



ArmorTuf® Smooth High Impact Liner | ARMT

Product:

ArmorTuf is a fiberglass reinforced plastic (frp) product panel. It is a high-impact resistant composite panel made with woven fiberglass and polyester resin. It out-performs thermoplastic products and standard chopped glass thermoset products throughout a wide range of performance tests.

Purpose:

ArmorTuf is specifically designed and formulated for the use as a high-impact liner panel for refrigerated and dry van trailers, containers, and rail cars.



Table One: Physical Properties

Typical Values			
Property	ARMT 0.06"	ARMT 0.075"	Test Method
Flexural Strength	30 x 10 ³ psi 207 MPa	42 x 10 ³ psi 290 MPa	ASTM - D790
Flexural Modulus	0.7 x 10 ⁶ psi 4826 MPa	1.3 x 10 ⁶ psi 8963 MPa	ASTM - D790
Tensile Strength	45 x 10 ³ psi 310 MPa	48 x 10 ³ psi 331 MPa	ASTM - D638
Tensile Modulus	2.0 x 10 ⁶ psi 13,790 MPa	2.3 x 10 ⁶ psi 15,858 MPa	ASTM - D638
Barcol Hardness	35	35	ASTM - D2583
Coefficient of Linear Thermal Expansion	0.80 x 10 ⁻⁵ in/in/°F 14 μm/m/°C	0.80 x 10 ⁻⁵ in/in/°F 14 μm/m/°C	ASTM - D696
Thermal Conductivity	0.4 Btu•in/hr•ft ² °F 5.0 cal•cm/hr•m ² °C	0.4 Btu•in/hr•ft ² °F 5.0 cal•cm/hr•m ² °C	ASTM - C177
Water Absorption	0.2%/24hrs@77°F 25°C	0.2%/24hrs@77°F 25°C	ASTM - D570
Specific Gravity	1.75	1.75	ASTM - D792

Table Two: Physical Properties

Product Code	Nominal Thickness	Nominal Weight	Finish	Size	Color
ARMT	0.06" 1.5 mm	0.46 lbs/ft ² 2.25 kg/m ²	Smooth	Available up to 104" (2.64 m) wide and up to 300' (91 m) in length. Panels can be interlapped into packaged coils up to 700' (213 m)	White 85
	0.075" 1.9 mm	0.59 lbs/ft ² 2.88 kg/m ²			

SPECIFICATIONS

Crane Composites panels are manufactured in lengths and widths as required.

COMPOSITION

Reinforcement: Random chopped fiberglass and woven fiberglass.
Resin Mix: Polyester/styrene copolymer and inorganic fillers and pigments.

FINISHED PANEL QUALITY

Panels shall have a wear side with a smooth finish. The backside shall be smooth. Backside imperfections, which do not affect functional properties, are not cause for rejection.

Physical properties shall be as set forth in Table 1.

Dimensions shall be as specified on purchase order, subject to the following tolerances:

Width: $\pm 1/8"$ (± 3.2 mm)

Length: $\pm 1/8"$ (± 3.2 mm) up to 12' (3.7 m)

Squareness: $\pm 1/8"$ (3.2 mm) in 48" (1.2 m) of width

Average thickness: ± 10 mils

Bulk Coil policy #6207 applies

CERTIFICATIONS

1. Meets USDA/FSIS requirements
2. Product identified by 1 green thread on the back.

FABRICATING RECOMMENDATIONS

Note: Protect your eyes with goggles; cover your nose and mouth with a filter mask; cover exposed skin when cutting CCI panels.

Hand Fabricating: Drilling—High speed drill bit (60° cutting angle, with 12°-15° clearance) or hole saw.

Stapling: Standard pneumatic stapler.

Cutting: Sheet metal shears or circular saw with reinforced carborundum or carbide-tipped blade.

Production Fabricating: Use carbide-tipped tools. Straight cuts can be sheared (90° cutting edge with 0.002" [0.05 mm] clearance) or sawed. For irregular cuts, use die punch or band saw.

Painting Preparation: To properly prepare the panel surface for painting, make sure the surface is clean, dry, and free from all oils, grease, silicones, dust, and other contaminants. Alkaline detergents or clean water may be used for this purpose. Sanding or roughening of the panel surface is recommended to achieve acceptable paint adhesion. Use 600 grit or finer sand paper or a 3M® "Ultrafine" Scotch-Brite® pad should be used.

Cleaning Instructions: Available from CCI.

DESIGN DATA NOTES

Bulk coil may be ordered in long lengths or in specific cut-to-size pieces. Crane Composites reserves the right to manufacture and ship total linear footage of long length bulk coils ordered within the following parameter lengths per piece:

Min. 200' (61.0 m)

Max. 700' (213 m)

Cut-to-size lengths 12' (3.7 m) and over of the same width will be interlapped (18"-36" [457.2 mm-914.4 mm] interlap per panel) into a coil for ease of handling and shipping. Total length tolerance – 0" and +6" (-0 mm and +152.4 mm).

STAINING STATEMENT

Some staining/discoloration may occur to frp liner panels after they have been in service for several years. This is a normal wear condition. As long as acceptable cleaning methods (i.e., steam cleaning) are used, the surface should remain sanitary and acceptable.

STORAGE REQUIREMENTS

Crane Composites panels are designed for peak performance prior to and after the panels have been applied. Careful handling during the manufacturing process is important. Avoid excessive clamping, dropping and scraping. Keep contents dry. Store indoors in a well ventilated area. When outside storage is necessary, cover and protect from the weather and exposure to sunlight.

PLEASE NOTE THE FOLLOWING PRODUCT USE INFORMATION:

Products manufactured by CCI will provide a clean, aesthetically pleasing finished installation. However, by nature, fiberglass reinforced plastic panels may occasionally have small areas that are aesthetically unacceptable for use. Panels should be inspected on-site prior to installation or lamination and original CCI skid tag/ticket number removed and retained. If any portion of material will not provide an acceptable appearance, CCI should be notified at once. Please report the non-conforming product utilizing the retained skid tag/ticket number. Upon verification of unacceptability, CCI will replace or refund the purchase price of the non-conforming product.

This product is not intended for Interior use that requires a Class C fire rating.

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Crane Composites is the manufacturer of ArmorTuf, Kemlite and a variety of other fiberglass reinforced plastic (frp) composite panels. Inspired by the Kemlite tradition, Crane Composites has over 55 years of experience in Transportation Products and is a recognized industry leader in frp applications.



We believe all information given is accurate. It is offered in good faith, but without guarantee. Since conditions of use are beyond our control, all risks are assumed by the user. Nothing herein shall be construed as a recommendation for uses which infringe on valid patents or as extending a license under valid patents.

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