



Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Joints Using Flexible Elastomeric Seals¹

This standard is issued under the fixed designation D4161; 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 covers axially unrestrained bell-and-spigot gasket joints including couplings required for machine-made “fiberglass” (glass-fiber-reinforced thermosetting-resin) pipe systems, 8 in. (200 mm) through 156 in. (4000 mm), using flexible elastomeric seals to obtain soundness. The pipe systems may be pressure (typically up to 250 psi) or nonpressure systems for water or for chemicals or gases that are not deleterious to the materials specified in this specification. This specification covers materials, dimensions, test requirements, and methods of test.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are provided for information purposes only.

NOTE 1—There is a similar but technically different ISO Standard (ISO 8639).

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D883 Terminology Relating to Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics

F412 Terminology Relating to Plastic Piping Systems

F477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

3. Terminology

3.1 Definitions:

3.1.1 *General*—Definitions and abbreviations are in accordance with Terminology D883 or Terminology F412, and Terminology D1600 unless otherwise indicated.

4. Types of Joints

4.1 This specification covers two types of axially unrestrained joints based on effecting soundness of the joint through compression of an elastomeric seal or ring:

4.1.1 Bell-and-spigot or coupling joint with the gasket placed in the bell in circumferential compression. An elastomeric gasket joint design featuring a continuous elastomeric ring gasket placed in an annular space provided in the bell or socket of the pipe or fitting. The spigot end of the pipe or fitting is forced into the bell, thereby compressing the gasket radially to form a positive seal.

4.1.2 Bell-and-spigot or coupling joint with the gasket placed on the spigot in circumferential tension: A push on joint design featuring a continuous elastomeric ring gasket placed in an annular space provided on the spigot end of the pipe or fitting. The spigot is forced into the bell of the pipe or fitting, thereby compressing the gasket radially to form a positive seal.

NOTE 2—A coupling joint of these types is a loose double-bell sleeve used to connect pipes which have spigots at both ends (see Fig. 1). All references to bells in this specification are applicable to the sleeve coupling as well as to the integral bell of a bell-and-spigot gasket joint.

5. Materials and Manufacture

5.1 The gasket shall be a continuous elastomeric ring of circular or other geometric cross section and shall meet the requirements of Specification F477, unless otherwise specified in this specification. When a splice is used in the manufacture of the gasket, no more than two splices shall be made in any one gasket.

5.1.1 The chemical composition of the gasket shall be compatible with the type of environment to which it will be

¹ This specification is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.23 on Reinforced Plastic Piping Systems and Chemical Equipment.

Current edition approved April 1, 2019. Published May 2019. Originally approved in 1982. Last previous edition approved in 2014 as D4161 – 14. DOI: 10.1520/D4161-14R19.

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.