



PRODUCT BROCHURE

TRANSONITE®

PANEL SYSTEM



WHAT IS TRANSONITE®?

TRANSONITE® is a pultruded 3-D Fiber Reinforced Polymer (FRP) "sandwich panel" consisting of thermoset resins, FRP skins, a core, custom designed 3-D insertions known as Fiber Insertions Per Square Inch (FIPSI) and in some cases shear webs for increased shear and compression capacity.

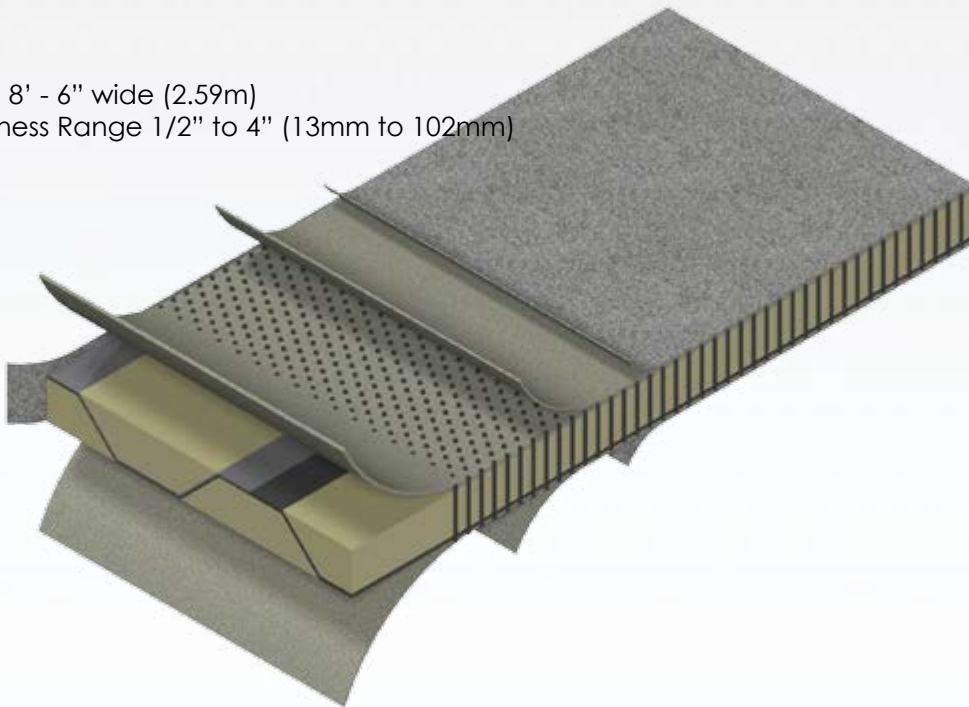
TRANSONITE® can be manufactured with thermoset resins including Vinyl Esters, or Polyesters, with or without fire retardant additives.

Special colors and resins are available where architectural, chemical, temperature, flame, smoke and toxicity may dictate that our standard systems will not meet your criteria. Creative Pultrusions, Inc.'s (CPI) highly skilled engineering team can put together an engineered solution to fit your application.

The top and bottom FRP face skins can be tailored specific for your application. The face skin thickness and fiber volume fractions can also be adjusted to meet your specific design requirements.

The core material can be made of closed cell polyisocyanurate or phenolic foam, or end grain balsa wood depending on the application.

- Up to 8' - 6" wide (2.59m)
- Thickness Range 1/2" to 4" (13mm to 102mm)



- 3-D Fiber Insertions 0 to 19 Fiber Insertions Per Square Inch (FIPSI)
- FRP Face Skins 0.050" to 0.50" (1.27mm to 12.7mm).
- Polyisocyanurate Foam Core

WHAT IS TRANSONITE®? (continued)

Fiber insertions connect the top and bottom skins by means of mechanical FRP insertions. The fiber insertion density can range from zero to nineteen FIPSI. The FIPSI pattern density significantly enhances the local compression strength, full section bending strength, as well as, the shear modulus and strength. Unlike traditional FRP panel structures, the patented fiber insertions prevent undesirable delaminations traditionally associated with cored FRP panels.

Shear webs can be incorporated into the TRANSONITE® panel when high shear and localized strength is required. CPI can custom-design the shear webs in terms of the angle, thickness, and pattern depending on your application.



Close Up of the Fiber Insertions with the Core Foam Removed

TRANSONITE® is a lightweight, high strength, extremely durable composite panel. With a wide variety of uses, this patented technology provides an alternative for structural and non-structural flat panel applications. Some examples include:

- Off-road mats
- Heavy truck cabs, floors and sleepers
- Construction panels
- Industrial flooring
- Sound walls/Barriers
- Pallets
- Roadway/Pedestrian Covers
- Air Cargo Containers
- Containment Basing
- Transformer Pads
- Refrigerator Shipping Containers
- RV walls, roofs and floors
- Trailer floors
- Boat bulkheads and flooring
- Tanks
- Wall panels
- Doors
- Customized I-Beams
- Scaffolding Planks
- Insulated Tank Covers
- Privacy Fence
- Blast Panels
- Temporary Shelters

TRANSONITE® can be manufactured in various thicknesses, widths and lengths. The following chart depicts the current range of the TRANSONITE® product.

TRANSONITE® PRODUCT RANGE

Parameter	Minimum	Maximum
Width, in (mm)	6 (152)	102 (2591)
Length, in (mm)	1 (25.4)	Limited only by Shipping
Skin Thickness, in (mm)	0.050 (1.27)	0.5 (12.7)
Sandwich Thickness, in (mm)	0.5 (12.7)	4 (102)
3D Fiber Density (FIPSI)	1/2 per sq inch	19 per square inch

TRANSONITE® FEATURES AND BENEFITS

The 3-D through-thickness fibers in TRANSONITE® provide greater durability than conventional sandwich panels. Delamination, a common problem in traditional sandwich materials, is virtually eliminated with the 3-D reinforcements that tie the face sheets together. Additionally, TRANSONITE® is one of the only panel products available which can be produced at any length, and width up to 8.5 feet. This provides large clean surfaces with no edges or seams. TRANSONITE® can be manufactured using a wide variety of core materials, reinforcements, fabrics, and resins.

TRANSONITE® Delivers:

- Extremely High Strength
- Very Lightweight
- Corrosion Resistance
- Extreme Durability
- Large Panel Size
- Acoustic Dampening
- Insulative Properties
- High Volume Production
- Fire Resistant Properties
- Reduced Labor

TRANSONITE® MECHANICAL AND PHYSICAL PROPERTIES

Mechanical and physical properties vary depending on the resin type, FIPSI pattern, skin thickness, fiber orientation, core material and shear web configuration when applicable. Typical FRP face sheet properties are presented below.

TYPICAL SKIN PROPERTIES

Test	Imperial Units	Metric Units
Tensile Strength Lengthwise ASTM D638	24,000 psi	165 Mpa
Tensile Strength Crosswise ASTM D638	22,000 psi	152 Mpa
Tensile Modulus Lengthwise ASTM D638	2.8E6 psi	19.3 Gpa
Tensile Modulus Crosswise ASTM D638	2.3E6 psi	15.9 Gpa
Compressive Strength Lengthwise ASTM D695	8,600 psi	59.2 Mpa
Compressive Strength Crosswise ASTM D695	8,600 psi	59.2 Mpa
Compressive Modulus Lengthwise ASTM D695	2.8E6 psi	19.3 Gpa
Compressive Modulus Crosswise ASTM D695	2.8E6 psi	19.3 Gpa
In-Plane Shear Strength Lengthwise ASTM D2344	5,000 psi	34.4 Gpa

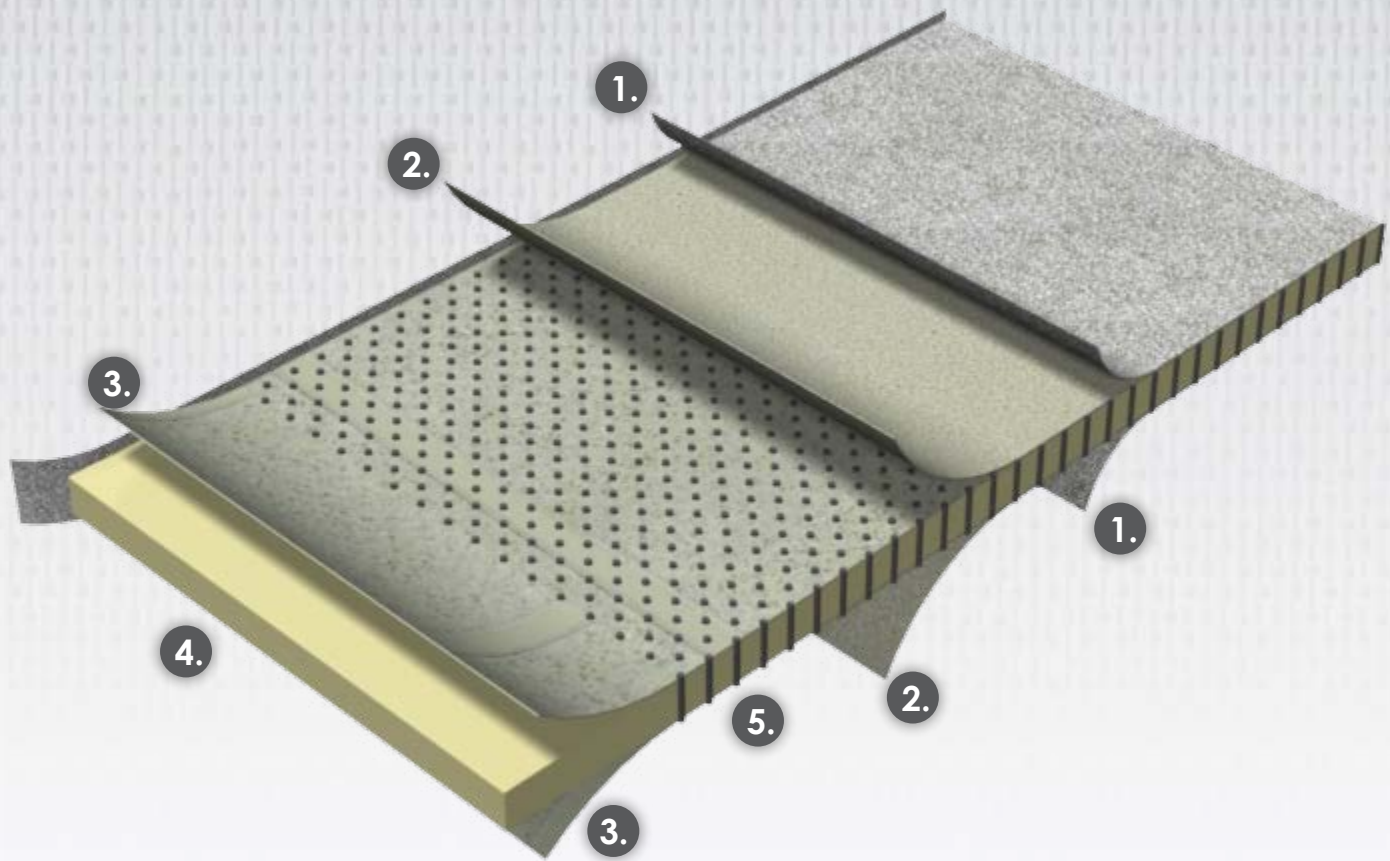
The perpendicular compression strength of the finished panel, depending on the number of FIPSI and shear webs, ranges from 100 to 1200 psi.

The shear strength ranges from 20 psi to 400 psi.

Note: CPI can custom-design a TRANSONITE® panel to meet a customer's mechanical and physical properties.

TYPICAL TRANSONITE® PANEL SYSTEMS

1.0" Thick 4.0 FIPSI 0.070" FRP Face Sheets (PA510)



TYPICAL FIBER ARCHITECTURE:

1. 10 MIL NYLON VEIL
2. E/E_{CR} GLASS -CONTINUOUS FILAMENT MAT
3. E/E_{CR} GLASS -GLASS WOVEN ROVING FABRIC
4. 2 PCF POLYISOCYANURATE FOAM CORE
5. E/E_{CR} FIBER INSERTS

E = E-glass (Electrical Grade Fiberglass)
 E_{CR} = E-glass Corrosion (Boron Free)

Typical Physical Properties

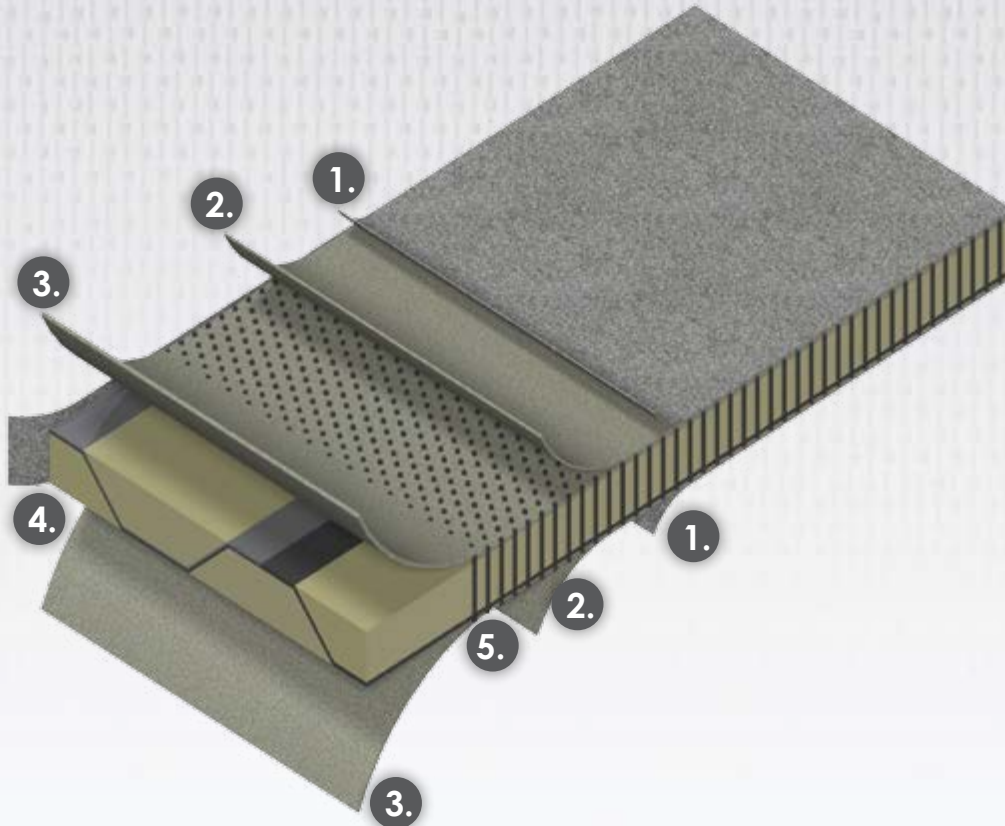
Thickness: 1.0" (25.4mm)
Face Skin Thickness: 0.07" (1.8mm)
FIPSI: 4.0 Staggered Pattern
Weight: 2.0 psf (9.77 kg/m ²)
Core Material: Polyisocyanurate Foam 2 pcf density
Compressive Strength Crosswise ASTM D695
Compressive Modulus Lengthwise ASTM D695
Compressive Modulus Crosswise ASTM D695
In-Plane Shear Strength Lengthwise ASTM D2344

Typical Panel Mechanical Properties

Flexural Strength: 3,400 psi (23.4 Mpa)
Flexural Modulus: 4.1E5 psi (2.8Gpa)
Shear Strength: 73 psi (503 kpa)
Compression Strength: 260 psi (1.8Mpa)

TYPICAL TRANSONITE® PANEL SYSTEMS

2.0" Thick 5.33 FIPSI 0.24 and 0.17" FRP Face Sheets (PA521) 6/4



TYPICAL FIBER ARCHITECTURE:

1. 10 MIL NYLON VEIL
2. E/E_{CR} GLASS -CONTINUOUS FILAMENT MAT
3. E/E_{CR} GLASS -GLASS WOVEN ROVING FABRIC
4. 2 PCF POLYISOCYANURATE FOAM CORE
5. E/E_{CR} FIBER INSERTS

E = E-glass (Electrical Grade Fiberglass)
E_{CR} = E-glass Corrosion (Boron Free)

Typical Physical Properties

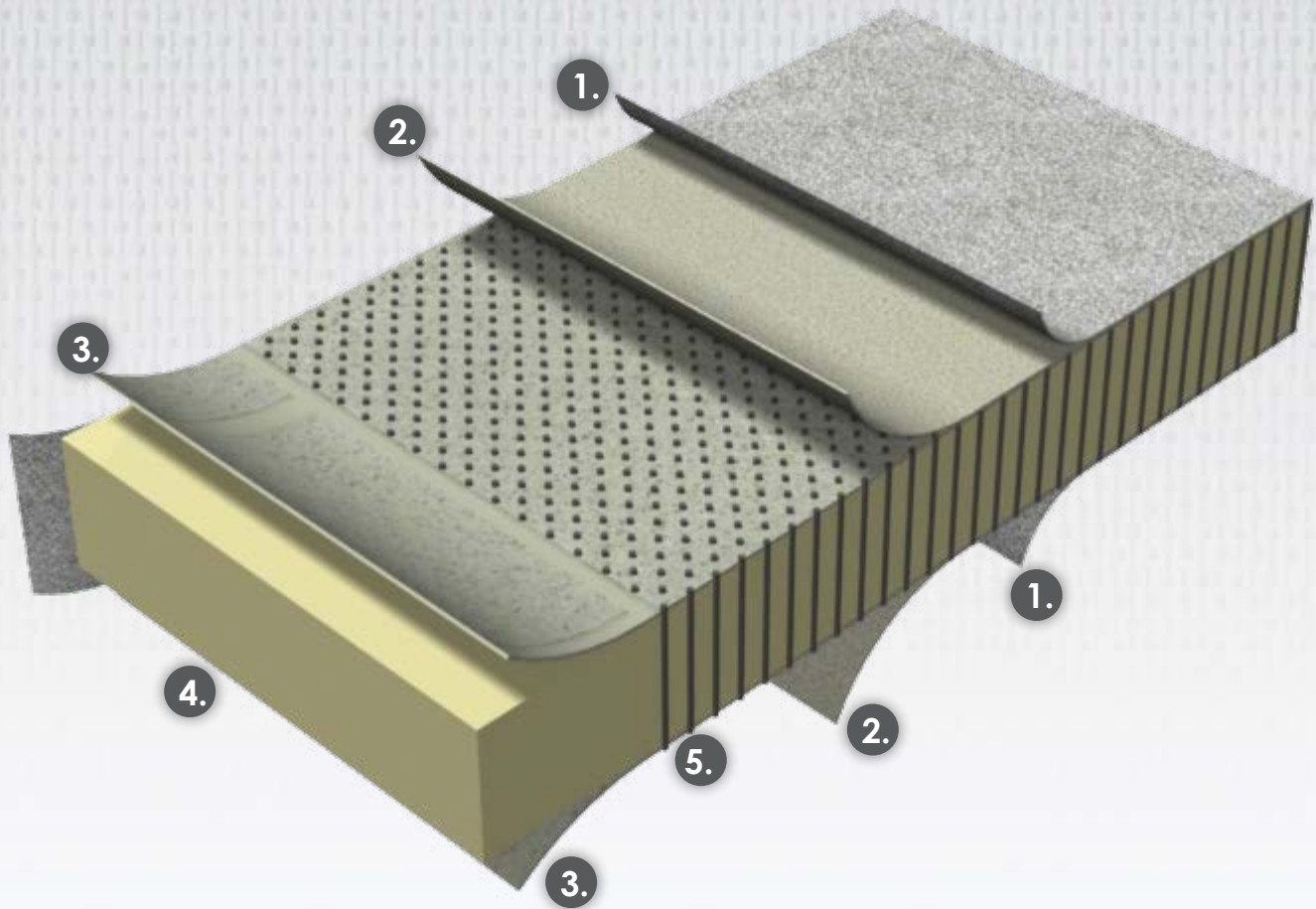
Thickness: 2.0" (50.8mm)
Face Skin Thickness: 0.24" and 0.17" (6.1mm&4.3mm)
FIPSI: 5.3 Staggered Pattern
Weight: 6.6 psf (32.2 kg/m²)
Core Material: Polyisocyanurate Foam 2 pcf density

Typical Panel Mechanical Properties (AOC)

Flexural Strength: 18,530 psi (128 Mpa)
Flexural Modulus: 1.95E6 psi (13.4 Gpa)
Shear Strength: 274 psi (1.9 Mpa)
Perp. Compression Strength: 280 psi (1.9 Mpa)

TYPICAL TRANSONITE® PANEL SYSTEMS

3.5" Thick 4.0 FIPSI 0.17" FRP Face Sheets (PA535)



TYPICAL FIBER ARCHITECTURE:

1. 10 MIL NYLON VEIL
2. E/E_{CR} GLASS -CONTINUOUS FILAMENT MAT
3. E/E_{CR} GLASS -GLASS WOVEN ROVING FABRIC
4. 2 PCF POLYISOCYANURATE FOAM CORE
5. E/E_{CR} FIBER INSERTS

E = E-glass (Electrical Grade Fiberglass)
 E_{CR} = E-glass Corrosion (Boron Free)

Typical Physical Properties

Thickness: 3.5" (88.9mm)
Face Skin Thickness: 0.17" (4.3mm)
FIPSI: 4.0 Staggered Pattern
Weight: 5.3 psf (25.9 kg/m ²)
Core Material: Polyisocyanurate Foam 2 pcf density
Thermal Resistance: 11.67 hr*ft ² *°F/BTU

Typical Panel Mechanical Properties (1525)

Flexural Strength: 3,300 psi (23.2 Mpa)
Flexural Modulus: 5.5E5 psi (3.8 Gpa)
Shear Strength: 22 psi (151 kpa)
Perp. Compression Strength: 180 psi (1.2 Mpa)
Pin Bearing: 9,800 psi (67.5 Mpa)
Screw Pull Out (#9 deck screw): 385 lbs (174 kg)

CPI CAPABILITIES

SECONDARY OPERATIONS

CPI can perform a variety of secondary operations to custom fabricate a TRANSONITE® panel after the pultrusion process. CPI has a 60" wide Computer Numerical Control (CNC) machine that can route custom shapes, and perform milling and drilling operations.

In addition, CPI can add various surface finishes on a panel to include applying a polyurea (Rhino-Lining) coating; installing a linoleum floor covering; applying pressure-sensitive films or decals; or applying aggregate grits on the skins to provide anti-skid for traction protection.



214 Industrial Lane, Alum Bank, PA 15521

814.839.4186 • Fax 814.839.4276 • Toll Free 888.CPI.PULL

www.creativepultrusions.com



Flowgrip®, Pultex®, Supergrate®, SUPERPILE® and Superplank® are registered trademarks of Creative Pultrusions, Inc. Creative Pultrusions™, Superstud!™, Superstud!™/Nuts!, SUPURTUF™, Superdeck™, Tuf-dek™, SuperLoc™, SuperWale™, SuperCap™ and SuperRod™ are trademarks of Creative Pultrusions, Inc.



PLEASE SCAN WITH PHONE