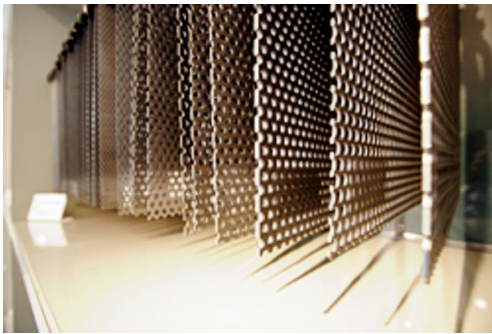


## About Perforated Metal

### What is Perforated Metal?

Perforated metal is a metal sheet that is punched with holes in a uniform pattern.  
It is used in many fields.

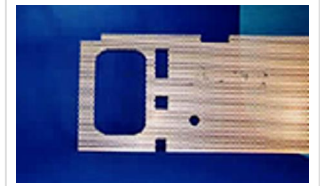


### Where is it used?

#### ■ Covers

Machinery covers, ornamental covers, speaker grills, storage, radiator grills, stove grills, protecting covers

[Click HERE to see examples.](#)



#### ■ Automotive Use

Air filters, oil filters, mufflers, front grills, interior and exterior parts

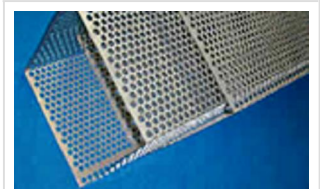
[Click HERE to see examples.](#)



#### ■ Noise and Heat Insulation

Heat insulation panels, noise insulation panels for construction sites, vehicles and vessels

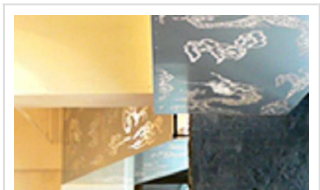
[Click HERE to see examples.](#)



#### ■ Architectural Applications

Wall paneling, partitioning, ornamentals, lighting equipment, exterior panels, fixtures, chairs, tables, ceilings

[Click HERE to see examples.](#)



#### ■ Strainers

For production of sugar, pulp and paper, flour, oil refining, distillation columns

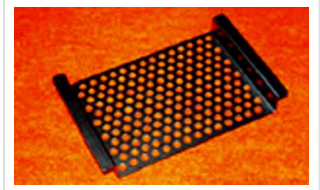
[Click HERE to see examples.](#)



## ■ Residential Applications

Boilers, ventilators, kitchen furniture, planters, shields for microwave ovens, dust boxes

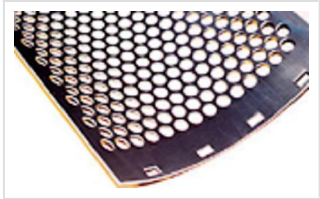
[Click HERE to see examples.](#)



## ■ Seives

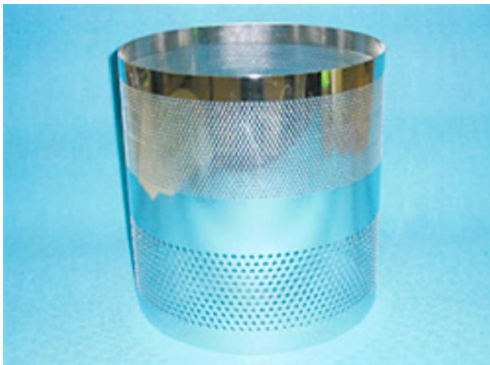
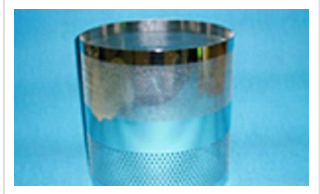
For screening grains, seeds, coal, sands, gravels and chemical products

[Click HERE to see examples.](#)



## ■ Granulation and Milling

For production of granular and tablet pharmaceuticals, cube sugar, instant coffee, agricultural chemicals, fertilizers, chemical products

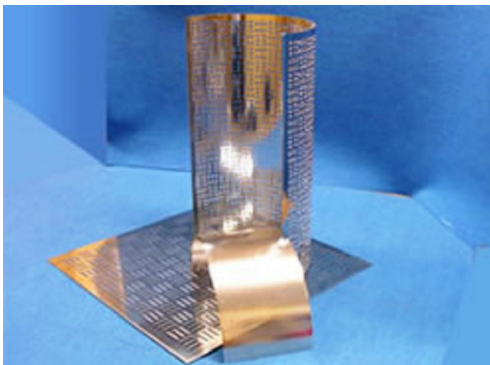


### ■ For granulators

Used for granulating solid materials to specific size and shape desired in particular applications.

### ■ Applications

Production of granular and tablet pharmaceuticals, cube sugar, instant coffee, agricultural chemicals, fertilizers, chemical products, etc.



### ■ For Mills

Used in machines for physically crushing and milling solid materials.

### ■ Applications

Manufacture of drugs, agricultural chemicals, fertilizers, industrial chemicals, etc.

**Perforated metals for granulators and mills are produced from materials and with plate thicknesses and hole sized suitable to particular applications.**

## ■ Centrifugal Separators

For food, chemicals, pharmaceuticals, pulp and paper, mining and ceramic industries



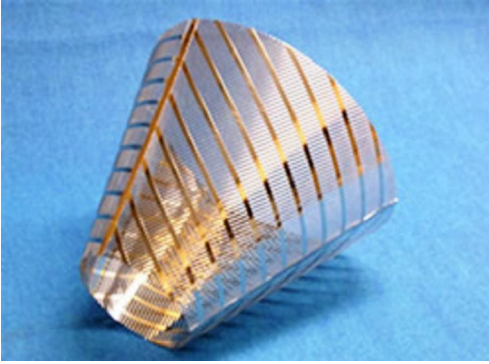
### ■ For Centrifugal Separators

Used for separating crystals from a filtrate in chemical industry.

### ■ Applications

Production process in food, chemicals, paper making, pharmaceuticals, mining, and ceramic industries as well as sewage treatment, waste treatment and industrial waste water treatment.

**Sectorial or conical shapes can be formed upon request.**



[Please contact for more information.](#)

Please make full use of our fabrication services.

### What is it made of?

.Rolled Steel for General Structure(SS)

.Cold-Rolled Steel (SPCC-SD)

.Hot-Rolled Steel (SPHC-P)

.Galvanized Steel(SGCC)(SGHC)

.High-Tensile Steel

.Stainless Steel(SUS)

.Aluminum(ALP)

● Galvanized Steel

.Electro-Galvanized Steel(SECC)(SEHC)

.Hot-Dip Zinc-Coated Steel(SGCC)(SGHC)

.Surface-Treated Steel

.Colored Steel

.Brass(BSP)

.Copper(CUP)

.Titanium(Tip)

.Polyvinyl Chloride

.Rubber

● Aluminium-Coated Steel(Alstar)

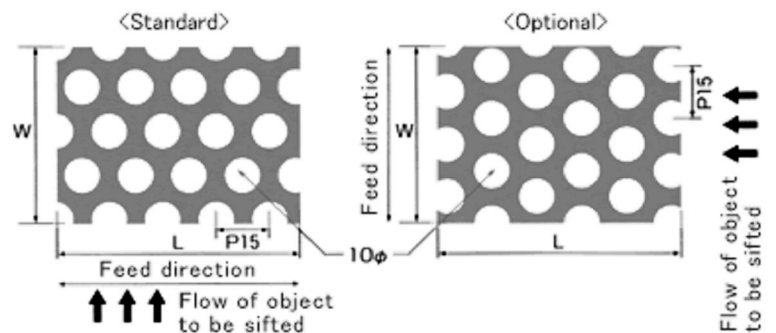
### Feed Direction

\*In the case of sieves, please specify direction the of flow of object to be sifted, because the through-put might be increased depending on the feed direction.

#### ■Round hole

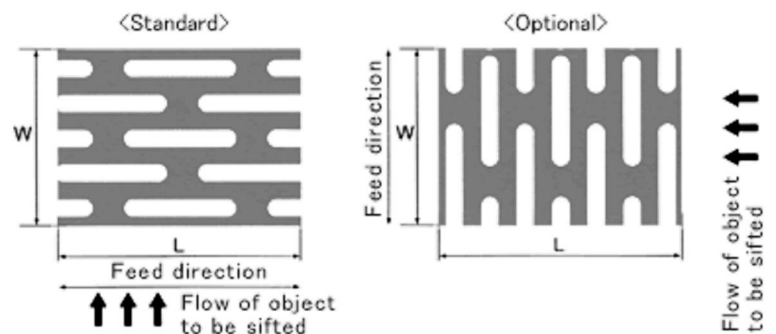
<Example>

D=10 P=15 60 deg. staggered



#### ■Round end slot

Please specify the orientation of slots in relation to the width and length of perforated metal sheet.



(1) Die layout

■Standard                      ■Step-and-a-half                      ■Two-steps-and-a-half

Feed direction

Standard layout: The pattern at the beginning and end of the sheet is complete, providing the finished ends.

Optional layouts: When it is difficult to use the standard layout due to a hole size in relation to a plate thickness and/or a pitch required, such optional layout as a step-and-a-half and two-steps-and-a-half layouts is used. In such case, the pattern of holes at the beginning and end of the sheet is incomplete, as shown above, providing unfinished ends.

(2) Staggered holes

■Standard layout

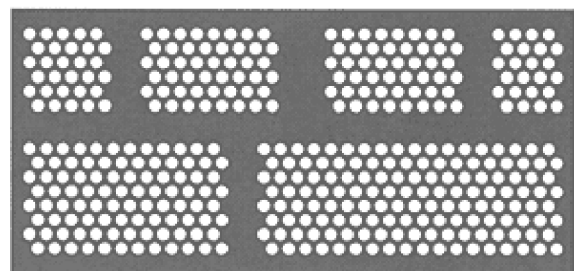
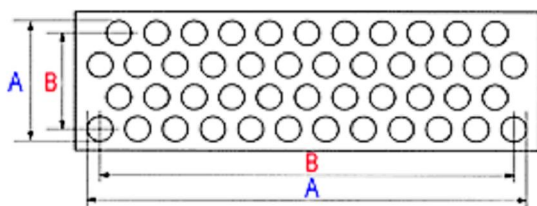
■Step-and-a-half layout

Die layout                      Die layout

As shown above, a perforating die layout for a staggered formation includes an even number of rows of punches in a die. The patterns at the beginning and end of the sheet are asymmetric.

Perforated areas (zone perforation)

For zone perforation, please specify A or B below.



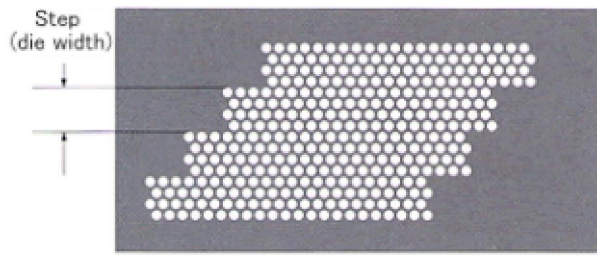
A: Distance between the top end of the first hole and the bottom end of the last hole

B: Distance between centers of the first and last holes

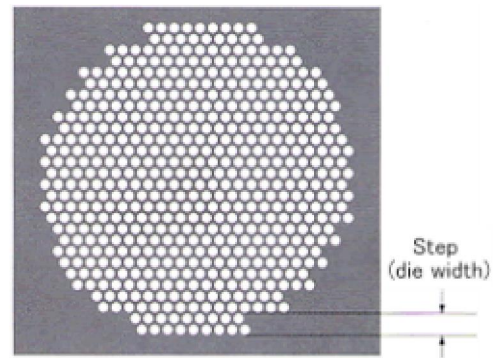


## Slant and circular processing

### ■ Four-row die layout

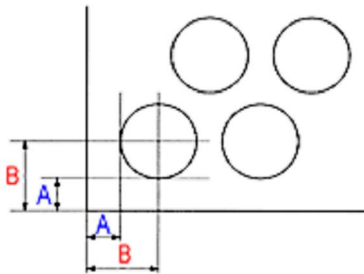


### ■ Two-row die layout

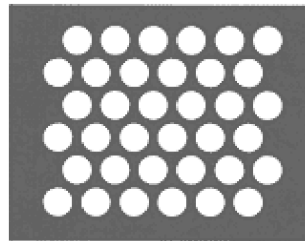


Steps of die width are caused in slant and circular processing as illustrated above.  
(Steps are less noticeable in the case of single-row die layout.)

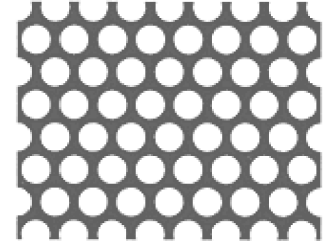
## Margins



### ■ With side and end margins

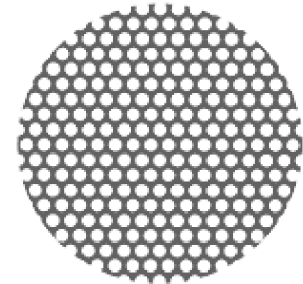
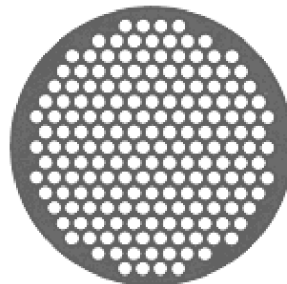


### ■ Without margins



**A:** Distance between the end of the sheet and end of the nearest hole  
**B:** Distance between the end of the sheet and center of the nearest hole

Please note there are two kinds of dimensions.

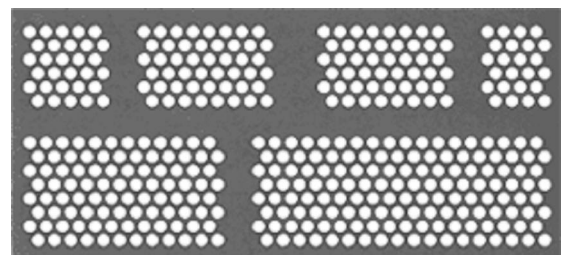
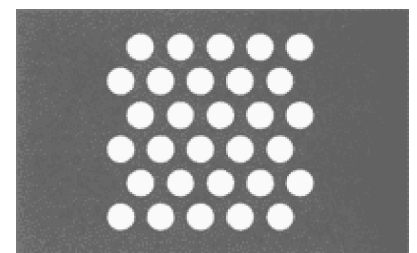


## Flatness (leveling)

All products have an excellent flatness, because they are subjected to corrective roll leveling after perforating process. Due to reaction of the forces accumulated in the perforated metal sheets during processing, the sheets may be slightly strained.

This should be noted especially in the following cases:

- A Margins are wide.
- B A blank area is present between perforated areas.
- C The pitch is low. (The percentage of open area is high.)
- D The sheet to be processed is relatively thick.
- E The sheet to be processed is very long.
- F Stainless steel or a special material is to be processed.
- G A margin must be left in a disk-shaped plate.



## Cuttig

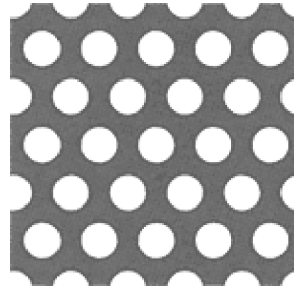
● In the case of cutting from standard size, the final product should have either:

- (1) no margin on any sides; or
- (2) a margin on some sides.

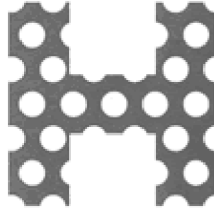
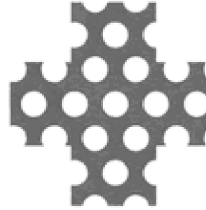
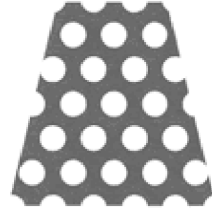
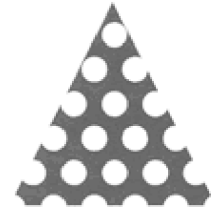
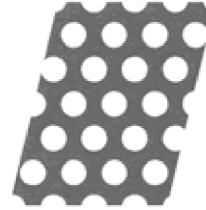
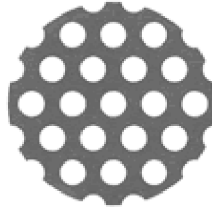
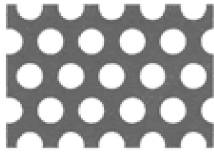
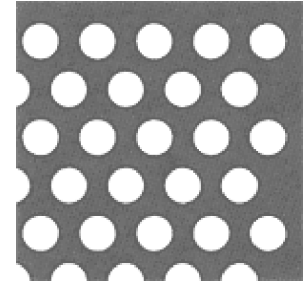
Please let us know if (1) is specifically required.

Cutting to a specified size is also available.

(1) No margin on any sides



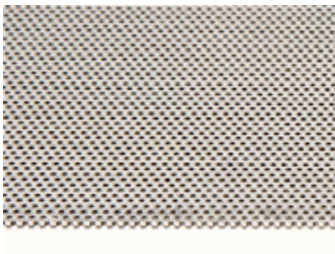
(2) Margin on some sides



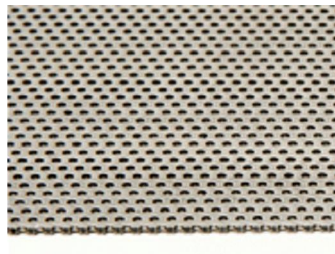
Shown above are only examples of various cutting patterns available.

## SUPERPUNCHING™

 Click to enlarge.\* **Not shown in full scale.**



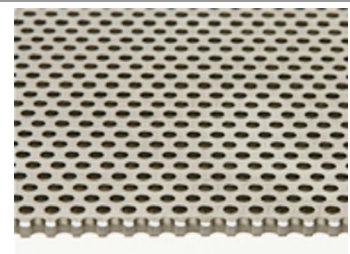
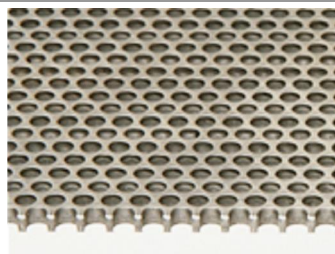
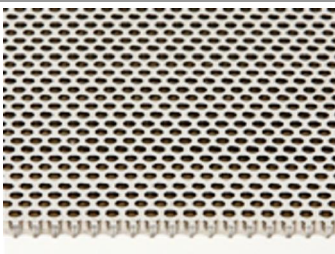
SUS304MK  
(Open Area 23%)  
t1×D0.75×P1.5 60deg. Staggered



SUS304L  
t1.5×D1.2×P2.4 60deg. Staggered



SUS304L  
(Open Area 22.6%)  
t2×D1.5×P3 60deg. Staggered

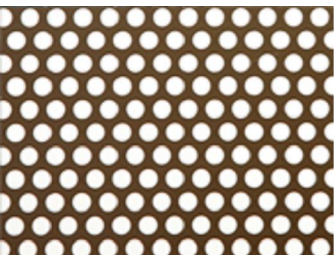


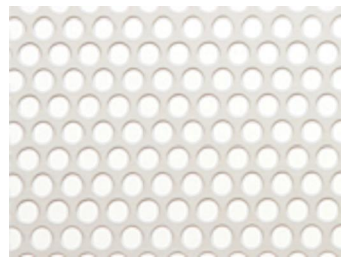
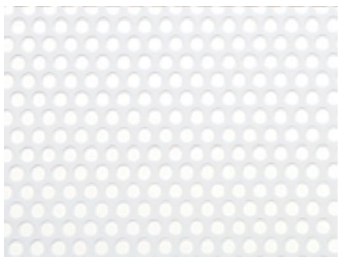


|   |   |   |
|---|---|---|
| <p>SUS304L<br/>(Open Area 40.3%)<br/>t3×D2×P3 60deg. Staggered</p>                  | <p>SUS304L<br/>t3×D3×P4 60deg. Staggered</p>                                      | <p>SUS304L<br/>(Open Area 32.6%)<br/>t4×D3×P5 60deg. Staggered</p>                  |
|    |  |  |
| <p>SUS304L<br/>(Open Area 32.6%)<br/>t5×D3×P5 60deg. Staggered</p>                  | <p>A5052P<br/>(Open Area 30.2%)<br/>t6×D3.1×P5 Straight</p>                       | <p>SUS304L<br/>t6×D5×P8 60deg. Staggered</p>  |
|    |  |  |
| <p>A5052P<br/>(Open Area 18.7%)<br/>t7×D5×P11 60deg. Staggered</p>                  | <p>SUS304<br/>(Open Area 40.3%)<br/>t9×D10×P15 60deg. Staggered</p>               | <p>SS400 Galvanized<br/>t12×D12×P23.5 Straight</p>                                  |
|  |   |   |
| <p>SS400<br/>(Open Area 15.7%)<br/>t16.0×D10×P24 60deg. Staggered</p>               |   |   |

Aluminum and Anodized Aluminum

 Click to enlarge.\* **Not shown in full scale.**

|   |   |   |
|---|---|---|
|  |  |  |
| <p>Bronze<br/>Delustered(BN)<br/>2.0T×D8×P12 60deg. Staggered</p>                   | <p>Black<br/>Delustered(KN)<br/>2.0T×D8×P12 60deg. Staggered</p>                    | <p>Bronze<br/>Luster(BC)<br/>2.0T×D8×P12 60deg. Staggered</p>                         |



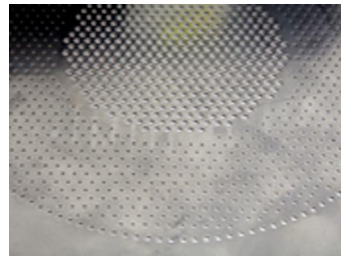
Silver  
Delustered(CN)  
2.0T×D8×P12 60deg. Staggered

Silver  
Luster(B1ED)  
2.0T×D8×P12 60deg. Staggered

Stained(Pale).**淡**  
Delustered(S**淡**N)  
2.0T×D6×P9 60deg. Staggered

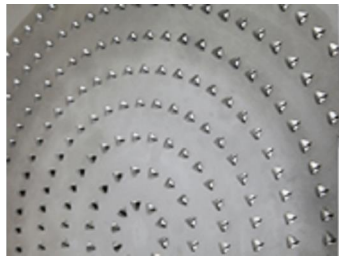
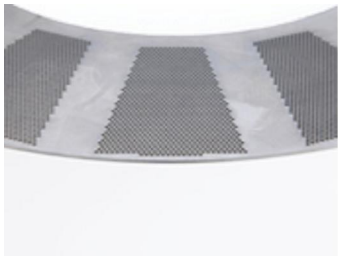
## Other Products

 Click to enlarge.\* **Not shown in full scale.**




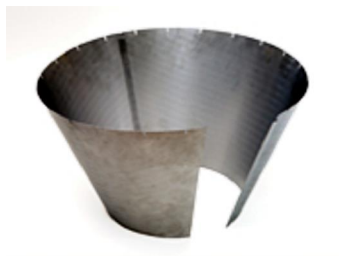
SUS304  
t1.5×Regular Hexagon12×  
P13 60deg. Staggered

t2×D7/H1.3×P10



Formed products can be supplied as well.


 Click to enlarge.\* **Not shown in full scale.**



## Comparison of Cutting Methods

Compare finished perimeters.



 Click to enlarge.\* **Not shown in full scale.**



Laser Beam Cutting

SUS304 0.5t-12t

\* Please ask for other thicknesses.



Nibbling

SUS304 0.5t-3t

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Okutani Ltd. KOBE JAPAN 

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Web site: <http://www.okutanikanaami.co.jp/en/>