	...	...	...	...	...	...	710	0.76	0.30	21.2	710	1.00	0.38	15.6
710	0.027	...	...	...	...	...	...	...	...	710	0.76	0.38	21.2	710	1.00	0.45	15.6
600	0.023	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
600	0.023	...	...	...	...	...	...	...	...	...	...	...	...	600	0.81	0.30	16.4
600	0.023	...	...	...	...	...	...	...	...	...	...	...	...	600	0.81	0.38	16.4
500	0.020	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
500	0.020	...	...	...	...	...	...	...	...	...	...	...	...	500	0.63	0.30	17.7
500	0.020	...	...	...	...	...	...	...	...	...	...	...	...	500	0.63	0.38	17.7

X2. MATERIALS USED FOR INDUSTRIAL PERFORATED PLATE AND SCREENS

X2.1 With a few exceptions, any material normally furnished in a flat sheet or plate can be successfully perforated, but the thickness of the material may have to be adjusted to keep the tonnage required for perforating within the limits of the perforating supplier's equipment.

X2.2 In selecting the material, it is recommended that the user consider the factors required in the end use of his product, such as abrasion resistance, corrosion resistance, impact resistance, weldability, formability, appearance, and so forth. When a suitable material has been selected, the perforating supplier should be contacted to determine the feasibility of supplying the required complete specification at reasonable cost.

X3. CHECKING AND CALIBRATING PERFORATED METAL AND SCREENS

X3.1 In checking specifications of industrial perforated plate it is necessary to determine three dimensions: (*1*) the dimension of the opening, (*2*) the dimensions of the bar, and (*3*) the thickness of the plate.

X3.2 *Dimensions of Openings:*

X3.2.1 For openings from 5 in. (125 mm) to ¼ in. (6.3 mm), measure the opening using a steel rule graduated to 1/64 in. or 0.5 mm or use a vernier inside caliper graduated to 0.001 in. or 0.02 mm. Since any perforated opening has an inherent taper, care should be taken to make all measurements from the surface of the plate that was uppermost during the punching operation (smoothside).

X3.2.2 For openings from ¼ in. (6.3 mm) to 0.127 in. (3.35 mm) measure the opening using a steel rule graduated to 1/64 in. or 0.5 mm.

X3.2.3 For openings from 7/64 in. (2.80 mm) to 0.020 in. (500 µm), measure the opening using a taper gage similar to that shown in Fig. X3.1.

FIG. X3.1 Kwik-Chek Hole Gage

X3.3 *Dimensions of Bars:*

X3.3.1 Bars from 1⅛ in. (28.5 mm) to 3/32 in. (2.36 mm) may be checked with a steel rule graduated to 1/64 in. (0.4 m m) or with a vernier outside caliper graduated to 0.001 in. (0.02 mm) if the nibs will fit into the adjacent openings.

X3.3.2 Bars from 0.090 in. (2.29 mm) to 0.021 in. (0.53 mm) may be checked by use of a steel rule graduated in decimals of an inch or in metric dimensions. The procedure used is to line up the scale along a straight row of openings.

X3.3.3 Set the end of the scale exactly at the edge of a given opening. Follow along the scale until the same edge of another opening lines up exactly with another graduation on the scale. Count the number of openings in this dimension and divide this dimension by the number of included openings. From this figure, subtract the diameter of the opening and the resultant figure will be the dimension of the average bar along that straight row of openings. In order to check the consistency of the bar dimensions in all directions, it is necessary to rotate the scale 60° and repeat the above procedure along the new straight row of openings.

X3.4 *Thickness of Plate*—Thickness of plate may be checked with a steel rule graduated to 1/64 in. or 0.5 mm or with a micrometer graduated to 0.001 in. or 0.02 mm.