

VOLUME 39  
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# THE M.C.GILL DOORWAY™

HIGH-PERFORMANCE COMPOSITE PRODUCTS SINCE 1945

*Thank You*

**The Q<sup>100</sup> Club**

For Consistently Delivering  
The Highest Quality Products  
You Make the Difference!

*BOEING*



## For Consistently Delivering The Highest Quality Products



# Quality is Company Wide

## A Great Honor

M.C. Gill Corporation and Alcore – part of the M.C. Gill Group of Companies – were recognized with the Boeing Q100 Award, a special honor reserved for suppliers to The Boeing Company who consistently deliver high-quality parts and assemblies over the previous twelve months.

Both M.C. Gill Corporation and Alcore are proud to receive this award. All employees worked very hard to achieve this level of performance, and look forward to continuously improving this level of quality.

There is great reason for this amount of pride, since Boeing is one of the premier aerospace and defense contractors in the world. They build a world-renowned fleet of aircraft and it is a pleasure to be involved in responding to their production needs.

M.C. Gill Corporation and Alcore materials fly on the majority of Boeing commercial, military and space vehicles.

## Castle Industries is a Q100 Recipient

Another member of the M.C. Gill Group of Companies led the way in receiving the Q100 award. Castle Industries was privileged to be recognized for its achievements in quality just two years ago.

It is a great achievement to focus on the goal of producing a quality product and being recognized for it.

M.C. Gill Corporation thanks everyone involved for this honor.



**COVER:** CEO Kenneth Boudreau and Chairman M.C. Gill at Q100 award ceremony.



# Debut of Gillcore™ HK Kevlar® Honeycomb Structural Core

The M.C. Gill Corporation recently introduced its next generation of structural core – Gillcore™ HK Kevlar® reinforced phenolic honeycomb. It promises to be a real breakthrough in addressing customer structural core needs, since the high strength and stiffness of Kevlar allows for use of lower density cores resulting in a huge potential for weight savings over Nomex® and other commonly used materials.

Gillcore™ HK core offers all of the advantages of first generation aramids but with superior shear strength, modulus, fatigue resistance, dimensional stability and hot/wet properties.

It is no secret that strength coupled with significant weight savings is critical in advanced aircraft design. This is of strategic importance for ground breaking designs such as the Airbus A380 and Boeing Sonic Cruiser that will usher in a new era of commercial aviation. With typical weight savings of 20-45% as compared to Nomex and other core materials, Gillcore HK is positioned to

become the new standard for aircraft interior components, flooring panels and fuselage structures where weight savings is of primary importance.

Gillcore HK is presently available in select configurations. An expanded range of cell sizes and density offerings is in development. This material is currently undergoing evaluation with Lockheed, Bell, Airbus, Boeing and other commercial and military manufacturers. At the same time, M.C. Gill Corporation is evaluating the benefits of this material as an alternate to Nomex in select Gillfab advanced composite sandwich panel designs.

Gillcore HK Kevlar honeycomb's ability to deliver superior mechanical properties at a lower weight combine to make it an attractive alternative in many applications. As customers learn about its properties they will realize its value as an alternative to Nomex, Korex® and fiberglass reinforced honeycomb.

## Kevlar N636 Core Typical Properties

	HK 2061	HK132	HK 3032	HK 362
Cell Geometry	Hexagonal	Hexagonal	Hexagonal	Hexagonal
Paper Thickness, mil, (µm)	1.4 (36)	1.8 (46)	2.8 (71)	2.8 (71)
Cell Size, inch (mm)	0.156 (4.0)	0.125 (3.2)	0.188 (4.8)	0.188 (4.8)
Density, lb/ft³ (kg/m³)	2.3 (37)	3.0 (48)	4.5 (72)	6.0 (96)
Bare Compression, psi (Mpa)	227 (1.57)	326 (2.25)	860 (5.93)	1,308 (9.02)
Stabilized Compression, psi (Mpa)	250 (1.72)	407 (2.81)	934 (6.44)	1,347 (9.29)
"L" Plate Shear Strength, psi (Mpa)	200 (1.38)	319 (2.20)	492 (3.39)	576 (3.97)
"L" Plate Shear Modulus, psi (Mpa)	14,207 (98)	20,795 (143)	20,522 (142)	21,451 (148)
"W" Plate Shear Strength, psi (Mpa)	126 (0.87)	171 (1.18)	368 (2.54)	488 (3.37)
"W" Plate Shear Modulus, psi (Mpa)	8,825 (61)	10,163 (70)	16,623 (115)	18,615 (128)





# Castle Industries



## **Innovative Airborne Laser Aircraft Application**

Castle Industries designed, tested and produced a significant number of light-weight equipment racks for the U.S. Air Force Airborne Laser Program. The Airborne Laser is a multi-megawatt chemical laser, mounted in a Boeing 747-400 that is designed to destroy enemy missiles seconds after they are launched. Castle worked with Boeing, Lockheed Martin, TRW and AP Labs to build the custom-designed racks that house the electronic gear used for target acquisition, tracking, pointing and beam control/fire control. The first test is scheduled for 2003.

# *There's Even More to the Story*

This is the second article in a series on Castle Industries, part of the M.C. Gill Corporation Group of Companies. The first, in the Autumn 2001 issue of *The Doorway*, discussed Observer Seats and only hinted at the full range of products they fabricate. Because of numerous requests to learn more about Castle, we are responding with more information about Castle Industries' capabilities.

## **Airborne Electronics Racks and Consoles**

Castle has a successful history of designing and building light-weight aluminum electronics racks and consoles for military airborne programs. These custom-designed racks and consoles are specifically designed to carry heavy equipment loads while meeting specific crash-load and ultimate flight loading conditions. The individual designs consider where the enclosure is located in the aircraft, orientation of the enclosure and varying g-force loading. A stress analysis is performed to determine the lowest possible weight for each enclosure.

Some designs require EMI shielding. For these applications, custom-designed filters are used to shield the equipment cooling vents and conductive gaskets seal doors and side panels.

Castle has supplied equipment racks and consoles to several major electronics manufacturers, system integrators, major sub-contractors and prime contractors.



Electronic Equipment Racks can be designed for any application.

## **Mechanical Assemblies**

Castle produces a variety of aircraft assemblies used in attendant seats, observer seats, electronic consoles, fuselage sections and decompression systems. These assemblies use the combined skills of welding, sheet metal working, metal machining, sewing and precision assembly. Some assemblies incorporate molded parts and components purchased from approved outside suppliers. These Castle offerings provide customers an opportunity to reduce cost and cut inventory.



Mechanical Assemblies require many skills to fabricate.

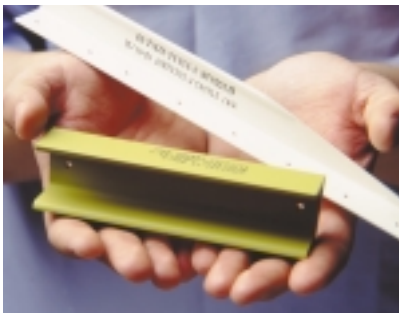
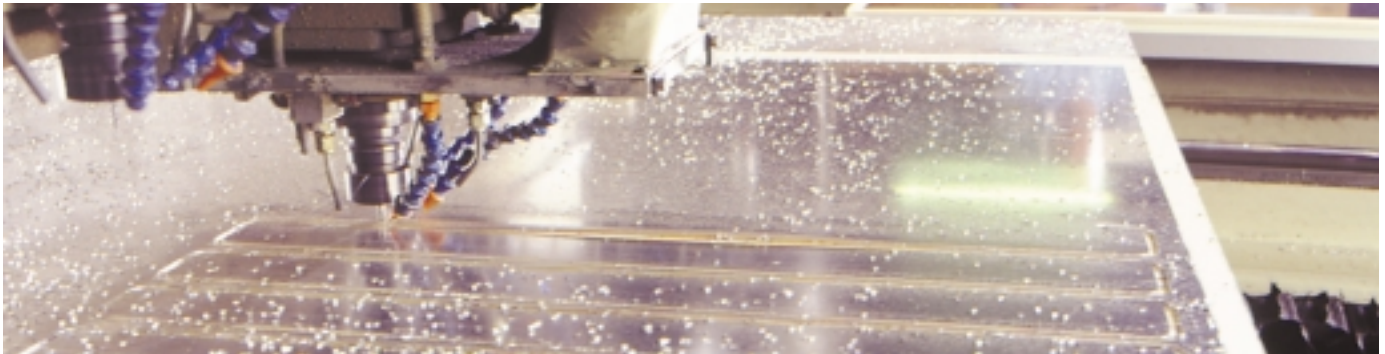


## Airplane Components

Parts for airplanes come in all shapes and sizes. Castle will fabricate to customer-supplied drawings or can assist in designing components. Most applications use aluminum but Castle also works with titanium, stainless steel, composites and steel.

Castle has a complete machine shop and a metal fabricating shop that works with titanium and all types of aluminum alloys in a wide variety of shapes and sizes. Each month large and small quantities of tear straps, doublers, angles, stiffeners, brackets, channels, tees, intercostals, webs and seat clips are produced. These components are used to produce floor beams, door assemblies and fuselage sections.

If a piece of metal can be formed, machined, cut, pressed, punched, jogged, shaped, welded, profiled or fabricated into a high-performance part, Castle has the equipment and experience to do it.



**Visit the M.C. Gill Group of Companies Online**  
**[www.mcgillcorp.com](http://www.mcgillcorp.com)**

# The M.C. Gill Group of Companies



## M.C. Gill Corporation

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The M.C. Gill Corporation is the world's largest manufacturer of original equipment and replacement baggage compartment liners for passenger and freighter aircraft. We are one of the largest producers of composite sandwich panels used for aircraft flooring in these markets.

The company also excels in most other types of fiber-reinforced plastics including flat panel composites, bullet resistant ballistic laminates, interior panels for creating structures such as aircraft galleys and bulkheads, honeycomb core and related products.



## Alcore

Manufactures a variety of metallic honeycomb cores for aerospace and other applications. Offers extensive special processing capabilities on metallic and non-metallic cores, from simple operations like chamfering to complex processes including roll-forming, 5-axis machining and splicing of different densities into core blankets.

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Alcore Overnight™  
Expedited Delivery  
email: overnight@alcore.com

*Alcore does not sell sandwich panels.  
Contact M.C. Gill for these products.*



## Castle

Specializes in aircraft quality metal parts fabrication, engineering and design. If a piece of metal can be bent, pressed, punched, routed, shaped, molded, welded, profiled or fabricated into a high performance part, Castle has the equipment and experience to do it.

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## Alcore Brigantine

Offers broad capabilities in structural core materials technology in Europe, including: Aluminum honeycomb, with special processing expertise and an in-house design office. Manufacture of sandwich panels from simple shapes to extremely complex parts. Advanced aluminum honeycomb shock absorption materials used as a kinetic energy absorber in everything from high-speed trains to automotive safety.

Brigantine propose une offre de compétences très large sur les technologies des matériaux d'âme structuraux en Europe. Fabrication de nid d'abeilles aluminium, expérience de l'usinage de précision de ce matériau, bureau d'études intégré. Fabrication de panneaux sandwich, des grandes séries aux pièces les plus complexes. Etude et fabrication d'absorbeurs de chocs en aluminium pour de nombreuses applications allant du ferroviaire à l'automobile.

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## Insoleq – M.C. Gill Europe Ltd.

Manufactures aircraft insulation, details composite panels including various honeycombs and creates complex assemblies using advanced fabrication methods. It also provides warehousing for other M.C. Gill products for quick European delivery.

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## THE FUNNY SIDE

There was a guy watching television who heard a knock at the door. He got up to get it, and when he opened the door, all he saw was a snail. Annoyed, he picked it up and threw the snail as far as he could. Three years later he was watching television and there was a knock at the door. So he got up and opened the door, and there was the snail. The snail slowly looked up at the guy and said, "What in the heck was that for?"

★ ★ ★

An old man was wondering if his wife had a hearing problem.

So one night, he stood behind her while she was sitting in her lounge chair.

He spoke softly to her, "Honey, can you hear me?"

There was no response.

He moved a little closer and said again, "Honey, can you hear me?"

Still, there was no response.

Finally he moved right behind her and said, "Honey, can you hear me?"

She replied, "For the third time, Yes!"

★ ★ ★

A group of attorneys had to measure the height of a flagpole for evidence to support a lawsuit. They went out to the flagpole with ladders and a tape measure.

They proceed to fall off the ladders and drop the tape measure; the whole thing was just a mess.

An engineer came along and saw what they were trying to do. He walks over, pulls the flagpole out of the ground, lays it flat, measures it from end to end, gives the measurements to one of the attorneys and walks away.

After the engineer has gone, one attorney turns to another and laughs. "Isn't that just like an engineer? We're looking for the height, and he gives us the length."



## Trivia

The word "lethologica" describes the state of not being able to remember the word you want.

★ ★ ★

TYPEWRITER is the longest word that can be made using the letters on only one row of the keyboard.

★ ★ ★

A snail can sleep for three years.

★ ★ ★

American Airlines saved \$40,000 in 1987 by eliminating one olive from each salad served in first-class.

★ ★ ★

China has more English speakers than the United States.

★ ★ ★

The electric chair was invented by a dentist.

★ ★ ★

Humans and dolphins are the only species that have sex for pleasure.

★ ★ ★

The strongest muscle in the body is the tongue.

★ ★ ★

It's impossible to sneeze with your eyes open.

★ ★ ★

You can't kill yourself by holding your breath.

★ ★ ★

The average chocolate bar has 8 insects' legs in it.

★ ★ ★

The average human eats 8 spiders at night during a lifetime.

★ ★ ★

The shortest war in history was between Zanzibar and England in 1896. Zanzibar surrendered after 38 minutes.

★ ★ ★

Donald Duck comics were banned in Finland because he doesn't wear pants.

★ ★ ★

If you keep a goldfish in a dark room, it will eventually turn white.