



Standard Specification for Fiberglass (GRP) Pultruded Open-Weather Storm and Guard, Square Railing Systems¹

This standard is issued under the fixed designation F1092; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification provides the material requirements, construction, installation, and testing requirements for open-weather deck, storm-and-guard, fiberglass square railing systems. Components are to be manufactured by the pultrusion process.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 The following safety hazards caveat pertains only to the test methods portion, Section 9, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

D570 Test Method for Water Absorption of Plastics

D638 Test Method for Tensile Properties of Plastics

D695 Test Method for Compressive Properties of Rigid Plastics

D790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

D3846 Test Method for In-Plane Shear Strength of Reinforced Plastics

D3917 Specification for Dimensional Tolerance of Thermo-

setting Glass-Reinforced Plastic Pultruded Shapes

E84 Test Method for Surface Burning Characteristics of Building Materials

3. Terminology

3.1 *pultrusion*—process of pulling fiberglass rovings (strands), mats, and other forms of reinforcements such as woven fiberglass through baths of thermosetting liquid resin, and then through a heated forming die (made of steel) to form a completed composite fiberglass structural shape.

3.1.1 *Discussion*—The heated die causes a chemical reaction to be initiated in the resin. The liquid resin molecules will cross-link and develop into a hardened plastic that is reinforced with the fiberglass.

4. Classification

4.1 Handrails and stanchions shall be fiberglass pultruded square tube available in the following two types:

4.1.1 *Type 1F*—Three-course railing systems, for use along the exposed peripheries of freeboards, weather decks, and superstructure decks.

4.1.2 *Type 2F*—Two-course railing systems, for use on bridges, platforms, walkways, and elsewhere as needed.

5. Ordering Information

5.1 Orders for materials under this specification shall include the following information:

5.1.1 Quantity (lineal feet (metres) of railing system).

5.1.2 Name of material (fiberglass pultruded square railing system).

5.1.3 Type (see 4.1).

5.1.4 Fiberglass coaming, if specified (lineal feet (metres)). (See 6.2.5.)

5.1.5 Attachment method for stanchions (see 6.2.6).

5.1.6 ASTM designation and year of issue.

6. Materials and Manufacture

6.1 Materials:

6.1.1 The fiberglass (GRP) pultruded square tube shall be 2 × 2 × ¼ in. (50 × 50 × 6.4 mm) with the outside corner radius ⅝ in. (4 mm). A synthetic surface veil shall be the outermost layer of reinforcement covering the entire exterior surface. The

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.03 on Outfitting and Deck Machinery.

Current edition approved Nov. 1, 2014. Published November 2014. Originally approved in 1987. Last previous edition approved in 2010 as F1092 – 04 (2010). DOI: 10.1520/F1092-14.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.