

## PRODUCT DATA SHEET

### DESCRIPTION

Aluminum Flex-Core® honeycomb utilizes either 5052 or 5056 alloy foil material and is available in two cell sizes. Flex-Core® has unique cell configurations that significantly reduce anticlastic behavior and permit small radii of curvature without deformation of the cell walls or loss of mechanical properties.

Aluminum Flex-Core® has been developed to allow the designer and fabricator freedom in the utilization of honeycomb for components requiring simple and compound curvatures. Highly contoured sandwich panels such as leading edges and flaps, nacelles, fairings, doors, and access covers, and other parabolic, spherical, and cylindrical shapes are prime Flex-Core® candidates. Duplicate die model and control tooling for aerospace use are also examples of Flex-Core® applications.

As with standard aluminum honeycomb, Flex-Core® provides controlled crush characteristics without rebound and thus curved energy absorption units become feasible and economical.

### FEATURES

- ▶ For parabolic, spherical, and cylindrical shapes
- ▶ Retains mechanical properties in sharp curvatures
- ▶ Offers cost savings for curved panels

### TYPICAL APPLICATIONS

- ▶ Aircraft leading edges and flaps
- ▶ Aircraft nacelles, fairings, doors, and access covers
- ▶ Helicopter rotor blades
- ▶ Fan casings

A wide variety of other applications have been found to exploit the unique properties of aluminum Flex-Core® such as:

- ▶ Duplicate die model and control tooling
- ▶ Parabolic, spherical, and cylindrical shapes

### PRODUCT RANGE

Standard products:  
The following products are usually available as ex-stock items. Additional grades can be sourced upon request, subject to minimum order quantities and extended lead times.

- ▶ 5052/F80-.0013-4.3N
- ▶ 5052/F80-.0025-8.0N
- ▶ **5056/F80-.0014-4.3N**

### PRODUCT DESIGNATION

e.g. 5052/F80-.0013-4.3N

5052	Grade of aluminum alloy
F80	Nominal cell count of open cells in 12 inches measured in the W direction
.0013	Nominal foil thickness in inches
4.3	Density (lb/ft³)
N	Nonperforated foil

Aluminum Flex-Core® is supplied with a CR III organo-metallic polymer coating that offers protection for aluminum honeycomb exposed to corrosive environments

### STANDARD DIMENSIONS & TOLERANCES

Nominal sheet length (W) = 1220 mm min.

Nominal sheet width (L) = 915 mm min.

Sheet thickness as requested above 2 mm ± 0.125 mm

Note: High-density materials, e.g., 8.0lb/ft³ or higher, may not be available at thicknesses exceeding 20 mm. Core is expanded at customer's own risk.

Density as nominal ±10%

Cell size as nominal ± 10%



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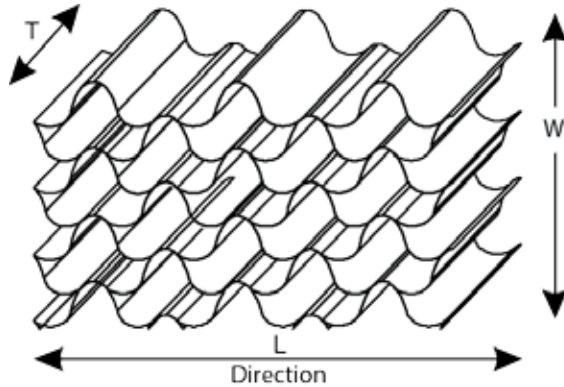
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## MECHANICAL PROPERTIES

	Material/ Cell Count – Gauge in in.	Nominal Density pcf (lb/ft³)	Compressive Strength					Crush Strength psi	Beam Shear Strength					
			Bare		Stabilized				"L Direction"			"W Direction"		
			Strength (psi)		Strength (psi)	Modulus (ksi)			Strength (psi)		Modulus (ksi)	Strength (psi)		Modulus (ksi)
			Typ.	Min.	Typ.	Min.	Typ.		Typ.	Min.	Typ.	Min.	Typ.	Min.
5 0 5 2	F80-.0013	4.3	524	402	542	455	195	–	300	196	45.0	190	120	20.0
	F80-.0025	8.0	1600	1100	1750	1120	400	–	650	434	98.0	455	260	31.0
5 0 5 6	F80-.0014	4.3	780	475	860	518	195	–	375	235	47.0	240	138	20.0

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

## FLEX-CORE® CELL

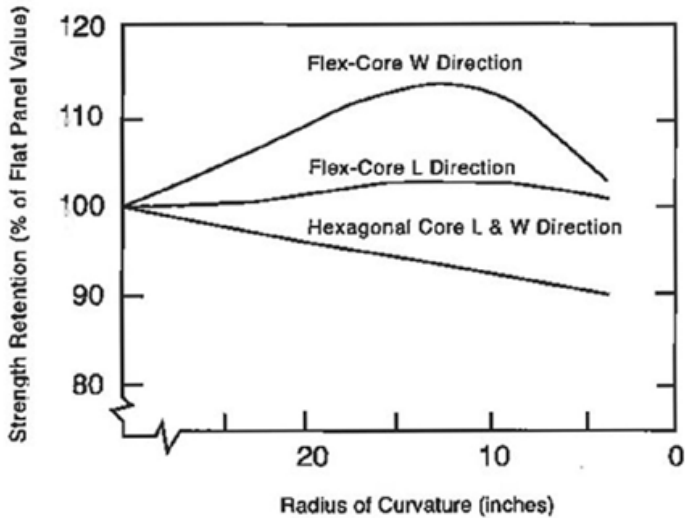


Images for explanation only and do not represent actual appearance.

T = Thickness or cell depth    L = Ribbon direction or width    W = Expansion direction, or direction perpendicular to the ribbon

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### EFFECT OF RADIUS CURVATURE ON SHEAR STRENGTH



Note: This data was derived from 3.8 pcf Hexagonal Core and 4.3 pcf Flex-Core®.