GENERAL INFORMATION

MANUFACTURING PROCESS

What is expanded metal?

Expanded metal is an extraordinarily versatile material – one with thousands of uses. It comes in four basic types, and it has four primary areas of application.

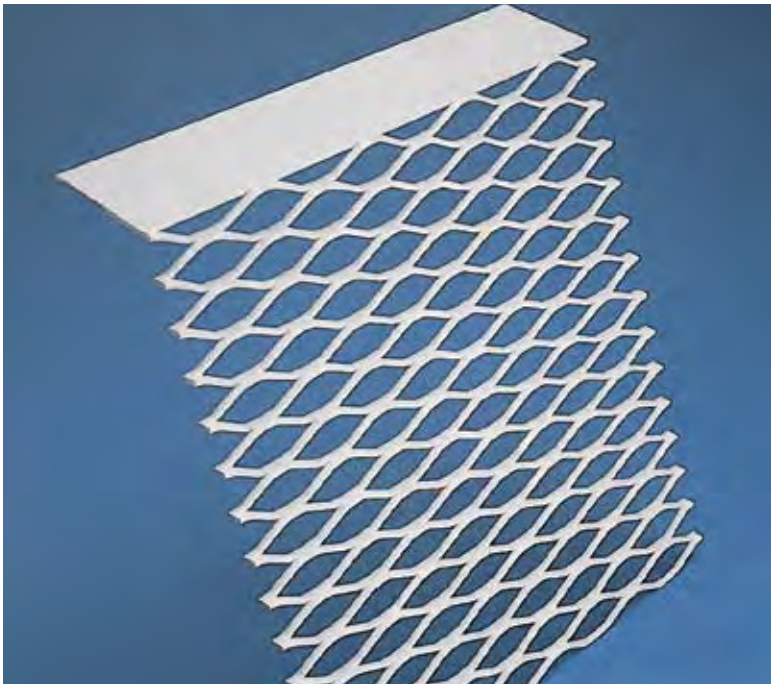
Basic types are raised (or standard), flattened, Gridwalk, and architectural (or decorative) meshes. The major areas of use are for enclosure, protection, support and decoration.

Expanded metal products are produced from solid sheets or plates of carbon, galvanized and stainless steel, as well as aluminium and a variety of alloys of copper, nickel, silver, titanium and other metals.

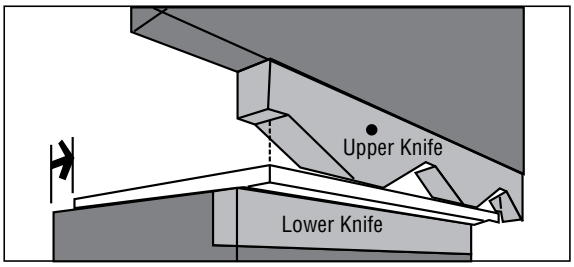
In an expanding process, the sheet or plate is simultaneously slit and stretched longitudinally – expanding the slits into diamond-shaped holes of uniform size, shape and regularity.

No metal is lost in the expanding process. Moreover, the final product is stronger per kilogram and lighter per metre than the original sheet or plate. The strands and knuckle of the diamond-shaped trusses form an angle to the original plane of the sheet, adding strength and rigidity.

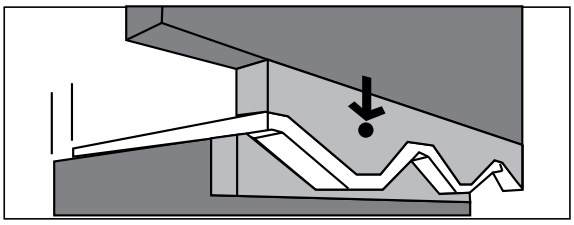
Because it is made from a solid sheet of metal, it can never unravel. The slender metal strands forming the open diamonds permit light, heat, air, liquid and sound to pass through – yet present a virtually impenetrable barrier to intruders. Even if cut at one or more points, the remaining strand intersections continue to hold.



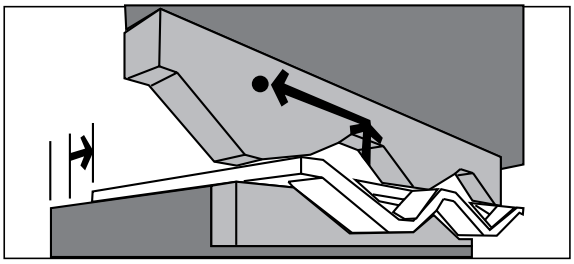
While the diamond design may vary, this illustration shows how a solid sheet of material becomes expanded metal without waste.
The result of this expanding operation is a product that is lighter and stronger than the original sheet or plate from which it came.



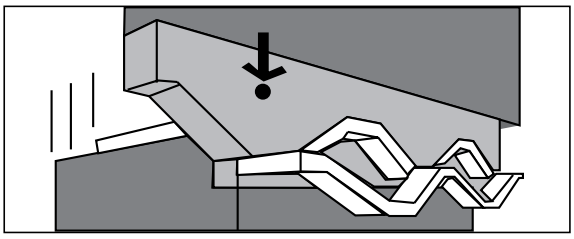
The sheet or plate advances between the knife one strand width beyond the lower.



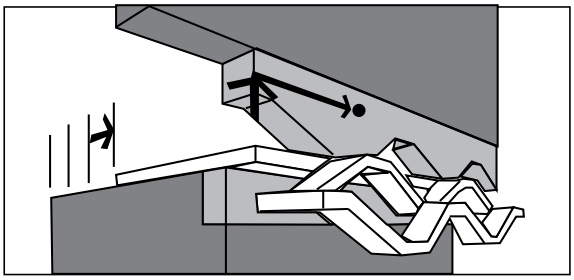
The upper knife descends to form one half of the diamond design. (SWD)



The upper knife then ascends fully and indexes one half diamond to the side (LWD) as the material advances another strand width.



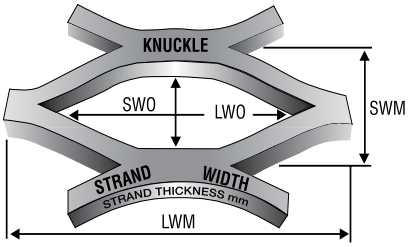
The upper knife descends again to form another row of half diamonds to complete the design.

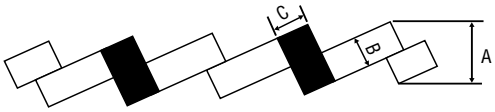


The upper knife ascends again, indexing (LWD) to its original starting position. The cycle continues until the sheet of expanded metal is complete.

GENERAL INFORMATION

RAISED EXPANDED METAL



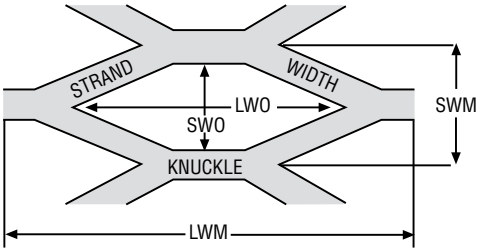


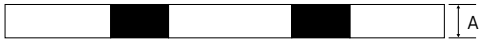
"A" Overall thickness "B" Strand Width
"C" Strand thickness

Raised Expanded Metal

Expanded metal as it comes off the machine. The strands and knuckles are set at a uniform angle to the plane of the sheet. This adds strength and rigidity, allows air circulation, and distributes the load on the metal to the supporting frames.

FLATTENED EXPANDED METAL





"A" Overall thickness and strand thickness

Flattened Expanded Metal

Manufactured by passing the raised expanded sheet through a cold roll reducing mill. By flattening the sheet, the knuckles and strands are turned down to produce a smooth and flat surface, reducing the overall thickness and elongating the diamond pattern (LWM).

LWM:
The distance from a point on a knuckle to a corresponding point on the following knuckle measured across the Long Way. This distance is also sometimes referred to as "pitch" LWM.

SWM:
The distance from a point on a knuckle to a corresponding point on the following knuckle measured across the Short Way. This distance is also sometimes referred to as "pitch" SWM.

LWO:
Long Way of Opening, the distance measured from the inside of the knuckle across to the inside of the knuckle LWO.

SWO:
Short Way of Opening, the distance measured from the inside of the knuckle across to the inside of the knuckle SWO.

Knuckle:
The intersection of two strands and it is always the width of two strands.

Overall Thickness:
The actual measurement of the thickness of the mesh measured at the knuckle. (Dimension 'A')

Open Area:
The percentage of open area given is approximate. For meshes of the conventional type with strands inclined from the plane of the sheet, two figures are shown:

a. For normal incidence i.e. when viewed with the sheet held at right angles to the line of vision.
b. For maximum incidence i.e. when viewed with the sheet slanting so that the thickness of strand is parallel to the line of vision, thus presenting a greater free area. For flattened meshes the normal incidence figure only is applicable.

Guillotining:
An operation carried out after expanding to cut expanded sheets exactly to size (within the guillotining tolerance). Shearing may leave "Stags" on a mesh.

Stag Ends:
Incomplete strands existing beyond the joints of a mesh either LWD, SWD or both.

Galvanising:
Hot dipped galvanising carried out to **AS/NZS4680:2006.** Distortion and windowing effect can occur to small steel range through to 15 profiles. Windowing effect is particularly prevalent on flattened meshes.

Material:
Expanded metal meshes are manufactured from materials that conform to the following standards; **AS/NZS1594:1997, AS/NZS1595:1998, AS/NZS1734:1997, AS1397:1993.**

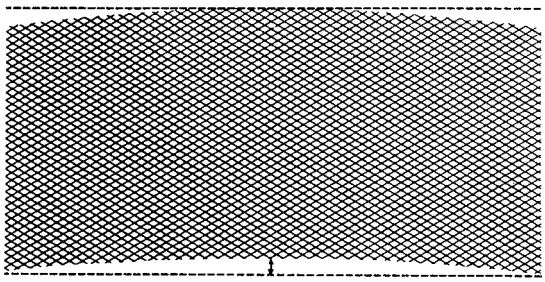
Design:
Locker Group walkway and platform range meet the requirements; **AS1657:1992, AS4100:1998.**

GENERAL INFORMATION

Camber

Bow in sheet. Measured by placing a straight edge along the concave side of the sheet parallel to LW, touching both ends of the sheet. The maximum distance between the edge of the expanded metal and the straight edge is the camber.

Standard expanded metal: 5mm per 1 metre of length. Flattened expanded metal: 7mm per 1 metre of length.

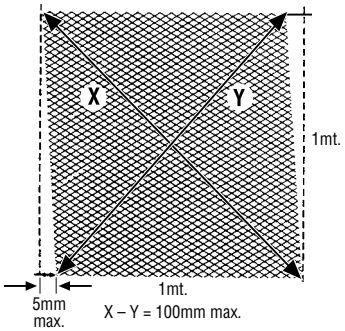


Out of Square

Expanded metal sheets are not perfectly square as manufactured. Stock size sheets and machine run non-standard size sheets will be produced to the following tolerances.

TOLERANCE:

Maximum out of square on edge of sheet 5mm per 1 metre of length OR 10mm on diagonals per square metre. Sheet must be re-squared by shearing on all sides for squareness.



Drawings are exaggerated to best illustrate

General Tolerances:

Reference to sheet size, strand width, thickness and weight are approximate only. Whilst every effort is made for these figures to be accurate, it must be understood that the specification of goods manufactured and supplied is subject to our standard tolerances. The company policy is one of continuous development: we therefore reserve the right to alter specifications, etc., without notice.

Stock Sheet Tolerances:

Raised Profiles		
Small Mesh Range LW: -0 + 3.5 mm SW: -0 + 1.5% per metre	Large Mesh Range LW: -0 + 10 mm SW: -0 + 2% per metre	Walkway LW: -0 + 25 mm SW: -0 + 50 mm

Flattened Profiles
LW: -0 + 140 mm SW: -5 + 25 mm

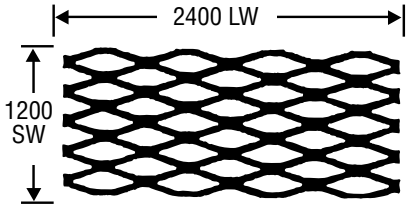
Order Procedure

When ordering Expanded Metals, give complete profile specifications to avoid possible error.

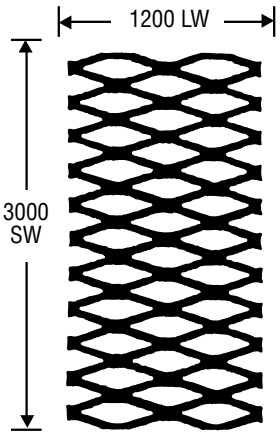
When ordering please state:

1. **Mesh reference**
2. **Quantity of sheets**
3. **Sheet Size (LW dimensions first – see diagram)**
4. **Type of material e.g. steel, aluminium, etc.**
5. **Finish, e.g. untreated or galvanised**
6. **Tolerances (if required)**
7. **Where applicable specify raised or flat**

EXAMPLE A
12-16
2400 LW x 1200 SW



EXAMPLE B
Gridwalk WK 3419G
1200 LW x 3000 SW



These examples show the importance of specifying which dimensions are LW and SW.

DISCLAIMER
Products furnished shall be subject to standard manufacturing variations, seller warrants that the materials furnished shall conform to specifications ordered by buyer. Seller makes no other warranties, express or implied and specifically excludes all warranties of merchantability and fitness for a particular purpose.
Buyer's exclusive remedy and seller's sole liability shall be limited to seller's replacing materials that do not conform to order. The seller shall not be liable for damages in connection with a sale for an amount exceeding the purchase price of the materials sold.
The seller shall not be liable for consequential damages, or for any loss or damage directly or indirectly arising.