



PRODUCT DATA

ALH-SG / 5052

STRUCTURAL GRADE ALUMINIUM HONEYCOMB

UNICEL® ALH-SG Is a structural grade aluminum honeycomb available in a wide variety of cell sizes and foil gauges. This type of material is the most commonly used aluminum honeycomb in aerospace and similar industries due to its high strength-to-weight ratio and its ready availability. The wide variety of strengths allows the designer to select the optimum properties for a specific application.

TYPICAL PROPERTIES:

- Structural grade honeycomb
- Corrosion resistant
- Readily available
- Excellent thermal conductor
- Close tolerances available
- nonhydroscopic
- Machinable
- Good electrical conductor
- High-strength alloy
- Wide variety of applications
- Moderate cost
- Wide variety of cell sizes

UNICEL® ALH-SG Is an expandable aluminum honeycomb made from special, full hard AA5052 alloy aluminum foil. The foil is chemically cleaned and coated for corrosion resistance prior to the application of the node-bond adhesive. Additional perforations and/or slotting are available. This material is shipped from our factories in blocks, slices and expanded sheets or in specially processed form such as CNC machining.

Manufactured by:



ALH-SG 5052
TYPICAL PROPERTIES
5052 ALLOY (FULL HARD)

| DESIGNATION ALH-SG- U.S. | Density/ Cell S.I. | COMPRESSIVE STRENGTH (BARE) MPa | COMPRESSIVE STRENGTH (STABILIZED) MPa | Comp Mod MPa | CRUSH- STRENGTH MPa | SHEAR "L" MPa | SHEAR "L" Mod MPa | SHEAR "W" MPa | SHEAR "W" Mod MPa |
|--------------------------------|--------------------------|--|--|--------------------|---------------------------|---------------------|----------------------------|---------------------|----------------------------|
| 4.5-1/8-.001-5052 | 3.2-72.1 | 3.6 | 3.8 | 1034.2 | 1.8 | 2.3 | 482.6 | 1.5 | 213.7 |
| 6.1-1/8-.0015-5052 | 3.2-97.7 | 6.0 | 6.3 | 1654.7 | 3.1 | 3.5 | 675.7 | 2.2 | 282.7 |
| 8.1-1/8-.002-5052 | 3.2-129.7 | 9.7 | 10.1 | 2413.1 | 5.2 | 5.0 | 930.8 | 3.1 | 372.3 |
| 3.1-3/16-.001-5052 | 4.8-49.7 | 1.9 | 2.0 | 517.1 | 0.9 | 1.4 | 310.3 | 0.9 | 151.7 |
| 4.4-3/16-.0015-5052 | 4.8-70.5 | 3.4 | 3.6 | 999.7 | 1.7 | 2.3 | 468.8 | 1.5 | 206.8 |
| 5.7-3/16-.002-5052 | 4.8-91.3 | 5.3 | 5.6 | 1516.8 | 2.7 | 3.2 | 620.5 | 2.1 | 265.4 |
| 6.9-3/16-.0025-5052 | 4.8-110.5 | 7.4 | 7.8 | 1965.0 | 4.0 | 4.1 | 786.0 | 2.6 | 319.9 |
| 8.1-3/16-.003-5052 | 4.8-129.7 | 9.7 | 10.1 | 2413.1 | 5.2 | 5.0 | 930.8 | 3.1 | 372.3 |
| 2.3-1/4-.001-5052 | 6.4-36.8 | 1.1 | 1.2 | 310.3 | 0.5 | 1.0 | 220.6 | 0.6 | 111.7 |
| 3.4-1/4-.0015-5052 | 6.4-54.5 | 2.2 | 2.3 | 620.5 | 1.0 | 1.6 | 344.7 | 1.0 | 165.5 |
| 4.3-1/4-.002-5052 | 6.4-68.9 | 3.3 | 3.5 | 965.3 | 1.6 | 2.2 | 455.1 | 1.4 | 205.5 |
| 5.2-1/4-.0025-5052 | 6.4-83.3 | 4.6 | 4.8 | 1310.0 | 2.3 | 2.8 | 565.4 | 1.8 | 244.1 |
| 6.0-1/4-.003-5052 | 6.4-96.1 | 5.9 | 6.1 | 1620.3 | 3.0 | 3.4 | 661.9 | 2.2 | 279.2 |
| 1.6-3/8-.001-5052 | 9.5-25.6 | 0.6 | 0.7 | 137.9 | 0.3 | 0.6 | 144.8 | 0.3 | 75.8 |
| 2.3-3/8-.0015-5052 | 9.5-36.8 | 1.1 | 1.2 | 310.3 | 0.5 | 1.0 | 220.6 | 0.6 | 111.7 |
| 3.0-3/8-.002-5052 | 9.5-48.1 | 1.8 | 1.9 | 482.6 | 0.8 | 1.4 | 296.5 | 0.9 | 146.2 |
| 3.7-3/8-.0025-5052 | 9.5-57.7 | 2.6 | 2.7 | 723.9 | 1.2 | 1.8 | 379.2 | 1.2 | 179.3 |
| 4.2-3/8-.003-5052 | 9.5-67.3 | 3.2 | 3.3 | 930.8 | 1.5 | 2.1 | 448.2 | 1.4 | 199.9 |

- 1) Certification to MIL-C-7438 may be available upon request.
- 2) Test Data on specimens 0.625" thick @ R.T.
- 3) Crush Strength values are typical and will vary with density
- 4) Minimum Order may be required on some items.
- 5) Other cell sizes & densities may be available.

Standards:

ALH-SG structural grade aluminum honeycomb is supplied in block, slice or expanded sheet form. The standard expanded sheet size is 48" x 96".

Thickness range from 0.100" up to 22" for most cell sizes and densities.

Not all densities are available perforated.

NOTICE: SOME TECHNICAL INFORMATION MAY BE PRELIMINARY. IN ANY CASE, ANYONE CONSIDERING THE USE OF OUR PRODUCTS SHOULD CONDUCT TESTING TO DETERMINE IF ANY SELECTED MATERIAL IS SUITABLE FOR AN APPLICATION. FOR MORE INFORMATION, PLEASE CONSULT OUR SALES OFFICE.

**ALH-SG 5052
TYPICAL PROPERTIES
5052 ALLOY (FULL HARD)**

| DESIGNATION ALH-SG- U.S. | COMPRESSIVE STRENGTH (BARE) Psi | COMPRESSIVE STRENGTH (STABILIZED) psi | Comp Mod ksi | CRUSH- STRENGTH psi | SHEAR "L" psi | SHEAR "L" Mod ksi | SHEAR "W" psi | SHEAR "W" Mod ksi |
|--------------------------------|--|--|--------------------|---------------------------|---------------------|----------------------------|---------------------|----------------------------|
| 4.5-1/8-.001-5052 | 520 | 545 | 150 | 260 | 340 | 70 | 220 | 31 |
| 6.1-1/8-.0015-5052 | 870 | 910 | 240 | 450 | 505 | 98 | 320 | 41 |
| 8.1-1/8-.002-5052 | 1400 | 1470 | 350 | 750 | 725 | 135 | 455 | 54 |
| 3.1-3/16-.001-5052 | 270 | 290 | 75 | 130 | 210 | 45 | 130 | 22 |
| 4.4-3/16-.0015-5052 | 500 | 525 | 145 | 250 | 330 | 68 | 215 | 30 |
| 5.7-3/16-.002-5052 | 770 | 810 | 220 | 390 | 460 | 90 | 300 | 38 |
| 6.9-3/16-.0025-5052 | 1080 | 1130 | 285 | 575 | 590 | 114 | 375 | 46 |
| 8.1-3/16-.003-5052 | 1400 | 1470 | 350 | 750 | 725 | 135 | 455 | 54 |
| 2.3-1/4-.001-5052 | 165 | 175 | 45 | 75 | 140 | 32 | 85 | 16 |
| 3.4-1/4-.0015-5052 | 320 | 340 | 90 | 150 | 235 | 50 | 150 | 24 |
| 4.3-1/4-.002-5052 | 480 | 505 | 140 | 230 | 320 | 66 | 210 | 29 |
| 5.2-1/4-.0025-5052 | 670 | 690 | 190 | 335 | 410 | 82 | 265 | 35 |
| 6.0-1/4-.003-5052 | 850 | 880 | 235 | 430 | 495 | 96 | 315 | 40 |
| 1.6-3/8-.001-5052 | 85 | 95 | 20 | 40 | 85 | 21 | 50 | 11 |
| 2.3-3/8-.0015-5052 | 165 | 175 | 45 | 75 | 140 | 32 | 85 | 16 |
| 3.0-3/8-.002-5052 | 260 | 270 | 70 | 120 | 200 | 43 | 125 | 21 |
| 3.7-3/8-.0025-5052 | 370 | 390 | 105 | 180 | 260 | 55 | 170 | 26 |
| 4.2-3/8-.003-5052 | 460 | 485 | 135 | 220 | 310 | 65 | 200 | 29 |

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- 2) Test Data on specimens 0.625" thick @ R.T.
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- 4) Minimum Order may be required on some items.
- 5) Other cell sizes & densities may be available.

Standards:

ALH-SG structural grade aluminum honeycomb is supplied in block, slice or expanded sheet form. The standard expanded sheet size is 1220 mm x 2440 mm.

Thickness range from 2.54 mm up to 558.8 mm for most cell sizes and densities.

Not all densities are available perforated.

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TOLERANCES:

| | |
|-------------------|---|
| Density: | +/- 10% |
| L & W Dimensions: | -0, + As Expanded, unless otherwise specified. |
| Thickness: | Up to 3" (76.2 mm) +/- 0.005" (0.127 mm) 3.01" -5.00" (76.45 mm—127 mm) +/- 0.025" (0.635 mm) 5.01" & up (127.25 mm) +/- .06" (1.52 mm) |

CONFIGURATION

The cell shape shall be essentially hexagonal. However, variations in both shape and density are allowable, within specified tolerances, to the extent that the minimum strength values are maintained. Up to but not more than 2 unbonded cells are in any 10 inch (254 mm) diameter circle.

AVAILABILITY:

Normal delivery time is 3 to 4 weeks from receipt of order. This time may vary depending on shop capacity at the time of order. Please consider transit time when estimating your on-dock dates.

TERMS AND CONDITIONS:

| | |
|----------------|---|
| Shipping: | All shipments are FOB Shipping point only, unless otherwise agreed to by Unicel Corporation |
| Cancellation: | A cancellation charge may be charged if an order is cancelled at any time after being placed. |
| Payment Terms: | Please contact your nearest Unicel Sales representative. |
| PACKAGING: | Materials are packaged to meet industry accepted practices. If special packaging requirements are needed, please let us know. |

PRODUCT DESIGNATION

UNICEL® ALH-SG structural grade aluminum honeycomb is identified in the following manner in U.S. Units Only:

ALH-SG-density-cell size—foil thickness-perforated (otherwise blank)-alloy

Example: ALH-SG-4.3-1/4-002P-5052

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