



Core Materials Processing Guide



Dallas • Miami • Ecuador
www.corelitecomposites.com

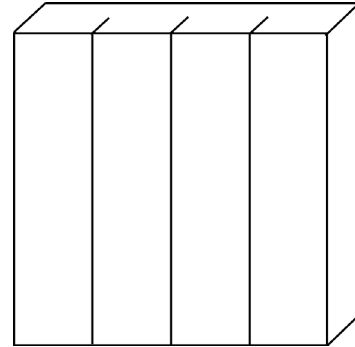
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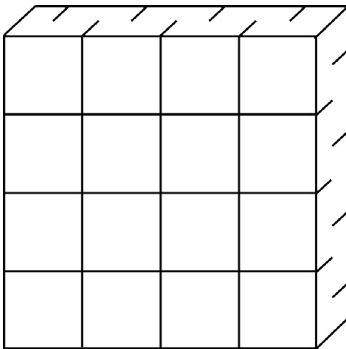
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Product Options

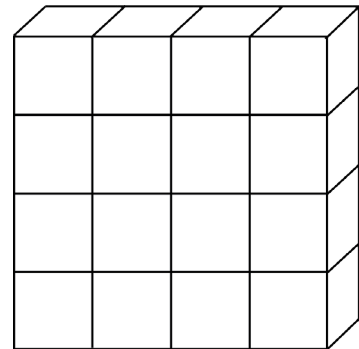
CoreLite core materials are available in several configurations, designed to optimize their use with specific processing methods. A set of product options were designed for flexibility in the core (Single Cut, Double Cut, and Contour Core). In addition, a set of configurations to control air and resin flow for the processing of panel configurations were designed (Perforation and Grooving). CoreLite core materials are designed to suit your needs.



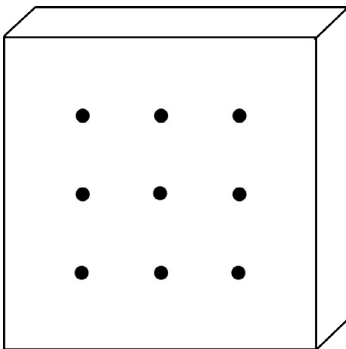
Single Cut Grooves (one surface): Saw cuts are made on one surface of the core to allow flexibility with minimal interference with resin absorption.



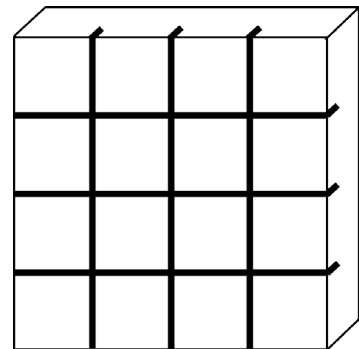
Cross Cut Grooves (both surfaces): Saw cuts are made on both surfaces in both directions to allow greater directional flexibility and more resin flow.



Contour Cut: Core is slit all the way through and backed with a fiberglass scrim. This configuration provides the most flexibility.

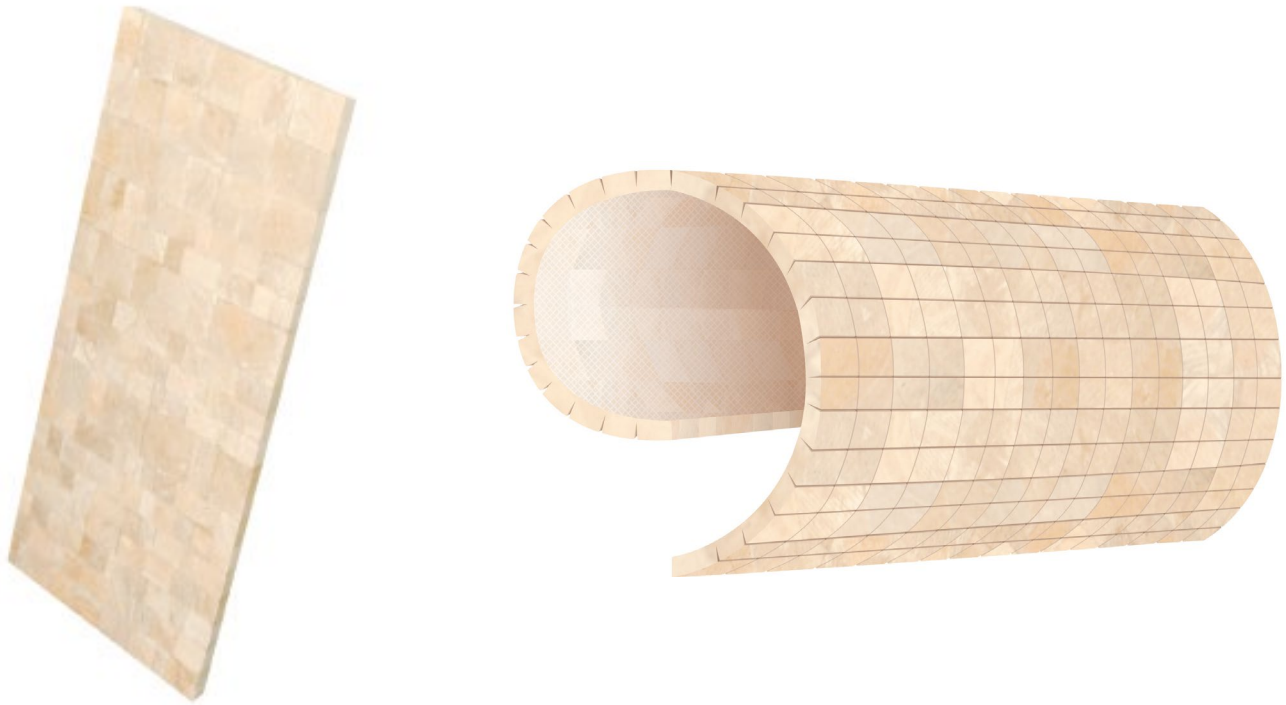


Perforations: Holes are pierced through the core material with a diameter of 2mm and a standard perforation pattern of 2" x 2" or 1" x 1".



Grooving: Superficial saw cuts are made 2.5mm deep and 1.5mm wide with a standard spacing pattern of 30mm x 30mm.

BALSASUD[®] Core



1. Packaging & Handling

BALSASUD Core comes standard in sheets of 24" x 48" (610x1220mm) of varying thickness. Each order is wrapped in plastic and packaged in corrugated carton boxes. Handle BALSASUD Core with care as thin sheets may be fragile. Caution dust may be present in packaging.

2. Storage

The recommended storage temperature of BALSASUD Core is between 32°F - 140°F (0°C - 60°C) with low humidity (less than 80%). The moisture content of BALSASUD Core should be no more than 12%, when checked with a moisture meter.

BALSASUD Core should be stored in its original packaging. This will prevent Balsa wood material contamination. Should the material be removed from the original packaging for storage, be sure to use a protective cover to minimize moisture and dust absorption.

BALSASUD® Core

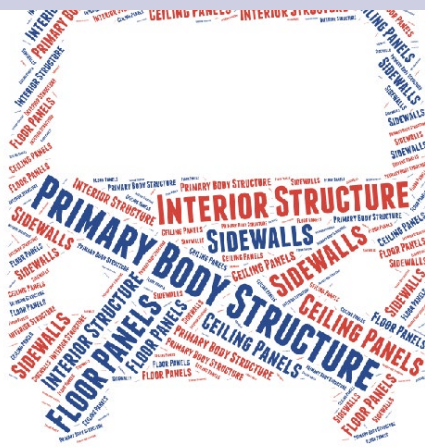
Marine



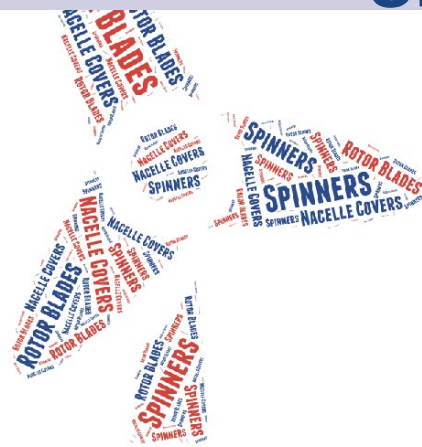
Aerospace



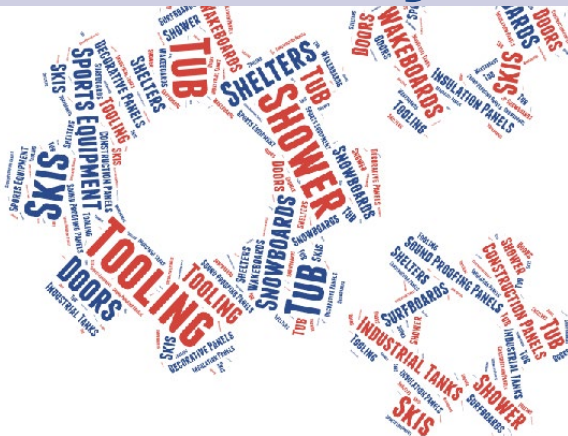
Road & Rail



Wind Energy



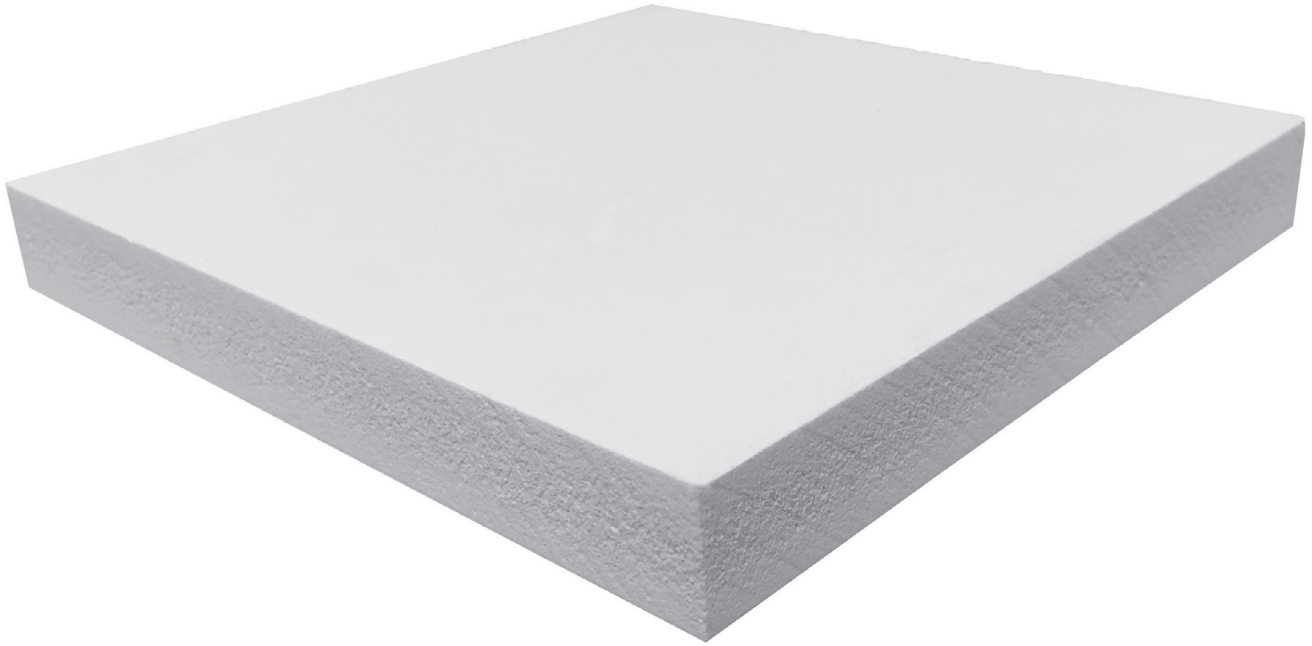
Industry



Defense



CoreLite[®] Board



1. Packaging & Handling

CoreLite Board comes standard in sheets of 48" x 96" (1220x2440mm) and each order will be wrapped in plastic. The CoreLite Board may come packaged in a box or on a pallet. Handle CoreLite Board with care. CoreLite Board already comes sanded.

2. Storage

The recommended storage temperature of CoreLite Board is between 32°F - 140°F (0°C - 60°C).

CoreLite Board should be stored in its original packaging. Although this material is water resistant, it is recommended to avoid dirt contamination. Should the material be removed from the original packaging for storage, be sure to use a protective cover and store the material off the floor.

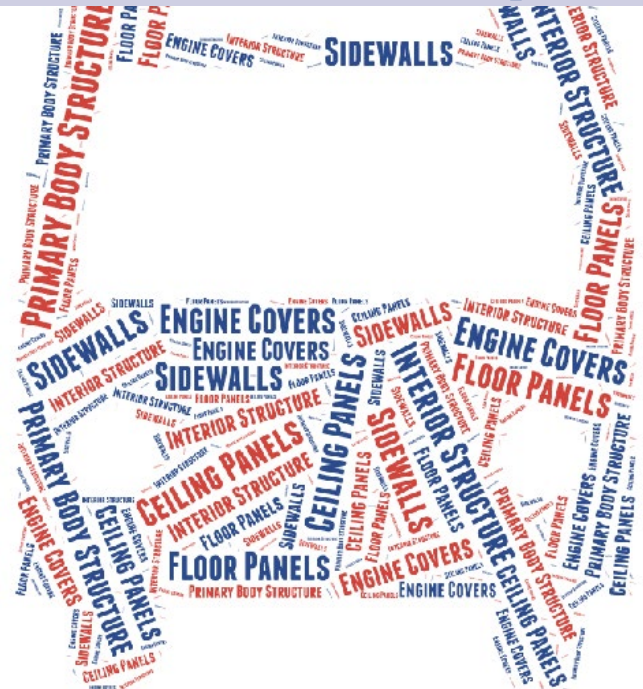
CoreLite® Board

Applications

Marine



Ground Transport



Signs



Industry



CoreLite® PET



1. Packaging & Handling

CoreLite PET comes standard in sheets of 24" x 48" (610x1220mm) and each order will be wrapped in plastic. CoreLite PET may come packaged in a box or on a pallet. Handle CoreLite PET with care.

2. Storage

The recommended storage temperature of CoreLite PET is between 32°F - 140°F (0°C - 60°C).

CoreLite PET should be stored in its original packaging. Although this material is water resistant, it is recommended to avoid dirt contamination. Should the material be removed from the original packaging for storage, be sure to use a protective cover and store the material off the floor.

CoreLite® PET

Applications

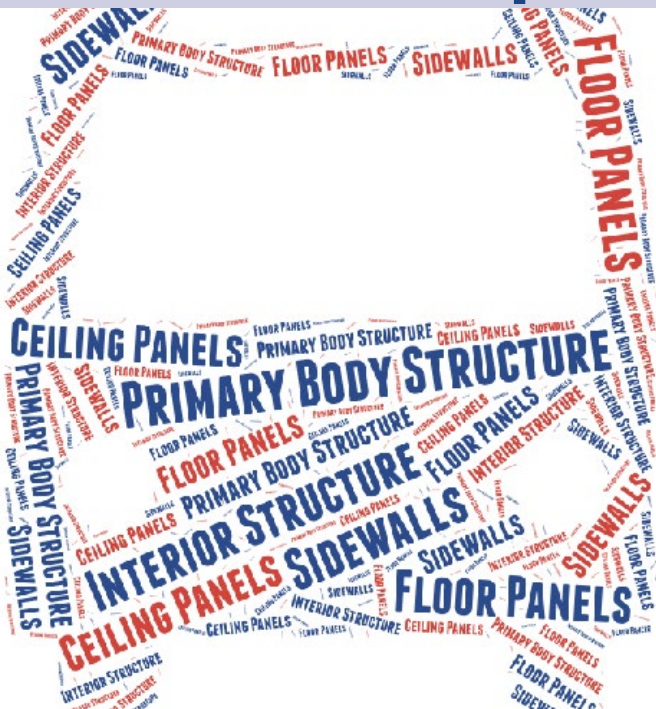
Marine



Wind Energy



Ground Transport



Industry



Sandwich Panel Construction

Sandwich Panel



1. Resin Systems

Different resin systems can be used for sandwich panel construction. All 3 CoreLite core materials are compatible with epoxy, polyester and vinylester resin systems. It is advisable to create a test sample of the core-laminate sandwich panel with reference to the resin suppliers recommendations, prior to initiating a full core installation.

A. Preparation

- Make sure that the core material has a matte finish, ensuring any raised edges and ridges are smooth.
- Cut and fit the sheets of laminate and core, such that the sandwich fits together with minimal gaps before bonding.

B. Resin application

- BALSASUD Core, CoreLite Board, and CoreLite PET are compatible with epoxy, polyester, and vinylester resin systems. When laminating to aluminum or carbon fiber skins, CoreLite recommends an epoxy resin system.
- Activate resin with the appropriate catalyst (if required)
- Apply adhesive resin uniformly across core material surface. If working with a curved surface and contoured core material, position the core such that the scrim is down to avoid excess resin requirements at the kerfs.
- For BALSASUD Core, if using a male mold, CoreLite recommends to put the scrim down.

C. Core Priming

- Ensure a smooth core and laminate surface
- Apply laminating resin. If working with a curved surface ensure that any open kerfs are well coated.

D. Sandwich construction

- Ensure all gaps are filled.
- Apply laminating skin, removing air and ensuring no gaps.

Please Note:

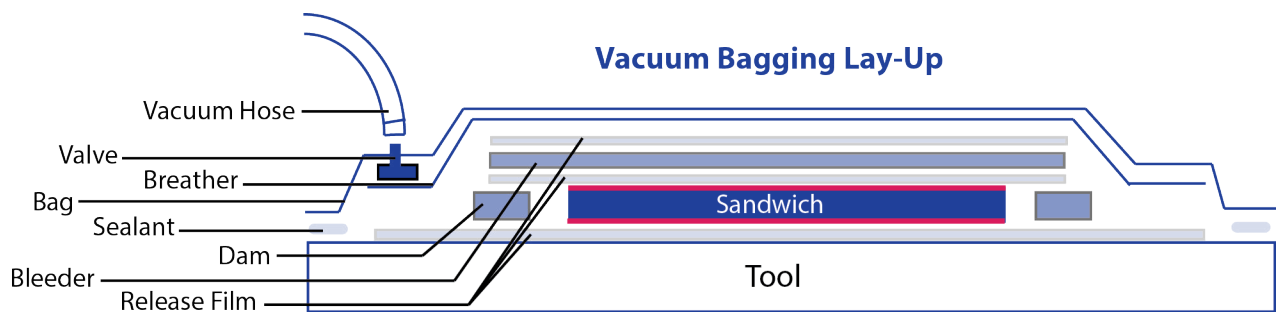
When using polyester or vinylester resins, a layer of chopped strand mat (0.75oz - 1.5oz) is recommended in between the core and the laminate to improve the laminate peel strength. However, epoxy resin systems do not typically require a layer of chopped chopped strand mat for adhesion.

2. Vacuum Bag Compaction

Recommended Material: Sheets with perforations. If using BALSASUD Core, coated sheets are recommended.

Processing Method:

- A. Using standard laminating techniques: place the first skin up, position the rigid sheets without gaps, and apply the second skin.
- B. Allowing 6-12 inches around the perimeter of the panel for vacuum bag compaction, use a smooth flat nonporous surface with a release agent.
- C. Example vacuum bag technique: perforated release film, breather/bleeder cloth, and vacuum bag layered together, see diagram below. Evacuate the bag from the edge of the panel. Use multiple vacuum hose connections or a perimeter manifold, if the panel is large. For the initial compaction, pull 10-15 inches of mercury. then reduce the vacuum to 5 inches of mercury until cured in order to avoid excess resin bleed.



3. Press

Recommended Material: Rigid sheets. If using BALSASUD Core, coated sheets are recommended. Supercial grooving is recommended to facilitate the removal of air.

Processing Method:

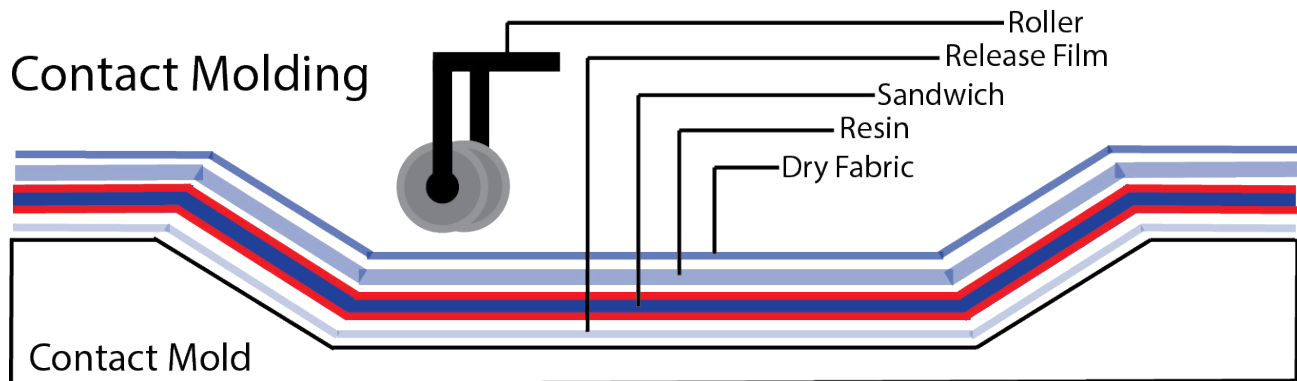
- A. Follow lay up procedure for vacuum bagging
- B. Apply 15-20 psi platen pressure until cured

4. Contact Molding

Recommended Material: Contoured sheets. For BALSASUD Core, coated sheets are recommended.

Processing Method:

- A. Using standard laminating techniques, lay the first skin up (commonly chopped strand mat).
- B. Using metal compaction rollers with moderate pressure, position and bend the flexible sheet into the surface of the laminate. Apply resin and roll in order to optimize core adhesion to the skin. Make sure no voids remain. For large panel production a double roller fabric resin impregnation machine can be used.
- C. Using standard laminating techniques, apply the second skin



5. Pre-cured or Metal face skins

Recommended Material: Rigid sheets. If using BALSASUD Core, coated sheets are recommended. Superficial grooves may be used to facilitate the removal of air.

Processing Method:

- A. Select adhesive appropriate for skin bonding. The adhesive selection is important to consider in order to ensure bonding with no gaps between the core and the laminate.
- B. Following standard laminating techniques or method as outlined by laminate skin manufacturer to bond the skin to the core material. Use appropriate adhesive for skin bonding to ensure the avoidance of gaps in the panel.

6. Pre-preg Reinforcement

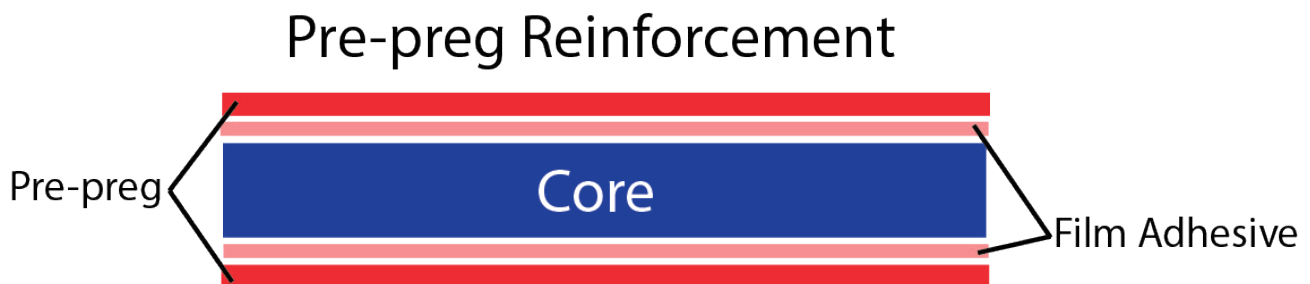
Recommended Material: Rigid sheets and cure film adhesives. If using BALSASUD Core, coated sheets are recommended.

Processing Method:

- A. First skin: Film adhesive of 250 gm/m² controlled flow thixotropic film adhesive prior to applying the first prepreg laminate. Confirm processing details with the film adhesive supplier.
- B. Second skin: Film adhesive of 400 gm/m² controlled thixotropic film adhesive prior to applying the second prepreg laminate. Confirm processing details with the film adhesive supplier.

Note:

- If using flexible sheets, remove the scrim during the core application process, to not interfere with the wet out and adhesion of the film adhesive.
- If using BALSASUD Core, the elevated temperature cure cycle can cause moisture or steam to affect the laminate bond. Hence we recommend holding the balsa moisture content between 3%-6% during the layup schedule.



7. Chopped Strand Mat

Recommended to increase bonding properties of the laminate when using polyester or vinylester resins. Chopped strand mat application is best paired with vacuum bag compaction.

A. Preparation

- Make sure both core and laminate are sanded and have a matte finish, ensuring any raised edges and ridges are smooth.
- Cut and fit the sheets of laminate and core, such that the sandwich fits together with minimal gaps before bonding. For flexible sheets, it is advisable to keep the scrim side up for installation. If scrim side is placed down, precoat the scrim surface within 1 minute of installation.

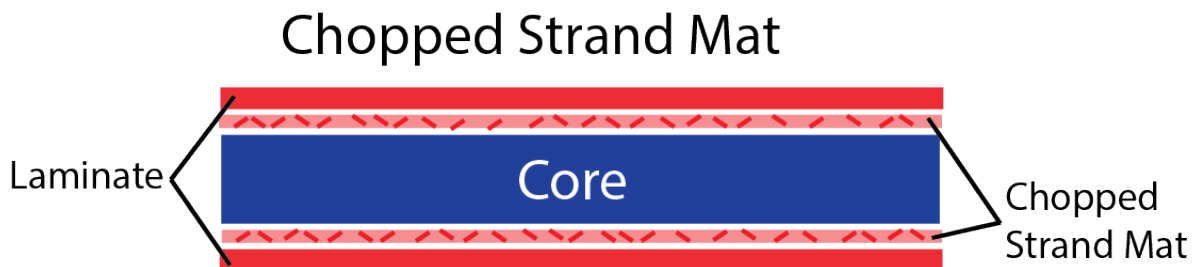
Note: Test bond sample of the laminate following the resin suppliers recommendations prior to full core installation. Refer to resin suppliers instructions.

B. Chopped Strand Mat Application

- A. Roll out a layer of 1.5oz chopped strand mat to the laminate surface with rollers to remove air. Set the catalyst rate to allow the bed coat resin to gel in 20-40 minutes.

3. Sandwich construction

- A. Make sure there are no gaps in the core.
- B. Coat the surface of the core with resin prior to laminating to create a bond without gaps.
- C. Place a chopped strand mat of at least 0.75oz as the first layer of inside skin.
- D. When using contour core, it is advisable to use a bonding paste to minimize resin uptake and shrinks that may happen when using vinylester or polyester resin systems. It will also be easier to fill the gaps of the kerfs.



Thermoforming

CoreLite PET can be thermoformed to obtain a desired shape and configuration. The process of thermoforming involves heating the foam and shaped under pressure. Thermoforming CoreLite PET can be used as an alternative to using contoured material to achieve a certain shape, with minimal resin requirements.

A. Heating

- It is recommended that the foam be heated to 310°F-350°F (155°C-175°C) by convection. However, other methods may be used. Foam must be heated uniformly.
- Heating time can be estimated as 25min/inch for heating processed by convection.

Note: Heating time will vary depending on oven and heating method.

B. Shaping

- Foam can be shaped with simple wooden or composite molds; however, for larger thermoforming projects it is recommended to use temperature controlled aluminum tools for maximised temperature control and uniformity in the shaping process.

C. Pressuring

- Pressuring can be achieved by molds or manual pressure application; however, it is recommended to use vacuum bagging to shape the foam.
- Shaping the foam with vacuum bagging can be performed in a hot air circulation oven, or an autoclave oven.

D. Cooling

- Foam should be cooled under pressurized conditions to maintain shape.

Driven by innovation,
inspired by possibilities,
powered by nature,
built for you,
we are proud to make the most sustainable
core material on earth.

Learn more



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Disclaimer: The advice, instruction or recommendation provided in this Processing Guide is given in good faith and comes from experience. No further duty of responsibility is accepted by the Company. The information is believed to be correct. The Company strongly recommends that users make test panels and conduct their own testing with the materials supplied by the Company. Always refer to the SDS of each manufacturer for safety and handling information of each material used. For any further inquiries, please contact the Technical Department.