



HexWeb® Rigidcell™

Corrosion Resistant Aluminum Corrugated Honeycomb

Product Data

Description

Corrosion resistant HexWeb® Rigidcell™ is manufactured by bonding together corrugated sheets of treated 5052 aluminum. This process allows fabrications of much higher density honeycomb than is possible by the expansion process. The node bond adhesive is a thermosetting type. Slices are cut from the corrugated block to specified thickness, length, and width.

Features

- High-density structural grade honeycomb
- High-compressive, shear and crush strength values
- Easily machined
- Excellent corrosion resistance
- Excellent energy absorption characteristics
- Damage tolerant; exhibits a nonbrittle failure mode
- Excellent for fastener points and closeouts; stronger than potting compounds

Applications

Hexcel HexWeb® Rigidcell™ honeycomb finds numerous uses as an energy absorption medium where large predetermined crush forces are requested to decelerate, restrain, and protect moving objects. Crush strokes of up to 65% are obtainable.

HexWeb® Rigidcell™ is used in sandwich structures when high strength and rigidity are requested. In addition, it is used as a higher performance alternative to epoxy potting compounds, aluminum extrusion and machined aluminum details in honeycomb structures for fastener inserts, details and closeouts. For the same weight as epoxy potting compounds, HexWeb® Rigidcell™ offers higher strength, lower manufacturing costs, better reliability, and higher skin to insert bond strength. HexWeb® Rigidcell™ eliminates expensive fit up and edge voids between extrusion and low-density core. For the same strength, HexWeb® Rigidcell™ weighs and costs less than machined details with undercuts and lightening holes.

HexWeb® Rigidcell™ plugs are easily bonded in low-density core by wrapping them with a foaming core splice adhesive prior to insertion.

Type Designation

Hexcel HexWeb® Rigidcell™ honeycomb is designated as follows:

Material – Coating – Cell size – Alloy – Density – Configuration

Example:

CR-PAA™ – 1/8 – 2 – 22.1 – STD

Where:

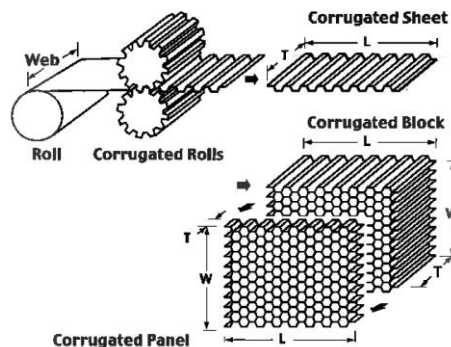
CR-PAA™ – is phosphoric acid anodized corrosion resistant coating
(**CR III** for CR III corrosion resistant coating)

1/8 – is the cell size in inches

2 – is the alloy of aluminum used (2 = 5052)

22.1 – is the nominal density in pounds per cubic foot

STD – standard hexagonal cell configuration



Images for explanation only and do not represent actual appearance.



Configurations

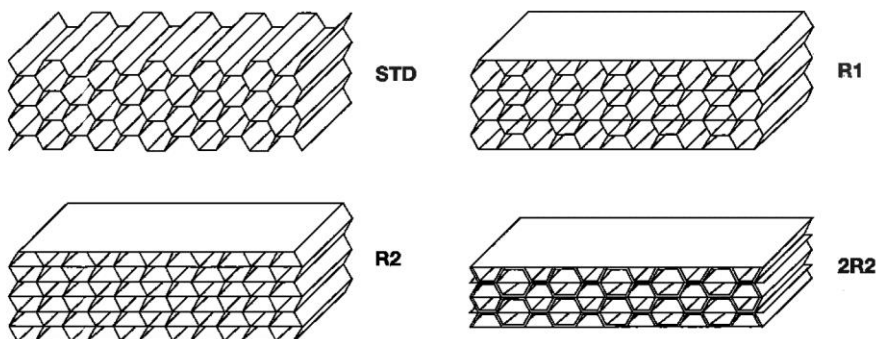
STD = Standard corrugated core (Can be offered with alternative adhesive that enhances roll formability.)

R1 = Reinforced (interleaf) every other ribbon, non-staggered

R2 = Reinforced (interleaf) every ribbon, non-staggered

2R2 = Corrugated double lap, reinforced (interleaf) every ribbon, non staggered

R2S = Reinforced (interleaf) every ribbon, staggered



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Coatings

HexWeb® RigidCell™ corrosion resistant aluminum corrugated honeycomb is available with two types of corrosion resistant coating. These coatings are CR III, and phosphoric acid anodized (CR-PAA™). CR III is an organo-metallic polymer coating that offers protection for aluminum honeycomb exposed to corrosive environments. CR III/CR-PAA™ corrosion resistant treatment meets the requirements of AMS-C-7438, formerly MIL-C-7438. CR-PAA™ offers superior protection in extreme salt spray corrosive environments.

Custom Processing

Hexcel aluminum corrugated honeycomb can be provided machined, formed to various shapes, or with bonded top and bottom plates to meet specific customer specifications. Contact the nearest Hexcel Sales Office for additional information.

Standard, Maximum, and Minimum Block Sizes

The standard HexWeb® RigidCell™ corrosion resistant aluminum corrugated honeycomb block size is:

L 96 in. + 4 in. -0 in. W 24 in. + 1 in. - 0 in. T 10 in.



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The maximum size HexWeb® RigidCell™ corrosion resistant aluminum corrugated honeycomb block sizes that can be built are:

For CR III and CR-PAA™ coatings:

L 132 in. W 38 in. T 10 in.

The smallest size HexWeb® RigidCell™ corrosion resistant aluminum corrugated honeycomb block sizes that can be built is:

L 48 in. W 12 in. T 10 in.

Thickness Tolerances

Tolerances on cut thicknesses are as follows:

Sheet Thickness	Standard Tolerance
0.250 in. to 3.999 in.	± 0.010 in.
4.000 in. and over	± 0.062 in.
Blocks	± 2.00 in.

Density Tolerances

The standard density tolerance from the nominal is ± 10%.

Availability

HexWeb® RigidCell™ honeycomb will be supplied as follows:

SHIPPING TERMS: FCA Hexcel, Casa Grande, AZ, USA (Incoterms 2010)

MATERIAL TITLE TRANSFER: Hexcel, Casa Grande, AZ, USA

Lead times will vary with the particular core type selected.

The information in this Data Sheet is subject to change without notice.

Contact your nearest Hexcel Sales Office for delivery information.

HexWeb® RigidCell Mechanical Properties

Typical values (typ) are presented below, as well as minimum average (min) for a product type.





Hexcel Honeycomb Designation Material-Cell Size – Alloy – Foil Gauge (Reinforcement)	Nominal Density pcf	Crush Strength psi	Compressive Strength		Beam Shear Strength	
			Bare psi	Stabilized psi	L Direction psi	W Direction psi
	typ	typ	typ	typ	typ	typ
1/8 – 2 – STD	12.0	1450	2300	2400	1950	1500
1/8 – 2 – STD	14.5	2100	2900	3050	2200	1600
1/8 – 2 – STD	22.1	4100	5200	5200	3000	2050
1/8 – 2 – R2	38.0	5650	8500	8700	4300	2200p
3/16 – 2 – STD	15.7	2100	3200	3300	–	–
3/16 – 2 – R2	25.0	2900	5700	5800p	3350p	1700p

P = preliminary values that are obtained from testing of only one or two blocks of honeycomb types.

Other cell sizes, densities, and dimensions are available on special request. Please contact your nearest Hexcel Sales Office for additional information. One block minimum buy may apply.

CRIII not made above 22.1#.

Important

Hexcel Corporation believes, in good faith, that the technical data and other information provided herein is materially accurate as of the date this document is prepared. Hexcel reserves the right to modify such information at any time. The performance values in this data sheet are considered representative but do not and should not constitute specification minima. The only obligations of Hexcel, including warranties, if any, will be set forth in a contract signed by Hexcel or in Hexcel's then current standard Terms and Conditions of Sale as set forth on the back of Hexcel's Order Acknowledgement.

For more information

Hexcel is a leading worldwide supplier of composite materials to aerospace and other demanding industries. Our comprehensive product range includes:

- Carbon Fiber
- Reinforced Fabrics
- Carbon, Glass, Aramid and Hybrid Prepregs
- RTM Materials
- Engineered Core
- HexTOOL® composite tooling material
- Structural Film Adhesives
- Honeycomb Cores

For US quotes, orders and product information call toll-free 1-800-688-7734. For other worldwide sales office telephone numbers and a full address list, please click here: <http://www.hexcel.com/contact/salesoffices>.