

IAPMO IGC 329 – ~~2023~~2024



PUBLIC REVIEW DRAFT

Industry Standard for

Steel Reinforced Polyethylene Tanks



IAPMO Standard

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Preface

This is the ~~third~~ ~~second~~ ~~edition~~ of IAPMO IGC 329, Steel Reinforced Polyethylene Tanks. This Standard supersedes ~~IAPMO IGC 329-2023~~ ~~IAPMO IGC 329-2016~~, Steel Reinforced Polyethylene Rainwater Harvesting Tanks. The previous edition of this Standard is ~~December 2023~~. ~~March 2016~~.

This Standard was developed by the IAPMO Standards Review Committee (SRC) in accordance with the policies and procedures regulating IAPMO industry standards development, Policy S-001, Standards Development Process. This Standard was approved as an IAPMO Industry Standard on ~~September 26,~~ ~~2023~~ Month, day, year

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 - (a) *standard designation (number);*
 - (b) *relevant section, table, or figure number, as applicable;*
 - (c) *wording of the proposed change, tracking the changes between the original and the proposed wording;*
and
 - (d) *rationale for the change.*
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 - (a) *the edition of the standard for which the interpretation is being requested;*
 - (b) *the definition of the problem, making reference to the specific section and, when appropriate, an illustrative sketch explaining the question;*
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- (12) Proposals for amendments to this Standard will be processed in accordance with the standards-writing procedures of IAPMO industry standards development, Policy S-001, Standards Development Process.*

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IAPMO IGC 329-~~2023~~2024

Steel Reinforced Polyethylene Tanks

1 Scope

1.1 Scope

- 1.1.1** This Standard covers steel reinforced polyethylene septic and rainwater harvesting tanks intended for below ground applications and specifies requirements for materials, physical characteristics, performance testing, and markings.

Tanks covered by this Standard are,

- (a) fabricated using steel reinforced high density polyethylene pipe;
- (b) prefabricated or assembled at the site of final installation;
- (c) intended for buried installations;
- (d) intended for stationary (i.e., fixed) installations only; and
- (e) intended for atmospheric pressure (i.e., non-pressurized) applications only.

Note: *Steel reinforced polyethylene tanks are normally used for underground applications where soil provides support to their flexible walls. The tanks are normally fabricated utilizing SRPE walls with bulkheads, risers, partitions, etc. as required for the project.*

1.2 Alternative Materials

The requirements of this Standard are not intended to prevent the use of alternative materials or methods of construction provided such alternatives meet the intent and requirements of this Standard.

1.3 Terminology

In this Standard,

- (a) “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy to comply with the Standard;
- (b) “should” is used to express a recommendation, but not a requirement;
- (c) “may” is used to express an option or something permissible within the scope of the Standard; and
- (d) “can” is used to express a possibility or a capability.

Notes accompanying sections of the Standard do not specify requirements or alternative requirements; their purpose is to separate explanatory or informative material from the text. Notes to tables and figures are considered part of the table or figure and can be written as requirements.

1.4 Units of Measurement

SI units are the primary units of record in global commerce. In this Standard, the inch/pound units are shown in parentheses. The values stated in each measurement system are equivalent in application, but each unit system is to be used independently. All references to gallons are to U.S. gallons.

2 Reference Publications

This Standard refers to the following publications and, where such reference is made, it shall be to the current edition of those publications, including all amendments published thereto.

ASTM International

ASTM A653/A653M

Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM D638

Standard Test Method for Tensile Properties of Plastics

ASTM D790

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

ASTM D1693

Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics

ASTM D3350

Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

[ASTM F2562](#)

[Standard Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non Pressure Drainage and Sewerage](#)

IAPMO (international Association of Plumbing and Mechanical Officials)

IAPMO/ANSI Z1002

Rainwater Harvesting Tanks

[IAPMO/ANSI Z1000](#)

[Prefabricated Septic Tanks](#)

3 Definitions and Abbreviations

3.1 Definitions

The definitions of IAPMO/ANSI Z1002 and [IAPMO/Z1000](#) shall apply in this Standard.

3.2 Abbreviations

The following abbreviations apply in this Standard:

SRPE — Steel Reinforced Polyethylene

4 General Requirements

4.1 General

Steel reinforced polyethylene tanks shall comply with the applicable requirements of IAPMO/ANSI Z1002 [for Rainwater Harvesting Tanks and IAPMO/ANSI Z1000 for Septic Tanks](#), with the exception of that the steel reinforced polyethylene material shall comply with the requirements of this standard.

4.2 Connections

Tank segments can be joined together either at the factory or in the field by certified installers to form the final tank configuration shown on the project plans. All fittings and components used shall be certified. Acceptable joint types are:

- (a) Bell and spigot, gasketed type – seal is affected by a gasket compressed between the spigot and bell ends of the pipe.
- (b) Welded coupler – seal is achieved by lapping an HDPE sleeve over the two tank segments to be joined and fully welding the coupler to each tank segment.
- (c) Other – When project conditions dictate; it is permissible to use joining methods such as flanging, extrusion welding, electro-fusion and others. Methods proposed should be evaluated by the engineer for suitability.

5 Materials

5.1 Steel

The steel material used in the manufacture of SRPE tanks shall have a minimum yield strength of 140 Mpa (20,305 psi), and shall be:

- (a) cold- or hot-rolled, formable steel meeting the requirements of ASTM A653/A653M;
- (b) galvanized with a minimum G60 coating weight as specified in ASTM A653/A653M.

5.2 Polyethylene

5.2.1 Compound

5.2.1.1 Tanks

Polyethylene for SRPE tanks shall have at least a cell classification of 335420C or 335420E as specified in ASTM D3350.

5.2.1.2 Parts, Joints and Fittings

Injection molded parts, joints and fittings used in the assembly of the SRPE tanks shall have a minimum cell classification of 314420C or 314420E as specified in ASTM D3350.

5.2.2 Physical Properties

5.2.2.1 Environmental Stress Crack Resistance

The environmental stress crack resistance of polyethylene for use in the construction of SRPE tanks shall be a minimum of 192 h when tested per ASTM D1693, test condition C using a 100% Igepal reagent with a maximum allowable failure criteria of 20%.

5.2.2.2 Tensile Strength

Polyethylene materials used in the manufacture of SRPE tanks shall have a minimum tensile strength of 20.7 MPa (3,000 psi) when measured in accordance with ASTM D638.

5.2.2.3 Flexural Modulus of Elasticity

Polyethylene materials used in the manufacture of SRPE tanks shall have a minimum flexural modulus of 758.4 MPa (110,000 psi) when measured in accordance with ASTM D790.

5.2.2.4 Wall Thickness

The minimum wall thickness of SRPE tank shall be:

- (a) 2.0 mm (0.077 in) for tanks up to a diameter of 1067 mm (42 in);
- (b) 3.1 mm (0.124 in) for tanks up to a diameter of 1524 mm (60 in); and,
- (c) 5.6 mm (0.220 in) for tanks up to a diameter of 3048 mm (120 in).

6 Testing Requirements and Performance Criteria

6.1 General

Steel reinforced polyethylene tanks shall comply with the applicable testing requirements and performance criteria of IAPMO/ANSI Z1002 [for Rainwater Harvesting Tanks and IAPMO/ANSI Z1000 for Septic Tanks](#). The watertightness tests can be performed either at a manufacturing location or in the field after the product is installed.

6.2 Test Specimen

Steel reinforced polyethylene tanks shall be installed in accordance with the manufacturers' installation instructions. In addition, the specimen may be braced or supported as necessary to simulate buried installation and minimize distortion of the tank during the testing.

7 Markings and Accompanying Literature

7.1 General

Tanks complying with this Standard shall be marked and shall be accompanied with literature in accordance with the applicable requirements of IAPMO/ANSI Z1002 [for Rainwater Harvesting Tanks and IAPMO/ANSI Z1000 for Septic Tanks](#).



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