

COOLING TECHNOLOGY INSTITUTE

Fiberglass-Reinforced Plastic Panels



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This guideline document summarizes the best current state of knowledge regarding the specific subject. This document represents a consensus of those individual members who have reviewed this document, its scope and provisions. It is intended to aid all users or potential users of cooling towers.

Approved by the CTI Executive Board



This document has been reviewed and approved as part of CTI's Five Year Review Cycle. This Document is again subject to review in 2014.

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1.0 SCOPE

- 1.1 This specification covers the classification, material of construction, workmanship, physical properties, and methods of testing glass-fiber reinforced plastic panels in various profiles intended for use as casing, louvers, and similar applications on cooling towers. FRP panels as covered by this specification may also be suitable for other uses in cooling towers. Consult manufacturers, regarding the suitability of FRP for other applications.
- 1.2 Supplementary information on glass-fiber reinforced plastic (FRP) panels may be obtained from ASTM D-3841 Standard Specification for Glass Fiber-Reinforced Polyester Plastic Panels or directly from the manufacturers.
- 1.3 Laboratory flammability tests (E84/UL-723) applicable to this standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire risk of materials, products, or assemblies under actual fire conditions.

2.0 APPLICABLE DOCUMENTS

- 2.1 ASTM D-3841 - Standard Specifications for Glass Fiber Reinforced Polyester Plastic Panels.
(Current Revision)
- 2.2 ASTM D-618 - Conditioning Plastics and Electrical Insulation Materials for Testing.
- 2.3 ASTM D-790 - Test Method for Flexural Properties of Reinforced Plastics.
- 2.4 ASTM D-638 - Test method for Tensile Properties of Plastics
- 2.5 ASTM D-1494 - Test Method for diffuse light Transmission Factor of Reinforced Plastic Panels.
- 2.6 ASTM E-84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- 2.7 ASTM E-72 - Conducting Strength Tests on Building Materials

3.0 MATERIALS

- 3.1 The polyester resin used in the panels shall be a thermosetting styrenated and/or

acrylated light-stabilized resin composed of polymeric esters in which the recurring ester groups are an integral part of the main polymer chain. The resin shall be reinforced with glass fibers. Glass fiber reinforcement may be either chopped strand roving, continuous strand roving, woven roving or any combination thereof. Glass veils, polyester veils or any combination thereof may be used.

The polyester resin may contain additives for various purposes such as additives to provide low smoke density, or high flame retardancy, catalyst residues, stabilizers, pigments, dyes, opacifying fillers, and reinforcing fiber or filament. Other resin systems such as Vinylester or coatings such paint/gel coat maybe used. Consult the manufacturer to find out if this is required.

- 3.2 Attachment hardware must be a minimum of 300 series stainless or per the customer specifications.

4.0 WORKMANSHIP

The panels will conform to the specific dimensions of the profile being produced and shall be fully cured. Panels shall not contain major visual cracks, pinholes, foreign inclusions, or surface wrinkles that would impair the proper resting of the panels, alter the specific dimensions of the panels, or otherwise affect their serviceability.

5.0 PHYSICAL REQUIREMENTS

- 5.1 SIZE (Length and Width) - Tolerances or nominal length and width specified by the purchaser shall be +/- 1/16 inch (1.6 mm) measured in accordance with 6.2.
- 5.2 SQUARENESS - Panels shall be within 1/8 inch (3.2 mm) of square when measured in accordance with 6.3.
- 5.3 WEIGHT - Tolerance on the specified weight of all panels shall be $\pm$ 10% when determined in accordance with 6.4 except for the following: Minimum panel weight produced shall not be less than 8 ounces/square foot. The following is a table of the panel weights typically specified and their associated manufacturing tolerances.