

Milliken® TYCOR®

fiber reinforced cores

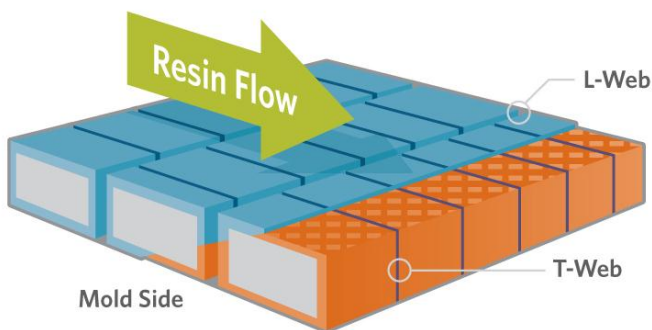
Frequently Asked Questions

1 Can you cut TYCOR core? With what equipment?

TYCOR core can be cut with conventional table saws, circular saws, bandsaws, reciprocating saws, hole saws and razor knives. It is easy to determine the feed rate through the saw that provides the best cut. TYCOR core kits can be produced in the same amount of time as conventional core kits, sometimes even faster due to TYCOR core's larger sheet size. CNC routers are not recommended for use with TYCOR.

2 How do you know you get full resin in the webs when you infuse TYCOR core?

TYCOR cores were developed to work with vacuum infusion processes. The webs have natural through-thickness porosity and the fiber in the webs provides resistance to produce a controlled resin flow front. Experience has proven that dry spots in the core only occur if there are infusion problems that produce dry areas in the surface laminates.



3 Can you repair a defective infused part?

TYCOR core components can be repaired as effectively as any sandwich panel. As in any composite part, damage identification and surface preparation are the most critical factors to address. Once the defect has been properly located, removed and prepared for repair, TYCOR core can be either reinfused or wet-laminated and vacuum bagged to reestablish the physical properties and geometry of the sandwich panel.

4 When you cut TYCOR core, is it ok to have an open edge (not wrapped in fabric)?

All TYCOR core kits are designed so a fiberglass wrapped L-Web is always placed next to a cut foam L-Web edge when a cut has been necessary. This reestablishes the repeating pattern of composite properties within the sheet. If this pattern cannot be maintained or in areas of especially high core stress, simply wrapping the edge of the core with fabric or mat reinforcement is recommended.

5 Can the workers walk on TYCOR core after it is laid in the mold?

The polyisocyanurate foam in the TYCOR core can be damaged prior to molding by rough handling. If a worker must kneel on the core to do a task, a foam pad can be placed temporarily between the material and the worker to protect the TYCOR core.

Even with workers treading carefully on the TYCOR core, large molds are loaded faster than with conventional cores.

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TYCOR Core Frequently Asked Questions cont.

6 Will TYCOR core conform and shape to the mold?

TYCOR core is designed to easily conform to the shape of the blade mold-surface. The core is highly conformable in the chordwise direction where a blade mold typically needs it. In some cases it will need to be held in place with a spray adhesive tackifier. TYCOR core retains full shear properties when used with conventional tackifiers so the use of these products ensure gap-free core placement. As with any core system, TYCOR core relies on an effective kitting strategy to match all the contours of a typical wind turbine blade.

7 Can you taper TYCOR core for thickness transitions and edge bevels?

TYCOR core can be cut at various angles but it is recommended that separate edge bevels designed for durability be used for transitions to solid laminate around the perimeter of the core. TYCOR core cannot be surfaced machined so thickness transitions within the core area of the part are accomplished by either laying a thin wedge of foam or balsa on the surface of the thinner core, or using a tapered piece of foam or balsa that transitions evenly between the two thicknesses.

8 What is the proper orientation for the TYCOR core in a wind turbine blade?

TYCOR core is designed so the continuous winding of the L-Webs is oriented parallel to the long axis of the blade where those higher properties are justified. TYCOR core is more controllable in the T-Web direction and this matches the need in the chord-wise direction of the blade.

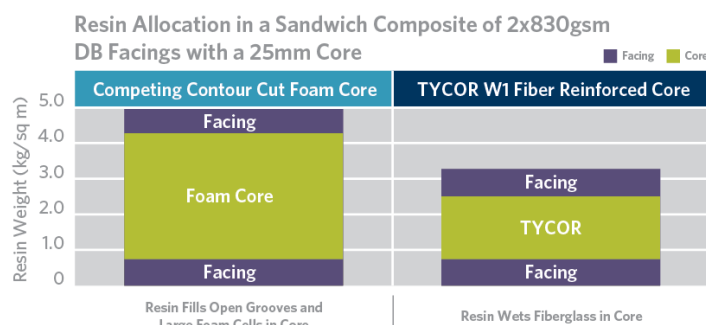
9 If TYCOR core requires resin to fill the webs and give it strength, how can it take less resin uptake than competitive cores?

The PU foam in TYCOR core was selected for fine cell size to minimize resin absorption into the foam. Conventional foam and balsa core materials absorb a significant amount of resin into the cells and grooves. The resin absorbed in a TYCOR core is predominantly used for the purpose of forming the composite fiberglass webs – excess resin absorption is minimal. Also, TYCOR core’s assembled web architecture is naturally permeable so no additional surface grooves and perforations are needed to aid resin infusion.

Conventional cores cannot be used in infusion without these holes and cuts which parasitically absorb excess resin just for mold processing. Quite simply, TYCOR core offers superior resin uptake compared to other controllable core products.

10 How does moisture effect the foam?

The Polyisocyanurate foam used in TYCOR core is moisture resistant and approximately 98% closed cell so very little moisture can be absorbed. Once properly infused, the TYCOR core L and T-Webs also create a compartmentalized structure. Moisture ingress in any local zone cannot propagate to the rest of the sandwich structure through these bulkheads or compartments.



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