The Doorway

A Publication of The Gill Corporation

High-Performance Composite Products Since 1945 • www.thegillcorp.com

Volume 59 - Number 3 - Summer 2023

FREIGHTERS

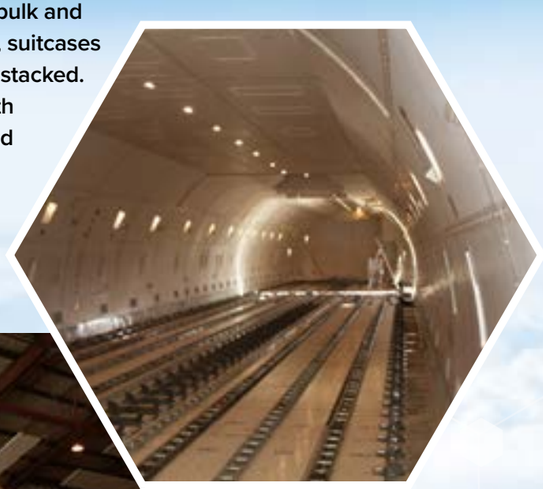
ANTIMICROBIAL TREATED

Aircraft began transporting cargo to provide shorter transportation times than ships traveling across the ocean. Now, aircraft fly an increasing number of goods around the world.

Aircraft purposely designed to carry cargo instead of passengers are known as Freighters. Freighters are manufactured on an OEM production line or created through a Passenger-to-Freighter (P2F) conversion process by OEMs, airlines and MROs. P2F conversions require extensive structural modifications to carry heavy loads in place of passenger seating. The modifications include installation of large doors to load and unload cargo, removal or sealing of passenger windows, and the replacement of floors, ceilings and sidewalls with optimized composite materials provided by The Gill Corporation (TGC).

Passenger airliners carry cargo typically in a lower section of the aircraft known as the cargo compartment whereas smaller business jet aircraft have a small baggage compartment behind the passengers. Some airliners referred to as Combination, or Combi-aircraft, carry a larger portion of cargo with a smaller passenger compartment.

There are two primary ways to store cargo: bulk and containerized. In bulk cargo compartments, suitcases and other items are individually loaded and stacked. Containerized compartments are loaded with containers that store individual suitcases and other items inside. Each of these storage compartments require unique composite materials to protect passengers, crew and aircraft structure.



TGC's first aircraft product was a cargo compartment lining material designed to prevent the spread of fire and smoke from cargo compartments. In the decades since, TGC has been a pioneer in the development of next-generation cargo liners and floor panels as we continuously develop new products to meet the changing needs of our customers.

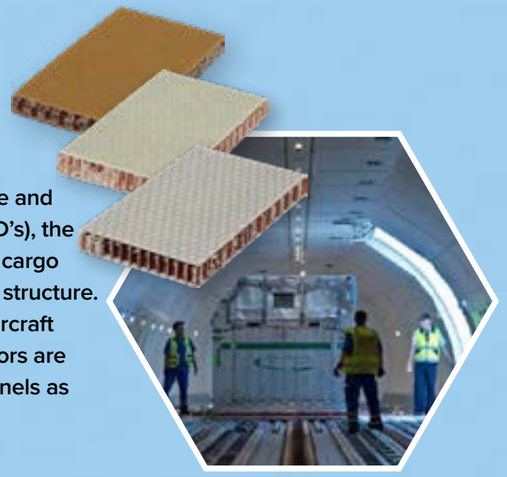
TGC works directly with companies all over the world that make new freighters and companies that perform P2F conversions. We provide off-the-shelf and custom-made composite materials optimized for cargo and freighter applications. These lightweight, high performance materials are used throughout the aircraft as floor panels, sidewall linings, ceiling linings, structural honeycomb, compartment bulkheads and dividers, in crew rests, galleys, lavatories, storage areas and other areas as well.

With our proprietary resin formulations and the ability to prepreg virtually every commercially available reinforcement, we are able to design cargo liners and panel facings to meet the most demanding impact, abrasion and hole tear-out requirements. In addition, we are able to incorporate a variety of core materials to meet specific sandwich panel performance requirements, such as aluminum, meta-aramid and para-aramid honeycomb, fiberglass and end-grain balsa wood.

We provide composite solutions as ready-to-install end items, assemblies, or shipset kits, and in raw material form when our customers choose to produce their own end items. Our cargo lining and floor panel products are designed into virtually every cargo carrying aircraft including the MD-11, ATR42/72, Airbus A300/320/A321/A330, Boeing 737/747/757/767/777, and Saab 340 & 2000.

PANELS

For containerized compartments where luggage and freight are stored inside Unit Load Devices (ULD's), the ULDs are loaded and unloaded into the aircraft cargo bay using a rail system integrated into the floor structure. The ULDs are locked securely in place during aircraft operations. The containerized compartment floors are made with light to medium weight sandwich panels as cargo are not in direct contact with the floors.



For bulk compartments, the floors are made with higher weight/strength reinforced sandwich panels that can withstand the impact from loading/unloading individual cargo such as suitcases or hard surface goods and materials. TGC offers an extensive selection of off-the-shelf or custom designed panels including unbalanced sandwich structures where the top surfaces have more layers, or impact resistance, than the bottom.

TGC provides honeycomb cores and sandwich panel materials that are used to form sidewalls, ceilings, bulkheads, dividers, crew and stowage compartments, lavatories, galleys and more.

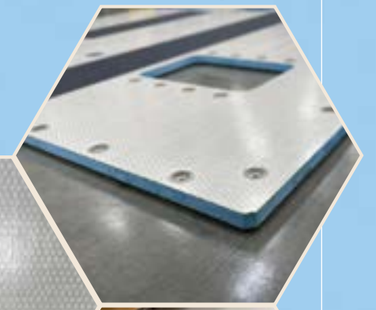
LAMINATES

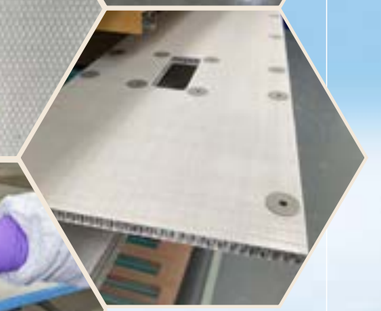
Cargo bay walls and ceilings are covered with protective lining materials known as Gilliner®. These fiberglass cargo liners provide fire protection as required by 14 CFR 25.855 when installed in Class B-E cargo compartments of passenger, combi and freighter aircraft. The fiberglass layers create a cargo fire barrier that limits propagation to areas occupied by pilots, crew and passengers before the fire suppression system can contain the fire. Secondarily, liners, when used with seam tapes and repaired with Gillpatch® materials, will create a sealed compartment that encapsulates hazardous levels of smoke while helping to maintain an adequate concentration of fire extinguishing agents.

FABRICATED ASSEMBLIES

TGC provides OEMs and P2F programs with fabricated parts, assemblies and shipset kits that are ready-to-install upon delivery. These solutions are made using modern 3-, 5-, and 6-axis CNC equipment with highly trained operators and fabrication personnel to precisely machine parts, install components, inspect, and kit parts to meet customer requirements. Fabricated parts and assemblies are made from sandwich panels, laminates, and other composite or metallic materials.

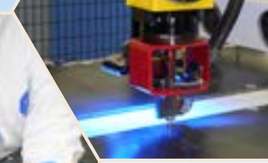
Gillfab® 4518 panels





Part Marking

6-axis robot insert installation



Edge Fill

Gillfab® 5424 panels

CAPABILITIES INCLUDE:

- Inserts
- Insulation blankets
- Vibration damping
- Sound damping
- Anti skid tapes
- Part markings
- Labels
- Fittings
- Intercostals
- Splice plates
- Edge fill
- Edge seal

SABENA TECHNICS ATR 42/72

TGC supplies cargo liners and fabricated floor panels for the ATR 42 and 72 aircraft conversion programs. Reinforced floor panels are CNC cut, fabricated according to customer drawings, and shipped with a UK CAA Form 1 ready to be installed in the aircraft. To date, Sabena Technics has completed 60+ conversions.

TGC also provides fabricated sidewall lining panels for the new-build/factory freighter ATR72-600F aircraft.

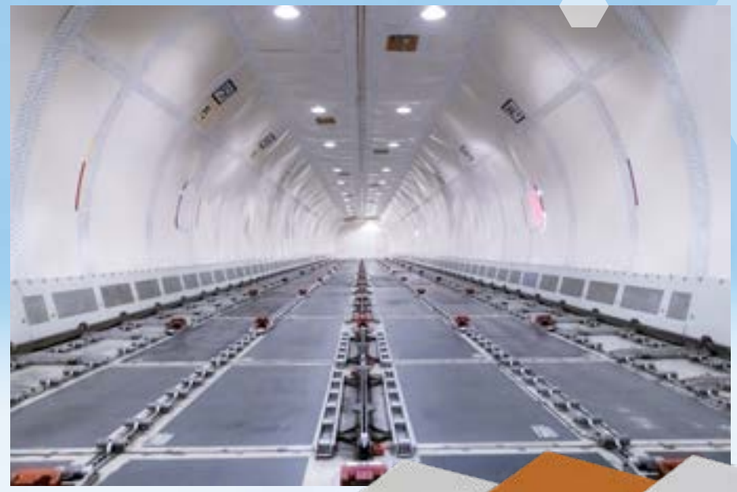
SAAB 340 / 2000

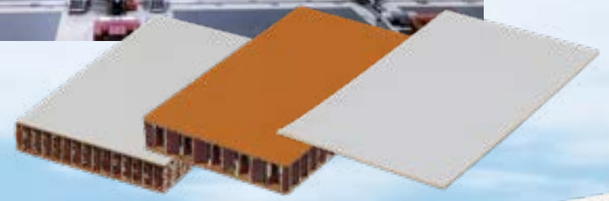
Taby Air Maintenance (TAM) is one of Europe's leading MRO providers. TAM holds an STC for the P2F conversion of the Saab 340, with approval pending for the Saab 2000P2F. Both conversions include TGC's fabricated Gilliner® sidewall lining panels.

Saab 2000 photo courtesy of TAM
ATR 72-500 photo courtesy of Alan Lebeda (GFDL 1.2 http://www.gnu.org/licenses/old-licenses/fdl-1.2.html), via Wikimedia Commons

AIRBUS A320/321

TGC supports the Airbus A300/A320/A321/A330 P2F programs through multiple STC holders. TGC products supplied to these programs include floor panels, cargo liners, and interior panels used in the manufacture of galleys and lavatories.





Australia post photo courtesy of
Mitchul Hope, CC BY SA 2.0 <https://creativecommons.org/licenses/by sa/2.0>, via Wikimedia Commons

BOEING

TGC supplies Boeing OEM and P2F companies with floor panels, cargo liners, interior panels, and honeycombs. These products are supplied as details, fabricated parts, assemblies, shipset kits or in sheet stock form. TGC's partnership with STC holders supporting P2F conversion programs include the B737, B747, B767, and B777 aircraft.

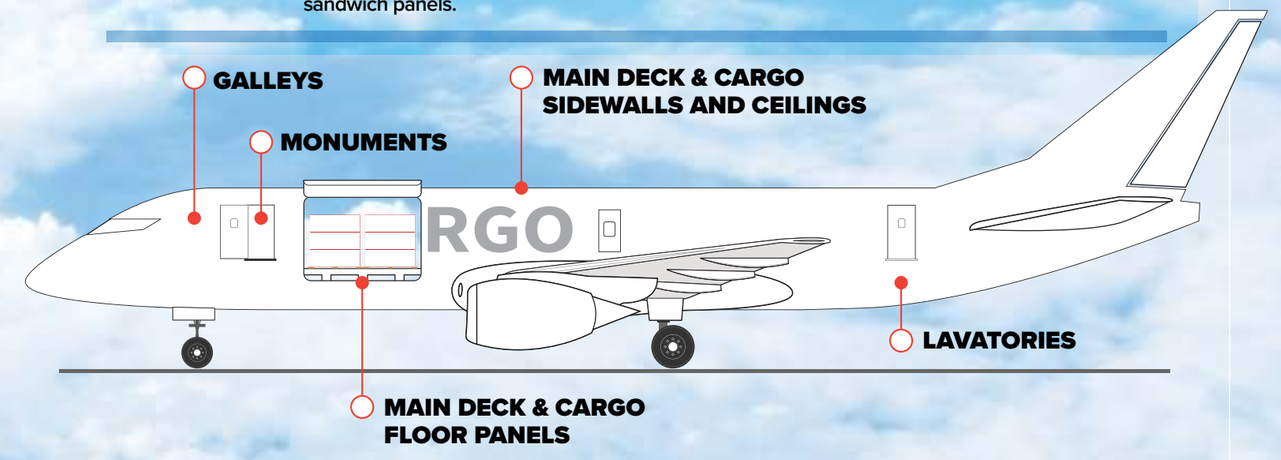
TGC fabricates the floor panel statement of work to Boeing for the OEM 777-200 freighter and provides the stock floor panel material for OEM 767 Freighter / Tanker programs. The 777 fabrication shipset kits include CNC cutting, insert installation, edge fill, bulb seals, bonding of insulation blankets, dampers, non skid tape, and attaching stiffeners. TGC ships drop-in ready kitted shipsets directly to Boeing laying the foundation to offer customized products and finished assemblies to all modification companies developing B777 P2F aircraft.

PANELS

PRODUCT	DESCRIPTION	APPLICATION	SPECIFICATION
Gillfab® 4017T	Unidirectional fiberglass reinforced epoxy facings bonded to meta-aramid honeycomb core.	Floor Panel.	BZZ 7002 Ty 1-3; MEP 15-031; MAT 003
Gillfab® 4122 Series	Woven fiberglass cloth reinforced phenolic facings bonded to meta-aramid honeycomb core.	Aircraft interiors - ceilings, sidewalls, and monuments.	FAR Part 25 Appendix F Parts I and III
Gillfab® 4123	Woven fiberglass cloth reinforced phenolic facings bonded to meta-aramaid honeycomb core.	Floor Panel.	5360 M1M 000500 Ty MDC2
Gillfab® 4422	Woven fiberglass cloth reinforced phenolic facings bonded to meta-aramid honeycomb core.	Floor Panel.	2550 M1M 0008 00 Ty A-N; ABD 0031
Gillfloor® 4417/4417A	Unidirectional fiberglass reinforced epoxy facings bonded to meta-aramid honeycomb core.	Floor Panel.	BMS 4-17 Ty I – IX
Gillfloor® 4518	Unidirectional fiberglass and woven fiberglass cloth reinforced modified epoxy facings bonded to para-aramid honeycomb core.	Floor Panel.	BMS 4-17 Ty X and XI
Gillfloor® 5424	Unidirectional fiberglass reinforced epoxy facings bonded to aluminum honeycomb core.	Floor Panel.	BMS 4-23 Ty I, II, III
Gillfloor® 5007C/D	Woven fiberglass cloth reinforced polyester skin bonded to end-grain balsa core.	Floor Panel.	FAR 25.853 and 25.855

LAMINATES

PRODUCT	DESCRIPTION	APPLICATION	SPECIFICATION
Gilliner® 1066 1066R	Woven fiberglass cloth with a polyester resin system.	Cargo liner.	Proprietary – FAR 25.855 Flammability
Gilliner® 1076C 1566C 1567A	Woven fiberglass cloth with a polyester resin system.	Cargo liner.	BMS 8-2 Cl 1 Gr A
Gilliner® 1366 1566 1569A	Woven fiberglass cloth with a polyester resin system.	Sidewalls, ceilings, partition walls and bulkhead facings of the lower cargo hold and main deck (freighters).	BMS 8-2 Cl 2 Gr A
Gilliner® 1366T 1566T 1570A	Same as Gilliner® 1366 but with a white PVF film overlay on the face side.	Sidewalls, ceilings, partition walls and bulkhead facings of the lower cargo hold and main deck (freighters).	BMS 8-2 Cl 2 Gr B
Gilliner® 1076D 1566D 1568A	Woven fiberglass cloth with a polyester resin system.	Sidewalls, ceilings, partition walls and bulkhead facings of the lower cargo hold and main deck (freighters).	BMS 8-2 Cl 3 Gr A
Gillfab® 1167 1167A	Woven fiberglass cloth with a phenolic resin system. It has a white PVF film overlay on the face side, Gillfab® 1167A does not.	Cargo liner.	1167: DMS 2226 Ty 1, Cl 1. 1167A: DMS 2226 Ty I, Cl 2
Gillfab® 1367 1367A 1367B 1367C	Woven fiberglass cloth with a phenolic resin system and white PVF film overlay on the face side.	Cargo liner.	FAR 25.853 and 25.855 - FAR Part 25 Appendix F Parts I and III (Burn Through)
Gillfab® 1368A	Woven fiberglass cloth with a phenolic resin system and a white PVF film overlay on the face side.	Cargo liner.	BMS 8-223 Cl 2 Gr B; DMS 2419 Cl 1 and 2; CDM010-09 Cl 2 Gr B; CEMS-1068; CPTI001
Gillfab® 1369A	Woven fiberglass cloth with a phenolic resin system and a white PVF film overlay on the face side.	Cargo liner.	2550 M1M 000800; ABS 5777; AIMS 05-11-001; AIMS 05-11-004; AIMS 05-11-001; HMS-E2-001
Gillfab® 1370A	Woven fiberglass cloth with a phenolic resin system and white PVF film overlay on the face side.	Cargo liner.	CMS-CP-503, Cl 2, Gr B, Ty 13 and 20; ZMS2419, Cl 1, Ty 30, 40, 50, and 70; FAR 25.853 and 25.855; Fire resistance
Gillfab® 1367B 1368B	Woven fiberglass cloth with a phenolic resin system and a white PVF film overlay on the face side.	Sidewalls, ceilings, partition walls and bulkhead facings of the lower cargo hold and main deck (freighters).	BMS 8-223 Cl 4 Gr B; CDM010-09 Cl 4 Gr B; CPTI001
Gillfab® 3072 h-Profile	Formed 'h' profile produced with layers of woven fiberglass cloth with a phenolic resin system and a white PVF film overlay on the face side. Profiles are available in four different channel heights for proper interface with Gillfab® 4422 sandwich panels.	Decompression panels installed in the lower cargo hold.	2550 M1M 000400 Ty A-D ; MEP 15-030; FAR 25.853 and 25.855: Fire resistance



Fun Facts

Alligators will give manatees the right of way if they are swimming near each other.

Baked beans aren't baked, but stewed.

Despite its hump, camels have straight spines.

Sunsets on Mars are blue.

Digging a hole to China is actually possible if you start in Argentina.

Mosquitos have 47 teeth.

A quarter of the bones in your body are in your feet.

Brain waves can be used to power an electric train.

The Boston Marathon didn't allow female runners until 1972.

Pigs get sunburned.

A one-day weather forecast requires about 10 billion math calculations.

"Bluetooth" technology was named after a 10th-century king, King Harald Bluetooth. He united Denmark and Norway, just like the technology united computers and cell phones.

There are 18 different animal shapes in the animal cracker zoo.

The average raindrop falls at 7 mph.

There's a town called "Big Ugly" in West Virginia.

You share your birthday with at least 9 million other people in the world.

No piece of paper can be folded more than 7 times.

Banks have therapists known as "wealth psychologists" who help clients who are unable to mentally cope with their immense wealth.

There are 119 grooves on a quarter.

Smelling apples or bananas can help you lose weight.

People don't sneeze in their sleep due to their brain shutting down the reflex.

Alaska has more caribou than people.

Oysters can change from one gender to another (and back again).

THE GILL CORPORATION

The Gill Corporation
International Headquarters
4056 Easy Street
El Monte, California 91731 USA
Phone: +1 626 443-6094
Email: info@thegillcorp.com

The Gill Corporation – Maryland
1502 Quarry Drive
Edgewood, Maryland 21040 USA
Phone: +1 410 676-7100
Email: info@thegillcorp.com

The Gill Corporation – France
Route de l'Aviation
7, Allée Etchecopar
64600 Anglet France
Phone: +33 (0) 5 59 41 25 25
Email: info@thegillcorp.com

The Gill Corporation – Europe
23 Enterprise Road
Bangor, Co-Down BT19 7TA
Northern Ireland, United Kingdom
Phone: +44 (0) 2891 470073
Email: info@thegillcorp.com

www.thegillcorp.com