

The Doorway™

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GILLCORE HD RACES TO THE FINISH LINE

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New technologies have a way of creeping into the mainstream where and when you least expect them. Who could've predicted that a sport followed by millions of fans and marked by the smell of burning rubber, screaming tires and roaring engines could be a benefactor of the strong but silent honeycomb sandwich panel?





The phenomenon that is NASCAR racing is a staple to the American landscape. NASCAR is one of the most-viewed professional sports (in terms of television ratings) in the United States. Professional football is the only sport to attract more viewers.

Internationally, NASCAR races are broadcast in over 150 countries, with 75 million fans worldwide. NASCAR fans are considered the most brand-loyal fan base worldwide and they spend over 3 billion dollars annually on licensed products.



The National Association for Stock Car Auto Racing (NASCAR) was founded in 1947 in Daytona, Florida. The first stock car races evolved out of bootleggers during Prohibition. Based chiefly in the Appalachian region of the United States, bootleggers typically used vehicles that were small and quick so they could evade the police. Many of the drivers began to modify their cars for increased speed, handling and cargo capacity as they distributed

their "shine" throughout the twisty mountain roads. After Prohibition was repealed, moonshine was still very popular and a new adversary emerged. Revenuers appeared in the hills, sent to collect taxes on the homemade whiskey. Over time, the chase between shiners and revenuers declined and the drivers began to race for the thrill of winning. These races became a major source of entertainment in the Wilkes County region of North Carolina.

1922: a policeman standing alongside wrecked bootlegger's car and cases of moonshine.



NASCAR is a family-owned and operated business that sanctions and governs multiple auto-racing events. NASCAR is the largest sanctioning body of stock car racing in the United States.

The three largest racing series sanctioned by NASCAR are the Sprint Cup Series, the Nationwide Series and the Camping World Truck Series.

In the late 1940s, William France took steps to formally organize the sport. The first NASCAR races were held in Daytona Beach and included hardtops, coupes, convertibles and sports cars. After the first season, the "strictly stock division" emerged. Almost immediately, drivers and their teams formed. It was clear that speed was not the only factor critical to scoring a win. Over the next decade the cars were redesigned for safety and performance, and by the 1960s, these vehicles were purpose-built with stock bodies.

Today, the engineering sophistication devoted to these cars is a science in itself. Stock car architects are always on the lookout for ways to squeeze more speed, endurance and power out of the cars in "the chase." Enter advanced composite products.

For over 40 years the aerospace industry has relied on advanced composites to provide an alternative to heavier, less durable materials in the construction of aircraft. Composites



The Sprint Cup Series trophy.

offer unsurpassed strength, flame resistance, durability and weight savings over other materials. M.C. Gill Corporation is one of the pioneering companies that began supplying the airline industry in the 1950s. In the succeeding decades, product advances have kept pace with the demand for stronger, more durable yet lighter-weight floor panels, cargo liners and core materials used in the primary and secondary structures of an aircraft.

In the last decade, stock car design engineers have followed that same line of reasoning in their search for structurally superior materials that will reduce drag and stop deflection at high speeds. One of today's most successful NASCAR teams that uses advanced composite materials in its cars is RCR Racing.



RCR's car seen "on the pole" (meaning: starting in the first position, and determined by weekly qualifying races.)



RCR Racing was founded by Rick Childress, who began driving stock cars in 1969. RCR has a storied history, with more than 180 victories and 12 NASCAR championships.

One of its most successful cars in 2010 was the #29 Penzoil car driven by Kevin Harvick. The #29 car incorporates composites in the side panels beneath the outer sheet metal body.



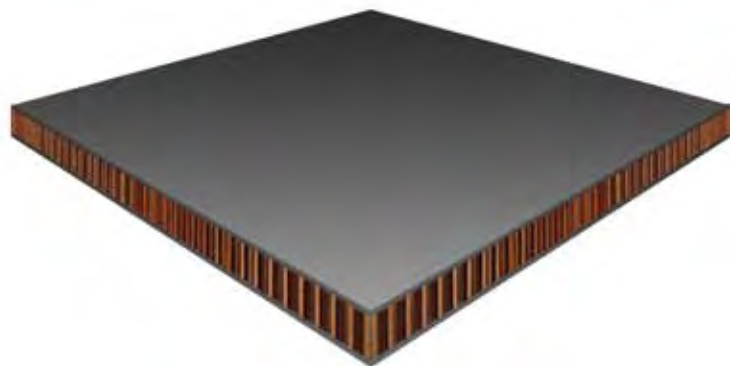
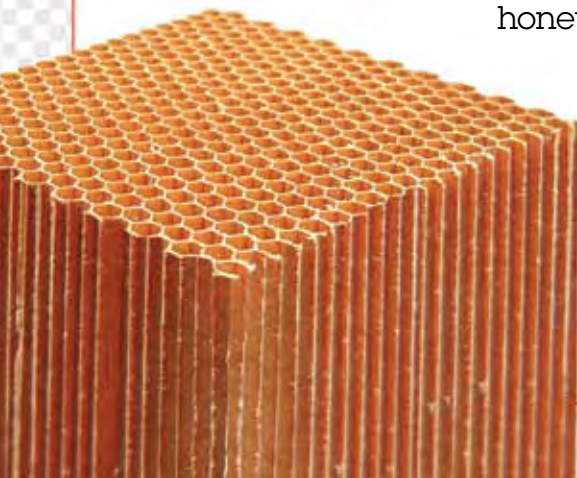
Preparing a winning NASCAR vehicle involves labor-intensive design and testing. When RCR was ready to explore the benefits of composites, they turned to a private firm based in central California called SDM Technology.

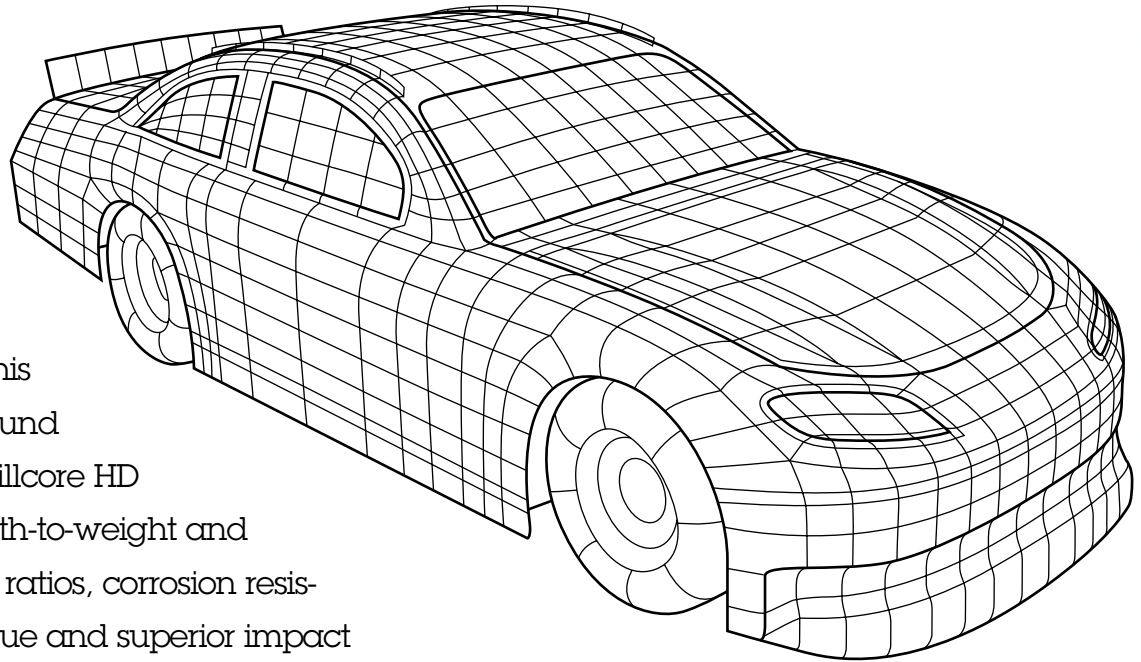
SDM Technology is owned and run by Dean Maples. SDM Technology has been a customer and supplier to M.C. Gill Corporation for many years. They provide essential manufacturing equipment used in our El Monte plant and they also purchase honeycomb core from our company.

In the late 1980s, the M.C. Gill Corporation began production of Nomex® honeycomb. The company soon secured key honeycomb contracts with Boeing and tier one and two suppliers. Over the next two decades, the company continuously improved the manufacturing processes so it was positioned well when SDM was sourcing a supplier for honeycomb core materials.

When RCR first approached Maples, he thought to test various grades of honeycomb materials. The NASCAR team required products that would display equal strength properties in multiple directions. Maples knew that a carbon-skinned panel would be extremely lightweight, yet offer high-temperature performance and the required strength properties.

Originally trained as a mechanical and test engineer, Maples understood the importance of evaluating how those different mechanical properties would translate in actual field performance. Maples needed honeycomb from a reliable source that provided customer service, quality products and the technical support necessary for his project. His only choice was M.C. Gill Corporation.





The M.C. Gill Corporation product he built his panel design around is Gillcore™ HD. Gillcore HD offers high strength-to-weight and rigidity-to-weight ratios, corrosion resistance, good fatigue and superior impact resistance that would work well in the NASCAR application. Gillcore HD is an aerospace-grade aramid fiber (Nomex®) reinforced honeycomb which is coated with phenolic resin. Gillcore HD is typically used for aircraft interior panels including floors, sidewalls, ceilings, galleys and lavatories. This product is also used in aircraft exterior applications, including trailing and leading edges, flaps, ailerons, access panels and doors.

The unique NASCAR panels are built on a foundation of aerospace-grade Gillcore HD. Early panel development

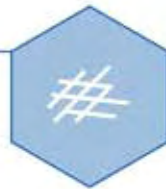
resulted in a 1/2-inch aramid honeycomb sandwich panel, a 3/8-inch aramid honeycomb sandwich panel and a new 1/8-inch thick panel that is still in development. A specially designed carbon-skinned panel was created to stop deflection of the sheet metal, reducing drag. The carbon-skinned panels are installed behind the outer sheet metal body at multiple locations on the car. Side deflection at high speeds causes drag, and the carbon-skinned panels stiffen the walls during race conditions.



**LIGHT-
WEIGHT**



**CORROSION
RESISTANCE**



**FATIGUE/
DURABILITY**



**IMPACT
RESISTANCE**

Over the years Maples' relationship with M.C. Gill Corporation and RCR has produced striking results that have paid off handsomely. The most exciting season was in 2010 when RCR Racing placed in the top 15 and finished third overall for the NASCAR season.

Not surprisingly, other highly successful NASCAR teams are now incorporating composites into their vehicle designs, too. MWR Racing (Michael Waltrip Racing) is now using composite panels in its cars and Hendricks Motor Sports is currently testing composites in anticipation of future race seasons.



The applications for composite materials seem endless these days. The aerospace, marine, rail, highway, recreational and sporting industries have profoundly benefited by an increasing reliance on composite products. M.C. Gill Corporation is a pioneer in the plastics field and is proud to be a small part of the growing list of industries who benefit from the wonderful group of products we call composites.

THE M.C. GILL GROUP OF COMPANIES



M.C. GILL CORPORATION

4056 Easy Street, El Monte, California 91731
phone: 626 443-4022 fax: 626 350-5880
email: info@mcgillcorp.com



Alcore, Inc.
Lakeside Business Park,
1502 Quarry Drive
Edgewood, Maryland
21040 USA
phone: 410 676-7100
fax: 410 676-7050
email: sales@alcore.com

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

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



Alcore Brigantine, Inc.
Route de l'Aviation
7, allée Etchecopar
64600 Anglet France
phone/téléphone:
+33 (0) 5 59 41 25 25
fax/télécopie:
+33 (0) 5 59 41 25 00
email: sales@alcorebrigantine.fr



M.C. Gill Corporation Europe Ltd.
23 Enterprise Road,
Balloo Industrial Estate South
Bangor Co-Down
BT19 7TA, N. Ireland
phone: +44 (0) 2891 470073
fax: +44 (0) 2891 478247
email: sales@insoleq.co.uk



Castle Industries, Inc.
of California
601 South Dupont Avenue
Ontario, CA 91761-1502 USA
phone: 909 390-0899
fax: 909 390-0898
email: info@castleindustries.net

www.mcgillcorp.com

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THE FUNNY SIDE

Flight Delay

Taxiing down the tarmac, the jetliner abruptly stopped and returned to the gate. After waiting about an hour, it finally took off. A concerned passenger asked the flight attendant what had happened.

"The pilot was bothered by a noise he heard in the engine," said the attendant. "It took us an hour to find another pilot!"

The Importance of Sandwiches

"George is so forgetful," the sales manager complained to his secretary. "It's a wonder he can sell anything. I asked him to pick me up some sandwiches on his way back from lunch, and I'm not sure he'll even remember to come back."

Just then the door flew open, and in bounced George. "You'll never guess what happened!" he shouted. "While I was at lunch, I met old man Brown, who hasn't bought anything from us for five years. Well, we got to talking and he gave me this half-million dollar order!"

"See," sighed the sales manager to his secretary. "I told you he'd forget the sandwiches."

Priorities

Two husky construction workers devoted a part of their lunch hour reminiscing about jobs they'd held prior to their present onerous situation.

"I once worked at a tea factory," said one worker. "The job paid good money and required very little effort. I sat six hours in a big chair doing nothing but lifting tea bags off a belt and dropping them into small cardboard boxes."

"Good Lord, Bob," said the other worker, "why'd you ever leave a job like that?"

"No coffee breaks," said Bob.

How to Get Help From the Police When You're Old

An elderly man from Mississippi was going up to bed when his wife told him that he'd left the light on in the garden shed. He opened the back door to go turn off the light, but saw that there were people in the shed stealing things.

He phoned the police, who asked, "Is someone in your house?"

He said, "No, but some people are breaking into my garden shed and stealing from me."

Then the police dispatcher said "All patrols are busy. You should lock your doors and an officer will be along when one is available."

The man said, "Okay."

He hung up the phone and counted to 30.

Then he phoned the police again.

"Hello, I just called you a few seconds ago because there were people stealing things from my shed. Well, you don't have to worry about them now because I just shot them." and he hung up.

Within five minutes, six police cars, a SWAT team, a helicopter, two fire trucks, a paramedic, and an ambulance showed up at the residence and caught the burglars red-handed.

One of the policemen said to the man, "I thought you said that you'd shot them!"

The man said, "I thought you said there was nobody available!"

