

Perforated Metal

Perforations

- **Round Perforations:** Staggered (60 degree pattern) is standard. Variations include 45 degree staggered, and straight line pattern.
- **Square Perforations:** Staggered 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.
- **Other Perforations:** Available upon request.

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

- **Staggered Perforations, both Round & Square:** Direction of the stagger will normally be the short dimension of the sheet. Straight row of hole is normally parallel to long dimension of sheet.
- **Slotted Perforations:** The long dimension of the slots can be furnished with either the width or length of the sheet in most cases.

Margins

- **Perforated Stock Size Sheets & Plates:** The long sides of the sheet will be supplied with minimum margins. The short sides of the sheet will have either minimum margins or no margins.
- **Sheets & Plates Re-sheared after Perforating:** Special margins are available to specifications but they must carry a tolerance within the limits of the perforating tool.
- **Unfinished end pattern is standard in the industry.**

Flatness of Sheets & Plates

In the majority of requirements, perforated sheets or plates can be furnished to AISI flatness tolerances. Before ordering any of the following special requirements, discuss then with our sales department:

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

Guidelines for Minimum Hole Size/Minimum Bar Width

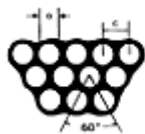
The rule of thumb for perforating is that the hole diameter should not be less than the thickness of the material. The closer to a 1-to-1 ratio, the higher the probability of tool failure and the greater the precautions necessary to avoid it. Modifications can be made in

certain instances at additional costs. For stainless steels and similar higher strength materials, it is preferable to specify at least three thickness gauges thinner than hole diameter.

The same general rule applies to bar width. The bar width should be greater than material thickness because of the increased number of punches and therefore, increased perforation tonnage. The bar width can be adjusted at increased costs.

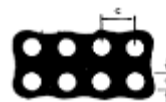
Open Area Calculations

Staggered Round Holes



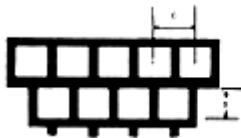
$$\frac{D^2 \times 90.69}{C^2} = \%$$

Straight Round Holes



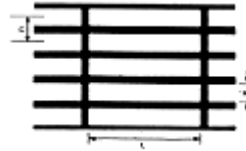
$$\frac{D^2 \times 78.54}{C^2} = \%$$

Square Holes (Straight or Staggered)



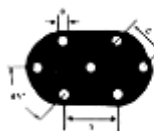
$$\frac{S^2 \times 100}{C^2} = \%$$

Square End Slot



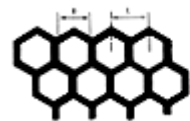
$$\frac{L \times W}{C^2} \times 100 = \%$$

45° Staggered Centers Pattern (Special)



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

Hexagon



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

To Find the Holes per Square Inch:

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