



# Standard Specification for Field-assembled Anodeless Riser Kits for Use on Outside Diameter Controlled Polyethylene and Polyamide-11 (PA11) Gas Distribution Pipe and Tubing<sup>1</sup>

This standard is issued under the fixed designation F2509; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope\*

1.1 This specification covers requirements and test methods for field-assembled anodeless riser kits for use with outside diameter controlled polyethylene and PA11 gas distribution pipe and tubing in sizes through 2 IPS as specified in Specification **D2513** polyethylene and Specification **F2945** for PA11.

1.2 The test methods described are not intended to be routine quality control tests.

1.3 This specification covers the types of field-assembled anodeless riser kits described in **3.3.2**.

1.4 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 not considered standard.

1.5 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures), shall not be considered as requirements of the standard.

1.6 *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.*

1.7 *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.*

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee **F17** on Plastic Piping Systems and is the direct responsibility of Subcommittee **F17.60** on Gas.

Current edition approved April 1, 2024. Published April 2024. Originally approved in 2006. Last previous edition approved in 2019 as F2509 – 15(2019). DOI: 10.1520/F2509-24.

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

**A513/A513M** Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing

**A53/A53M** Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

**D638** Test Method for Tensile Properties of Plastics

**D1600** Terminology for Abbreviated Terms Relating to Plastics (Withdrawn 2024)<sup>3</sup>

**D2513** Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings

**F412** Terminology Relating to Plastic Piping Systems

**F1948** Specification for Metallic Mechanical Fittings for Use on Outside Diameter Controlled Thermoplastic Gas Distribution Pipe and Tubing

**F2897** Specification for Tracking and Traceability Encoding System of Natural Gas Distribution Components (Pipe, Tubing, Fittings, Valves, and Appurtenances)

**F2945** Specification for Polyamide 11 Gas Pressure Pipe, Tubing, and Fittings

### 2.2 ASME Standards:<sup>4</sup>

**ASME Boiler and Pressure Vessel Code**<sup>4</sup>

**ASME B1.20.1** Pipe Threads, General Purpose (Inch)<sup>5</sup>

**B31.8** Gas Transmission and Distribution Piping Systems

### 2.3 Federal Regulations:<sup>5</sup>

**United States CFR, Title 49, Part 192** Pipeline Safety Regulations

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

<sup>4</sup> Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

<sup>5</sup> Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, <http://www.access.gpo.gov>.

\*A Summary of Changes section appears at the end of this standard

2.4 *UL Standard*:<sup>6</sup>

**UL 360 Standard for Liquid-Tight Flexible Steel Conduit**

### 3. Terminology

3.1 The gas industry terminology used in this specification is in accordance with ASME B31.8 or the United States CFR, Title 49, Part 192, unless otherwise indicated.

3.1.1 *pipe*—used herein refers to both “pipe” and “tubing” unless specifically stated otherwise.

3.1.2 *gas*—used herein refers to any fuel gas unless specifically stated otherwise.

3.2 *Definitions*—Definitions are in accordance with Terminology **F412** unless otherwise specified. Abbreviations are in accordance with Terminology **D1600** unless otherwise specified.

#### 3.3 *Definitions*:

3.3.1 *anodeless riser, n*—a type of mechanical fitting which is designed to transport gas from underground polyethylene or PA11 piping to above-ground metallic piping. When properly installed, the polyethylene or PA11 piping is the gas carrier in the below ground portion of an anodeless riser and is protected by a rigid metallic or plastic coated flexible metallic riser casing when it extends above ground level.

3.3.2 *field-assembled anodeless riser kit, n*—a kit containing all of the elements required to assemble an anodeless riser at the point of installation with the exception of the gas-carrying polyethylene or PA11 piping. It consists of, at a minimum, a riser casing and a riser adapter. These components may be either integrally combined or include provisions for attachment to one another at the point of installation.

3.3.3 *mechanical fitting, n*—a device for making a connection between piping components that employs physical force to develop a leak-tight seal, produce alignment, and provide resistance to pullout caused by axial loads.

3.3.4 *riser adapter, n*—a type of mechanical fitting used to join polyethylene and PA11 pipe to a metallic piping connection (typically a pipe thread). Riser adapters are sometimes referred to as service head adapters.

3.3.5 *riser casing, n*—the metallic, non-gas carrying portion of an anodeless riser that serves as a protective conduit for the polyethylene or PA11 piping. It may be either rigid, flexible, or a combination of both.

3.3.6 *qualified installation instructions, n*—a written procedure for making a plastic mechanical joint that has been demonstrated will meet the requirements set forth in the United States CFR, Title 49, Part 192.283(b), and this standard.

### 4. Materials and Manufacture

#### 4.1 *General*:

4.1.1 All materials of the riser kit shall meet the performance requirements of this specification and applicable referenced specifications. Specific materials referenced in this section are common materials used in these types of products.

<sup>6</sup> Available from Underwriters Laboratories (UL), 2600 N.W. Lake Rd., Camas, WA 98607-8542, <http://www.ul.com>.

Alternate materials proven to provide equal or better performance shall be acceptable.

4.1.2 All burrs on metal components which could damage the polyethylene or PA11 piping during assembly shall be removed or suitably covered with a protective device such as an ID plastic sleeve, to preclude any damage to the polyethylene or PA11 gas piping.

#### 4.2 *Riser Casings*:

4.2.1 Rigid riser casings shall be constructed of Specification **A53/A53M** or **A513/A513M** or equivalent metallic materials with a minimum nominal 0.065 in. (1.65 mm) wall thickness within the allowable tolerance ranges of the applicable metallic piping specification.

4.2.2 Flexible riser casings shall be constructed of plastic coated flexible metallic tubing providing a crush strength of not less than 1000 lbs. when tested in accordance with UL 360, section 11.1. The flexible tubing shall also be capable of withstanding a tensile load of 300 lbs. force without breaking or unwinding when tested in accordance with UL 360, section 10.5.

#### 4.3 *Moisture Seal*:

4.3.1 The riser casing shall include a bushing or seal at the point where the PE pipe will enter the casing. This seal shall protect the PE pipe from being damaged by the casing end during field assembly and resist the entry of moisture into the casing interior after installation.

4.4 Specifications outlining the properties of the field-assembled riser kit shall be available from the manufacturer upon request.

### 5. Physical Properties

#### 5.1 *Thread Requirements*:

5.1.1 All gas carrying pipe threads shall comply with ASME B1.20.1

#### 5.2 *Bend Radius Requirements*:

5.2.1 The bend radius of prebent rigid casings shall be such that the PE is not damaged during field insertion and assembly.

#### 5.3 *Coatings*:

5.3.1 Field-assembled riser kit coatings, if any, shall be as agreed upon between the buyer and seller.

#### 5.4 *Welding Requirements*:

5.4.1 All gas pressure containing factory welding shall comply with the requirements of the ASME Boiler and Pressure Vessel Code, Section IX or API 1104.

### 6. Dimensions, Mass, and Permissible Variations

6.1 Because of the varying designs, the actual spread of dimensions is quite different from manufacturer to manufacturer. A table of dimensions and tolerances encompassing these differences would be meaningless and without value and, therefore, are omitted from this specification.

### 7. Design Qualification Requirements

7.1 The riser adapter shall meet the performance requirements of Specification **F1948** for Category 1 mechanical fittings.