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AMETCO
MANUFACTURING CORPORATION

PERFORATED

STEEL • STAINLESS • ALUMINUM • PLASTIC

Immediate Shipment From Stock
or
Custom Fabricated to Your Design

AMETCO MANUFACTURING CORPORATION

PERFORATED

Ametco's Perforated Metal and Plastic gives you, the architect, the freedom of choice to design projects the way you want them. Although perforated material has been in use for over 100 years, each day new applications are being designed to meet the ever-changing demands of today's world. Perforated metal is being used for a wider variety of applications than ever before. New construction projects are using perforated as acoustical wall and ceiling panels, hand rail infill panels, sun shading devices, point-of-purchase displays and many others, limited only by your imagination. The choice of metal or plastics not only allows the architect to choose the type of material, but also the choice of perforation patterns and percentage of open area required for specific projects. Perforations not only reduce the weight of the material, but also permit you to control the airflow, amount of visibility and sound levels.

Ametco's computer-assisted perforating presses give you, the designer, far greater freedom than ever before.

AMETCO MANUFACTURING CORPORATION

PERFORATING STANDARDS

The following standards are intended to aid designers, engineers, and buyers of perforated products in selecting the correct item for their application. For simplicity, Ametco has adopted the general terminology used by the Industrial Perforators Association. For closer tolerances than described in this bulletin, please contact Ametco's sales department for details.

Sheet and Plate Size Specification

Standard stock size sheets and plates
(Typical: 36" x 96", 36" x 120", 48" x 96", 48" x 120")
The width and length will be **standard mill shearing** plus any stretch of the material by perforating, unless otherwise specified. For carbon steel sheets or plates, our tolerances are the same as the American Iron and Steel Institute.

Sheets and plates resheared after perforating
Length and width tolerances for:
thickness lighter than 1/8" = ±1/32"
thickness 1/8" to 3/16" incl. = ±1/16"
thickness heavier than 3/16" to 1/2" incl. = ±1/8"
thickness heavier than 1/2" = check with our Sales Dept.

If special re-square tolerances are required, consult our Sales Department

Thickness of Metals

Steel – Use "Manufacturer's Standard Gauge for Steel Sheets"

Stainless Steel – Use the U.S. Standard Gauge Table

Monel – Use the U.S. Standard Gauge Table

Copper, Brass or Muntz – Use the B&S Gauge Table

Aluminum – Use the B&S Gauge Table

Perforations

Round Perforations – Staggered (60 degree pattern) is standard. Variations include the 45 degree staggered, and Straight Line Pattern.

Square Perforations – Staggered Pattern or Straight Line Pattern.

Slotted Perforations – Side Staggered, End Staggered, or Straight Lines. Slotted Perforations will be round end slots; specify if square end slots are required.

Custom Perforations – Consult Ametco.

Spacing of Perforations

Spacing for large perforations will be designated by either **Centers** of Perforations, or by the **Open area** required. Spacing for small perforations will be designated by either **Centers**, or **Open area**, or if more practical, by the **Number of Perforations to the Square Inch.**

Pattern of Perforations (see page 4)

Unfinished End Pattern – As a result of tool design, some specifications of staggered pattern perforations yield a pattern that appears incomplete at both ends of the sheet. This is an industry standard.

Finished End Pattern – As a result of tool design, some specifications of staggered pattern perforations yield a completed pattern on both ends of the plate.

Staggered Perforations, both Round and Square – The pattern stagger is normally in the short dimension of the sheet. Holes in a straight row pattern are normally parallel to long dimension of sheet.

Slotted Perforations – Slots can be furnished parallel with either the length or width of the sheet in most cases.

Margins (see page 4)

Perforated stock size sheets and plates.

The long side of a sheet will be supplied with minimum margins. The short side of a sheet will have either minimum margins or no margins.

Sheets and plates resheared after perforating.

Special margins are available, but they must carry a tolerance within the limits of the perforating tool.

Unfinished end pattern is standard in the industry.

Flatness of Sheets and Plates

Perforated sheets or plates can, generally, be finished to AISI flatness tolerances. However, if your job contains one of the following conditions you should consult Ametco's Sales Department.

- Perforated sheet has extra wide margins.
- Blank areas required within the perforated area.
- Perforated sheet has a large percentage of open area.
- Heavy gauge metal in relation to the size of the perforation.
- Special alloys.
- Stretcher leveled sheets.

Customer Supplied Materials

Material furnished by the customer must be referred to as "Perforating and Processing Only." All materials furnished must be of perforating quality. The **weight** of material furnished refers to the weight before perforating.

Additional Services

If work in addition to perforating is to be performed, please submit detailed information and sketches to Ametco.

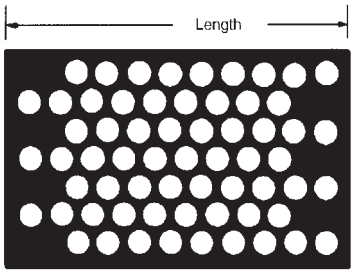
PERFORATED PATTERNS

End Patterns

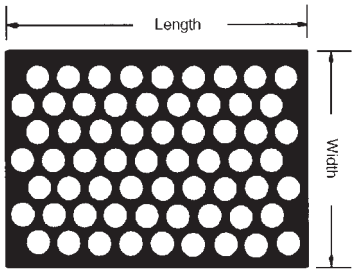
On staggered pattern perforations, the end patterns will either be “finished’ or “unfinished” depending on the tooling available. An unfinished end pattern is **Standard;** however, a finished end is available as a non-standard item. Consult Ametco for details.

“Unfinished” end patterns are standard on some staggered pattern perforations, meaning the hole pattern appears incomplete at the end of the sheet.

“Finished” end patterns are non-standard on most staggered pattern perforations, meaning the hole pattern is complete at the end of the sheet.



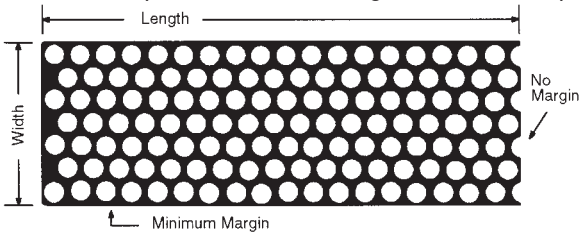
Standard
Unfinished
end pattern



Non-standard
Finished
end pattern

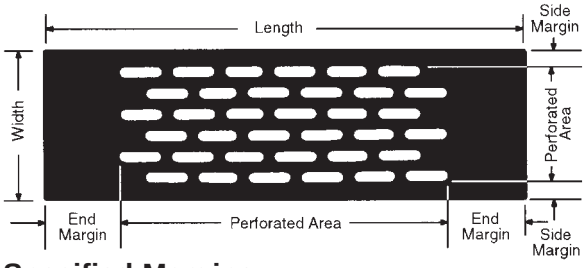
Margins

The “margin” on a perforated sheet or plate refers to the distance from the edge of the sheet to the first perforation along the same dimension. “No margin” refers to the last row or set of perforations extending off the sheet or plate.



Minimum Margins

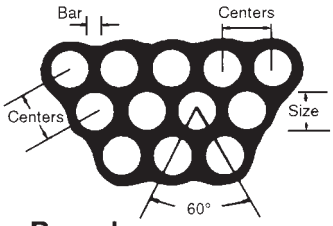
Perforated stock size sheet or plate with minimum margins



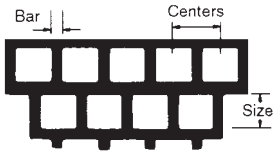
Specified Margins

Sheet or plate resheared after perforating with margins specified

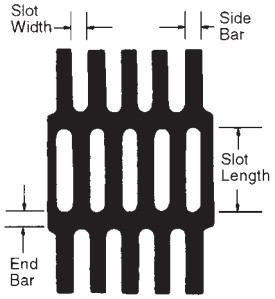
Staggered Patterns



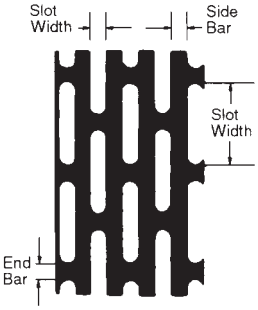
Round
Standard



Square
Standard

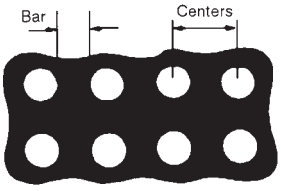


Slotted
End Stagger

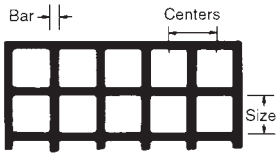


Slotted
Side Stagger

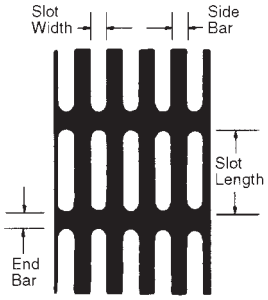
Straight Line Patterns



Round
Optional

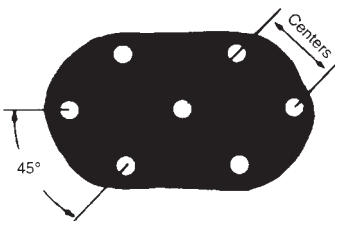


Square



Slotted

45 Degree Pattern



Round
Optional

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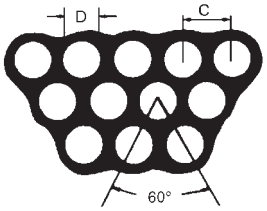
PERCENTAGE OF OPEN AREA

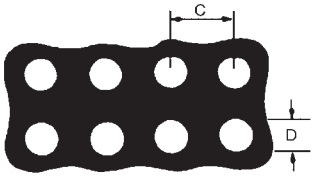
Calculate the amount of open area from the following formulas:

Staggered Round Holes



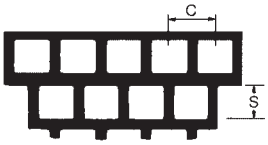
$$\frac{D^2 \times 90.69}{C^2} = \%$$

Straight Round Holes



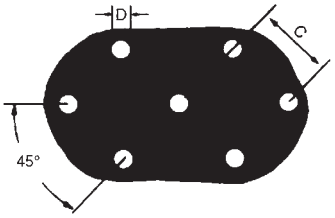
$$\frac{D^2 \times 78.54}{C^2} = \%$$

Square Holes (Straight or Staggered)



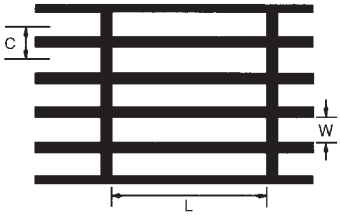
$$\frac{S^2}{C^2} = \%$$

45° Staggered Centers Pattern (Special)



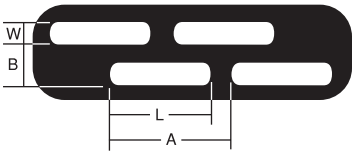
$$\frac{157.08\ D^2}{S^2} = \%$$

Square End Slot



$$\frac{L \times W}{C^2} \times 100 = \%$$

Round End Slots (Staggered)



L = Length of slot
W = Width of slot
A = End center
B = Side center

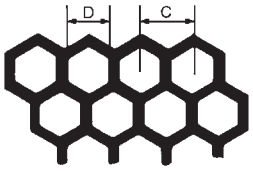
$$\text{Free Area} = \frac{W(L - .215W)}{AB} \times 100$$

Round End Slots (Straight Line)

L = Length of slot
W = Width of slot
A = End center
B = Side center

$$\text{Free Area} = \frac{W(L - .215W)}{AB} \times 100$$

Hexagon



$$\frac{99.9 \times D^2}{C} = \%$$

For hexagon pattern use this holes per square inch calculation:

$$\text{H.P.S.I.} = \frac{\%\ \text{Open Area}}{78.54 \times D^2}$$

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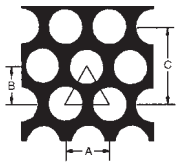
PERFORATED CENTER DATA

60 degree Center data in 64ths

The 60 degree center data is the standard perforated pattern. Using the following dimensions, you can calculate the proper amount of flow or open air in a perforated sheet or plate.

A – Center – the distance from the center of one hole to the center of the next hole.
B – Height of the triangle
C – Layout straight line



Standard 60 Degree Center Data

Center (A) Fraction	Center (A) Decimal	Holes Per Square Inch	Height of Triangle (B)	Layout Straight Line (C)
3/64	.0468	528	.04059	.0811
1/16	.0625	296	.0541	.1081
5/64	.0781	189	.0676	.1352
3/32	.0938	132	.08118	.1624
7/64	.1094	97	.09465	.1893
1/8	.125	74	.1082	.2165
9/64	.1406	59	.1217	.243
5/32	.1562	47	.1353	.2705
11/64	.1718	40	.1488	.297
3/16	.1875	33	.1624	.3248
13/64	.2031	28	.1759	.352
7/32	.2187	24	.1894	.378
15/64	.2343	21	.2092	.406
1/4	.250	18.5	.2165	.433
17/64	.2656	16.4	.2300	.4600
9/32	.2812	14.5	.2435	.486
19/64	.2968	13.1	.2570	.5140
5/16	.3125	11.8	.2706	.540
21/64	.3281	10.7	.2841	.5682
11/32	.3437	9.8	.2976	.595
23/64	.3593	9.0	.3111	.6222
3/8	.375	8.25	.3248	.650
25/64	.390	7.6	.3382	.6764
13/32	.406	7.0	.3518	.704
27/64	.4218	6.5	.3653	.7306
7/16	.4375	6.05	.378	.756
29/64	.4531	5.6	.392	.785
15/32	.4687	5.25	.406	.812
31/64	.4843	4.9	.419	.839
1/2	.500	4.6	.433	.866
17/32	.531	4.1	.460	.920
9/16	.5625	3.65	.4875	.975
19/32	.5937	3.45	.514	1.028
5/8	.625	2.95	.541	1.082
11/16	.6875	2.45	.595	1.190
3/4	.750	2.05	.650	1.300
13/16	.8125	1.75	.704	1.408
7/8	.875	1.5	.756	1.516
15/16	.9375	1.31	.812	1.625
1	1.00	1.15	.866	1.732
1–1/16	1.0625	1.0	.920	1.840
1–1/8	1.125	.91	.975	1.950
1–3/16	1.187	.82	1.030	2.060
1–1/4	1.250	.74	1.082	2.164
1–5/16	1.312	.67	1.1624	2.324
1–3/8	1.375	.61	1.190	2.380
1–7/16	1.437	.56	1.243	2.486
1–1/2	1.500	.51	1.300	2.600
1–5/8	1.625	.44	1.408	2.816
1–3/4	1.750	.38	1.516	3.032
2	2.00	.29	1.732	3.464

AMETCO
MANUFACTURING CORPORATION

PERFORATED METAL

VISIT OUR WEB SITE AT WWW.AMETCO.COM
FOR COMPLETE LISTING OF STOCK PERFORATED MATERIAL

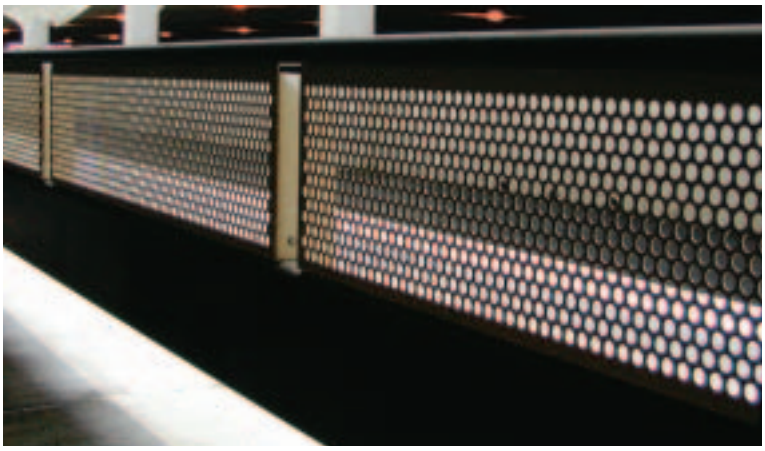
POWDER COATING

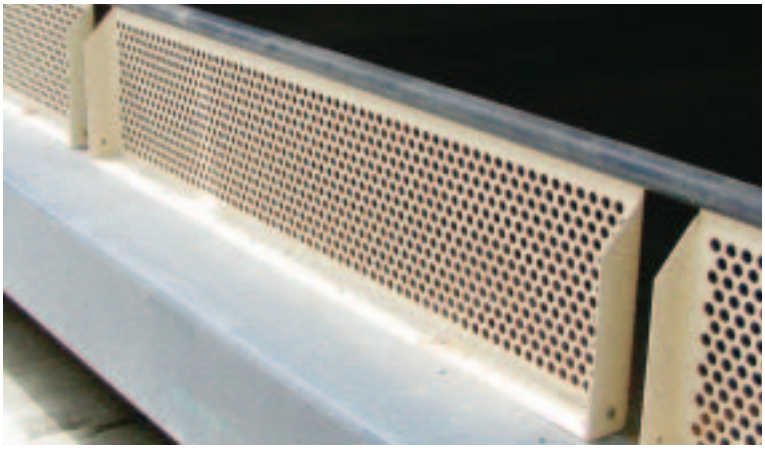
Ametco offers a polyester powder coating to add color and elegance to harmonize with any environment. This powder coating, over whichever material you select, is available in 15 standard colors. Performance properties of the polyester coating are as follows. SALT SPRAY RESISTANCE: (ASTM-B-117) Bonderite 1000 steel panels, in a scored condition, exhibit no undercutting after 500 hours in 5% salt spray testing at 95 degrees F and 95% humidity. No rusting or blistering on panel face. Under the same conditions after 1000 hours the panels showed less than 3/16" undercutting. WEATHERABILITY: (ASTM D822) After one year exposure in South Florida with panels facing south and tilted at a 45 degree angle, a high gloss white polyester coating retains 88% of its gloss (gloss readings obtained on washed panels). No film failure. Ametco Mfg. Corp. offers a 10-year Warranty on the polyester coating not to crack, peel or blister for a period of 10 years. Accidental damages, defects resulting from improper installation and damage from vandalism or abuse are not included. Warranty is limited to a prorated value of the coating, not to exceed the original value of the coating. Or, at Ametco's discretion, re-coating the panel but not to include labor for removal or reinstallation.

Available colored coatings

White	Cal Gray	Cream
Moss Green	Red Baron	Bronze Mat
Light Ivory	Black Velvet	Pale Green
Light Blue	Safety Yellow	Blue Streak
Charlie Brown	Safety Orange	+Silver

+ Clear coat required for weather resistance. Additional charges for clear coat.
Note: The reprint of the color chart may vary from actual finish color.





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