

PAA-SHH®

Phosphoric Acid Anodized Aluminum Honeycomb

Description

PAA-SHH is an aerospace grade 5052 aluminum honeycomb materials produced from phosphoric acid anodized aluminum sheets. Phosphoric acid anodize gives an excellent corrosion resistance to aluminum alloy, and the surface treatment system with a corrosion prohibited primer provide the greatest bondability and fatigue strength under critical conditions such as hot & wet condition. PAA-SHH is available in a wide selection of cell sizes and foil thickness.

Features

- Aerospace structural grade honeycomb
- Superior corrosion protection compared to standard aluminum honeycomb
- Enhanced bondability and fatigue strength
- Highest strength and rigidity to weight for sandwich construction
- Available in 5052 aluminum alloys

Applications

PAA-SHH has been developed to enhance the properties of standard aluminum honeycomb against the corrosion. The enhanced corrosion protection of PAA-SHH can provide a potential to reduce a life cycle cost or/and to reduce manufacturing cost occurred for additional processes to improve corrosion protection and durability of the standard aluminum honeycomb. For this reason, PAA-SHH will be an alternative for the standard aluminum honeycomb being used for the bonded assemblies of aircrafts.

Type Designation

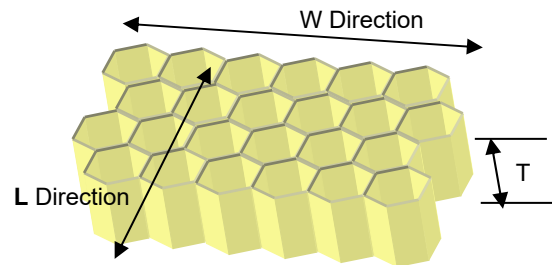
PAA-SHH is designated as follows:

Material – Cell Size – Alloy – Foil Thickness
 Example: PAA-SHH 1/8-5052-001

Where: PAA-SHH – PAA aluminum hexagonal
 1/8 – 1/8 inch cell size
 5052 – 5052 aluminum alloy
 001 – .001" nominal foil thickness

Dimensional Nomenclature

L = Ribbon Direction, or Width
W = Length, or Perpendicular to the Ribbon
T = Core Thickness, or Cell Depth



Special Cell Configuration and Processing

In addition to the hexagonal cell shapes, PAA aluminum honeycomb is available in the flexible cell configuration in 5052 alloy. Please refer to Document# TD-SFH-01 for PAA-SFH aluminum flexible honeycomb. PAA-SHH is also available machined to customer's requirements including flat pieces cut to size.

Standard Dimensions

PAA-SHH is available in the following standard dimensions with the tolerances as indicated.

Alloy	L Direction	W Direction	T Minimum
5052	42" +2/-0"	96" +4/-0"	0.120"

Tolerances on cut thickness are as follows:

- ±0.005" for 0.120" to 4.000" Thickness
- ±0.062" for 4.001" and over

Note: 1) T maximum and T minimum to be confirmed with Showa Sales Office.
 2) Longer L and W directions are available. Please contact Showa Sales Office.

Standard Specifications

Specification

PAA-SHH meets the requirements of Military Specification MIL-C-7438 where applicable.

Density: Tolerance of the density of PAA-SHH will be plus or minus 10 percent of nominal density shown in the table below.

Mechanical Properties: Table below lists PAA-SHH product line and mechanical properties.

PAA-SHH 5052 Type Mechanical Properties

Designation	Density (pcf)	Compressive Strength (psi)	Plate Shear			
			Strength (psi)		Modulus (psi)	
			L Direction	W Direction	L Direction	W Direction
1/8-5052-001	4.5	405	285	168	51.2	25.0
1/8-5052-0015	6.1	680	455	272	76.8	36.8
1/8-5052-002	8.1	1100	670	400	112.0	50.4
3/16-5052-001	3.1	215	155	90	32.0	16.0
3/16-5052-0015	4.4	385	280	160	50.4	24.8
3/16-5052-002	5.7	600	410	244	69.6	33.6
3/16-5052-0025	6.9	800	540	328	90.1	42.0
3/16-5052-003	8.1	1100	670	400	112.0	50.4
1/4-5052-001	2.3	130	100	57	21.6	11.2
1/4-5052-0015	3.4	250	180	105	36.0	18.4
1/4-5052-002	4.3	370	265	155	48.8	24.0
1/4-5052-0025	5.2	510	360	200	61.0	30.5
1/4-5052-003	6.0	660	445	265	75.2	36.0
1/4-5052-004	7.9	1050	650	390	109.6	48.8
3/8-5052-001	1.6	70	60	32	12.8	6.4
3/8-5052-002	3.0	200	145	85	31.2	15.6
3/8-5052-0025	3.7	290	205	120	40.3	20.2
3/8-5052-003	4.2	360	255	150	48.0	23.0
3/8-5052-004	5.4	540	380	228	65.6	32.0
1/2-5052-004	3.9	304	214	125	47.1	21.7

NOTE:

- 1) Above values are the properties when tested per MIL-STD-401 using 0.625" core thickness.
- 2) Above values are the minimum values and guaranteed values for the average of five specimens of honeycomb when tested per MIL-STD-401.

CONTACT for MORE INFORMATION

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