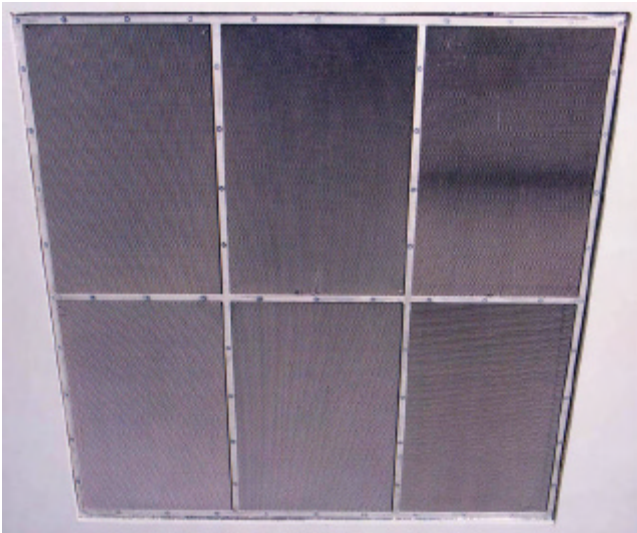


# ALUMINIUM HONEYCOMB



Aluminium honeycomb used as RF shielded air vents



Honeycomb being expanded

## Description - Type 5052 High Strength honeycomb

5052 is a hexagonal cell honeycomb material used principally as a shear carrying core in light weight adhesively bonded sandwich structures.

The 5052 aluminum alloy used is a fully hard H191 temper 2.5% magnesium alloy conforming to MIL-A-81596. Except where indicated, the 5052 foil is treated against corrosion using a chromate conversion coating process.

5052 is available in a wide range of cell sizes and densities allowing versatility in design of sandwich structures and other applications.

## Description - Type 3003 Commercial Grade

3003 is a hexagonal cell honeycomb material used principally as a shear carrying core in light weight adhesively bonded sandwich structures, and is suitable for a wide range of other applications.

Type 3003 is available in a number of cell sizes and densities allowing versatility in design of sandwich structures with minimum weight by maximum stiffness and buckling resistance.

### Key Features

Good strength and stiffness to weight ratio.

High fatigue resistance.

Good vibration damping characteristics.

Non-combustible.

Can be machined to complex profiles.

Exhibits uniform crushing characteristics.

Compatible with a wide range of skin materials.

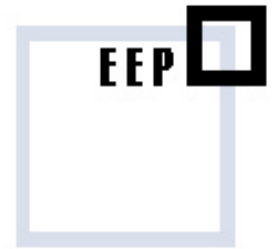
### European EMC Products Limited

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# ALUMINIUM HONEYCOMB

## Applications

In Sandwich Panels

- Building cladding panels
- Commercial vehicle panels
- Railway floors, doors, interiors, fairing panels
- Boat hulls and interior panels & furniture
- Racing car chassis and body panels
- Cable car structural panels
- Specialist flight cases
- Helicopter blades.
- Aircraft engine structures.
- Aircraft doors and hatches.
- Aircraft floor panels.
- Racing car structures and aero foils.
- Energy absorbers

Non sandwich panels

- Energy absorption
- Flow straighteners for air or fluids
- Heat exchangers
- Light collimation
- Sacrificial profile cutting beds (Water / Laser)

## Material Properties

### Fire

Classified as non-combustible when tested to IMO resolution A.472(XII).  
2.3 3/8 15(3003) has been classed a 'non-flammable' (incombustible) when tested in accordance with method 1 of the French Merchant Navy Bill of 19.05.80.

### Temperature

The honeycomb in a sandwich panel will withstand temperatures of up to 200°C although the properties will reduce as the temperature increases.

### Machining

Both grades of honeycomb can be supplied and then machined to form complex surfaces with the use of high speed routers. Some single curvature contours can be machined on to a un-expanded slice before expansion.

### Bonding

Non volatile adhesives should be used for bonding skins to the honeycomb to prevent possible build up of volatiles during cure. This may be alleviated by using perforated honeycomb.

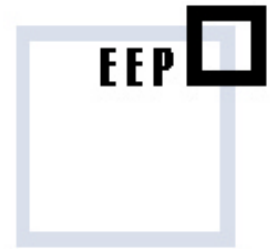
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# ALUMINIUM HONEYCOMB

## Material Form

Honeycomb is supplied in flat sheets where the length and width are determined by the block dimensions (usually 1400 length x 3000 width). The slice thickness is cut to customer requirements. The material can be supplied expanded or in the un-expanded form for expansion by the customer. In this case, the length and width dimensions given are those in the expanded condition.

T - Thickness of sheet required. Designated by customer.

W - Width of material (expansion direction). Generally 3000mm.

L - Length of ribbon direction of material. Generally 1400mm

## Corrosion Protection

Honeycomb is normally supplied with a corrosion protection coating. Non-treated foil can only be supplied by special order.

## Perforating

Pin holes in the honeycomb allow gasses to be vented from the cells. Perforated honeycomb is only available to special order.

## Tolerances

Tolerance on length and width -0/+50mm, thickness +/- 0.13mm, density +/- 10%

## Dimensions

For example 1400 x 3000 x 12.7mm

1400 Length or Ribbon direction, 3000 Width or direction of expansion, 12.7 Thickness

## Specifying

The material type and dimensions must be defined as follows:-

For example **5.2 1/4 25P(3003)T - UNX**

5.2 Density in lb/ft<sup>3</sup>

1/4 Cell size in inches

25 Nominal foil thickness (inches 0.0025" 2.5 thou)

P Specifies perforated foil (limited range) OPTIONAL

(3003) Specifies honeycomb type

T Corrosion protected foil

UNX For unexpanded slices

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# ALUMINIUM HONEYCOMB

## Range of 3003 aluminium honeycomb

Designation	Sheet Size (mm)	Max Thickness (mm)	Min Thickness (mm)
1.8 3/4 25	1400x3000	150	3
2.3 3/8 15	1400x3000	150	3
3.4 1/4 15	1400x3000	150	3
3.7 3/8 25	1400x3000	150	3
5.2 1/4 25	1250x2500	150	3
5.2 1/4 25	1400x3000	150	3

## Range of 5052 aluminium honeycomb

Designation	Sheet Size (mm)	Max Thickness (mm)	Min Thickness (mm)
1.8 3/4 25	1400x3000	150	3
2.3 1/4 10	1400x3000	150	3
3.1 3/16 10	1400x3000	150	3
3.4 1/4 15	1400x3000	150	3
3.7 3/8 25	1400x3000	150	3
3.9 1/2 40	1400x3000	150	3
4.3 1/4 20	1400x3000	150	3
4.4 3/16 15	1400x3000	150	3
4.5 1/8 10	1400x3000	150	3
5.2 1/4 25	1400x3000	150	3
5.4 3/8 40	1400x3000	150	3
5.7 3/16 20	1400x3000	150	3
6.9 3/16 25	1400x3000	75	3
7.9 1/4 40	1400x3000	75	3

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