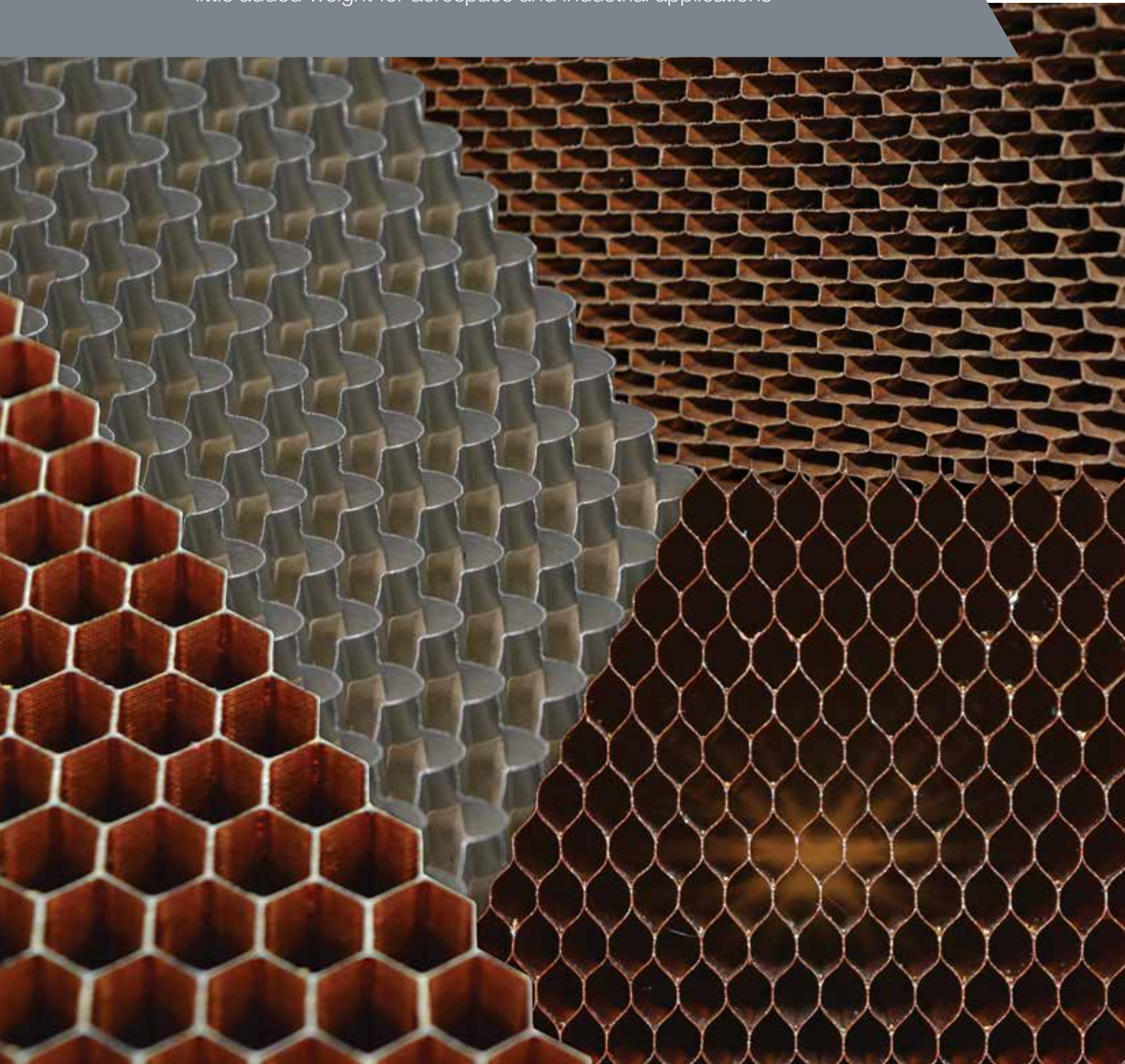




HexWeb[®] Honeycomb

Selector Guide

HexWeb[®] honeycomb provides exceptional stiffness and strength with little added weight for aerospace and industrial applications





HexWeb® Honeycomb

Selector Guide

- Exceptional stiffness and strength with little added weight for the aerospace and industrial markets
- Available in a variety of cell sizes and densities
- Made from fiberglass, aluminum and aramid mechanical papers

Honeycomb is a lightweight core material for structural stiffening applications. This versatile material is widely used in the construction of aircraft components such as floors, interior paneling and helicopter rotor blade aerofoils. Other applications include railway carriage doors and ceiling panels, marine bulkheads and furniture. Honeycomb is also the ideal material for

energy absorption (bumpers/fenders, lift shaft bases), for RF shielding and fluid and light directionalization.

This guide has been compiled to assist with the selection of the best type of honeycomb for a particular application. More detailed information is included in the individual product data sheets.

Metallic

	Product type	Strength	Stiffness	Dielectric Performance	Max Service Temp. °C (°F)	Thermal Conductivity/ Characteristics	Product Form	Density Range kg/m ³ (lb/cf)	Recommended for Energy Absorption	Treatment Options	Environmental Resistance
Aluminum	CR-PAA/CRIII 5052 Aerospace Grade Aluminium Honeycomb	High	Very High	Low Transmission	175 (350)	High	Hexagonal cell	16 to 192 (1 to 12)	Yes	CRIII Corrosion resistant coating that meets AMSC7438 Specifications	Good
							OX cell	42 to 169 (2.5 to 10.5)			
							Rigicell® (corrugated)	168 to 880 (10.5 to 55)	Yes	CR-PAA treated and primed	Excellent
							Flex-Core	34 to 128 (2 to 8)			
							Double-Flex	44 to 77 (3 to 5)			
	CR-PAA/CRIII 5056 Aerospace Grade High Performance Aluminium Honeycomb	High	Very High	Low Transmission	175 (350)	High	Hexagonal cell	16 to 147 (1 to 9)	Yes	CRIII Corrosion resistant coating that meets AMSC7438 Specifications	Good
							Flex-Core	34 to 192 (2 to 12)		CR-PAA treated and primed	Excellent

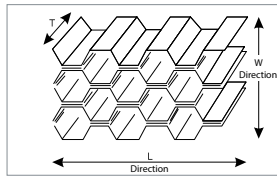
Non-Metallic

		Product type	Strength	Stiffness	Dielectric Performance	Max Service Temp. °C (°F)	Thermal Conductivity/ Characteristics	Product Form	Density Range kg/m³ (lb/cf)	Environmental Resistance
Aramid	Meta-Aramid Paper	HRH-10 / A1 Aerospace Grade Aramid/Phenolic	High	Low	Good Transmission	175 (350)	Low	Hexagonal cell	24 to 144 (1.5 to 9)	Excellent
								OX cell	29 to 72 (1.8 to 4.5)	
								Flex-Core	40 to 88 (2.5 to 5.5)	
	Para-Aramid	A10 Commercial Grade Aramid/Phenolic	High	Low	Good Transmission	175 (350)	Low	Hexagonal cell	29 to 80 (2 to 5)	Excellent
								OX cell	29 to 72 (1.8 to 4.5)	
		HRH-310 Aramid/Polyimide	High	Low	Excellent Transmission	175 (350)	Low	Hexagonal cell	29 to 80 (1.8 to 5)	Excellent
		HRH-36 Kevlar®* Paper/Phenolic	High	High	Good Transmission	175 (350)	Low	Hexagonal cell	24 to 96 (1.5 to 6)	Excellent
OX cell	32 to 48 (2 to 3.0)									
HRH-49 Woven Kevlar®*/Epoxy	High	Low	Good Transmission	175 (350)	Very Low	Hexagonal cell	34 (2.1)	Excellent		

*Kevlar is a registered trademark of E.I. du Pont de Nemours and Company

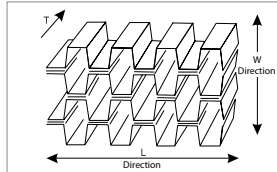
	Product type	Strength	Stiffness	Dielectric Performance	Max Service Temp. °C (°F)	Thermal Conductivity/ Characteristics	Product Form	Density Range kg/m³ (lb/cf)	Environmental Resistance
Glass	HRP Fiber Glass/Phenolic	High	Moderate	Good Transmission	175 (350)	Low	Hexagonal cell	35 to 192 (2.2 to 12)	Excellent
							OX cell	51 to 112 (3.2 to 7)	
							Flex-Core	40 to 88 (2.5 to 5.5)	
	HTP Fiber Glass/Phenolic	High	Moderate	Good Transmission	175 (350)	Low	Hexagonal cell	40 to 128 (2.5 to 8)	Excellent
	HFT Bias Weave Fiber Glass/Phenolic	High	High	Good Transmission	175 (350)	Low	Hexagonal cell	32 to 128 (2 to 8)	Excellent
	HRH 327 Bias Weave Fiber Glass/Polymide	High	High	Excellent Transmission	260 (500)	Low	Hexagonal cell	51 to 128 (3.2 to 8)	Excellent
	HDC Fiberglass/Phenolic	High	Moderate	Good Transmission	260 (500)	Low	Hexagonal cell + Reinforced	256 to 280 (16.0 to 17.5)	Excellent

Honeycomb Configurations



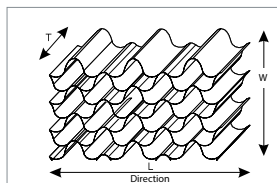
Hexagonal Core

The standard hexagonal honeycomb is the basic and most common cellular honeycomb configuration, and is currently available in all metallic and non-metallic materials.



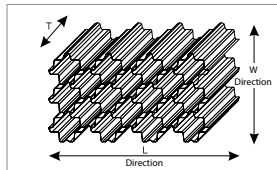
OX-Core®

The "OX" configuration is a hexagonal honeycomb that has been over-expanded in the "W" direction, providing a rectangular cell configuration that facilitates curving or forming in the "L" direction. The OX process increases "W" shear properties and decreases "L" shear properties when compared to hexagonal honeycomb.



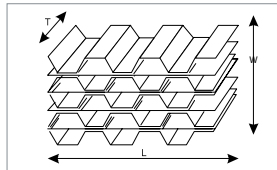
Flex-Core®

The Flex-Core cell configuration provides for exceptional formability in compound curvatures with reduced anticlastic curvature and without buckling the cell walls. Curvatures of very tight radii are easily formed. When formed into tight radii, Flex-Core provides higher shear strengths than comparable hexagonal core of equivalent density. Flex-Core is manufactured from aluminum, aramid papers and fiberglass substrates.



Double-Flex®

Double-Flex is a unique large cell Aluminum Flex-Core with excellent formability and high specific compression properties. Double-Flex formability is similar to standard Flex-Core®.



Reinforced Hexagonal

Reinforced honeycomb has a sheet of substrate material placed along the nodes in the ribbon direction to increase the mechanical properties. The Reinforced Hexagonal configuration provides a heavy density honeycomb suitable for high load areas such as attachment points.

Other Configurations

The standard honeycomb configurations described above will meet almost all requirements. Hexcel can design and fabricate special cell geometries in response to specific needs.

For more information

Hexcel is a leading worldwide supplier of composite materials to aerospace and industrial markets. Our comprehensive range includes:

- HexTow® carbon fibers
- HexFlow® RTM resins
- Acousti-Cap® sound attenuating honeycomb
- HexForce® reinforcements
- Redux® adhesives
- Engineered core
- HiMax™ multiaxial reinforcements
- HexTool® tooling materials
- Engineered products
- HexPly® prepregs
- HexWeb® honeycombs
- HexMC® molding compounds

For US quotes, orders and product information call toll-free 1-888-611-4038. For other worldwide sales office telephone numbers and a full address list, please go to:

<http://www.hexcel.com/contact/salesoffice>

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