

SAH[®]

Aramid Fiber/Phenolic Resin Honeycomb

Description

SAH is produced with Nomex[®] aramid fiber sheets. These sheets are bonded by a thermosetting adhesive at the nodes. After expanded to the hexagonal cell or over-expanded cell configuration, it is dipped in a heat resistant phenolic resin and cured in an oven. SAH is available at the required core thickness since the cutting to thickness is done according to customer's request.

Features

- Small Cell Size at Low Density
- Damage Resistant
- Fire Resistant (Self-Extinguishing)
- Water and Fungus Resistant
- Excellent Dielectric Properties
- Good Surface for Bonding

Applications

SAH has been widely accepted throughout the aerospace industry and several commercial areas as a very tough, environmentally resistant core material in sandwich panels. It has been designed and used in flat and contoured shapes, with a wide variety of facing material and adhesives, and it has extensive service in both structural and non-structural parts.

Type Designation

SAH is designated as follows:

Material – Cell Size – Density

Example: SAH 1/8-3.0

Where: SAH – Showa Aramid Honeycomb

1/8 – 1/8 inch cell size

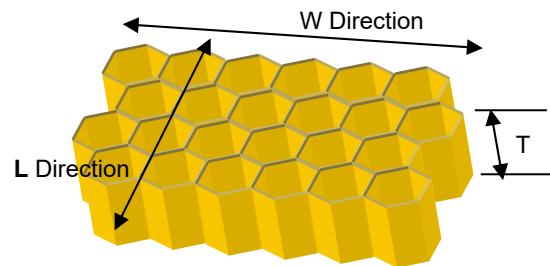
3.0 – 3.0 lbs/ft³ Density

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, SAH is available in the OX cell shapes. The OX cell is an over-expanded hexagonal cell that provides a rectangular cell shape, and provides suitable formability. SAH is also available machined to customer's requirements including flat pieces cut to size.

Standard Dimensions

SAH is available in the following standard dimensions with the tolerances as indicated.

| Cell Configuration | L Direction | W Direction | T Maximum | T Minimum |
|--------------------|-------------|-------------|-----------|-----------|
| Hexagonal Cell | 48" ± 2" | 96" ± 6" | 32" | 0.125" |
| OX Cell | 38" ± 2" | 96" ± 6" | 20" | 0.125" |

Tolerances on cut thickness are as follows:

±0.006" for 0.120" to 2.000" Thickness

±0.010" for 2.001" to 4.000" Thickness

±0.120" 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

Configuration: Tolerance of the cell size will be plus or minus 10 percent of nominal cell size, that is determined by averaging measures of 10 consecutive cell length at 6 random locations. The double cell wall will be permitted providing the density is within the tolerance. The unbonded nodes will be permitted providing the minimum mechanical properties are conformable.

Density: Tolerance of the density will be plus or minus 10 percent of nominal density, that is determined by measuring on a minimum of 18 cubic inch.

Mechanical Properties: Table below lists SAH product line and mechanical properties.

Mechanical Properties at Room Temperature

| Designation | Compressive | | | | Plate Shear | | | | | |
|-----------------|----------------|------|------------|------|----------------|------|------------|----------------|------|------------|
| | Strength (psi) | | | | L Direction | | | W Direction | | |
| | Bare | | Stabilized | | Strength (psi) | | Mod. (ksi) | Strength (psi) | | Mod. (ksi) |
| | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Typ. | Min. | Typ. |
| SAH 1/8-1.8 | 110 | 70 | 130 | 85 | 90 | 65 | 3.7 | 50 | 36 | 2.0 |
| SAH 1/8-3.0 | 300 | 180 | 330 | 250 | 180 | 155 | 7.0 | 95 | 85 | 3.5 |
| SAH 1/8-4.0 | 500 | 330 | 560 | 430 | 245 | 200 | 9.1 | 140 | 98 | 4.7 |
| SAH 1/8-5.0 | 755 | 580 | 860 | 660 | 325 | 235 | 12.0 | 175 | 120 | 5.5 |
| SAH 1/8-8.0 | 1565 | 1095 | 1700 | 1260 | 490 | 355 | 16.0 | 250 | 190 | 7.8 |
| SAH 1/8-9.0 | 1700 | 1400 | 1800 | 1600 | 500 | 370 | 17.0 | 270 | 240 | 9.0 |
| SAH 3/16-3.0 | 300 | 180 | 330 | 250 | 150 | 130 | 5.0 | 95 | 67 | 3.5 |
| SAH 1/4-1.5 | 90 | 45 | 95 | 55 | 75 | 45 | 3.0 | 35 | 23 | 1.5 |
| SAH 3/16 OX-1.8 | 105 | 70 | 105 | 85 | 60 | 45 | 1.2 | 60 | 42 | 1.8 |
| SAH 3/16 OX-3.0 | 365 | 230 | 400 | 270 | 115 | 90 | 3.0 | 125 | 90 | 6.0 |
| SAH 1/4 OX-3.0 | 350 | 225 | 370 | 270 | 100 | 85 | 1.8 | 100 | 85 | 3.6 |

NOTE:

- 1) Above is the properties when tested per MIL-STD-401 using 0.500" core thickness.
- 2) The typical values represent the mean average of relatively large number of test values from many blocks of honeycomb.
- 3) The minimum values are guaranteed values for the average of five specimens of honeycomb when tested at ambient conditions per MIL-STD-401.

CONTACT for MORE INFORMATION

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