



# Standard Specification for Thermoplastic Elastomeric Seals (Gaskets) for Joining Plastic Pipe<sup>1</sup>

This standard is issued under the fixed designation F913; 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 thermoplastic elastomeric seals (gaskets) used to seal the joints of plastic pipe and fittings used for gravity and low-pressure applications.<sup>2</sup> This specification refers to push-on joints that require no internal or external pressure to effect the initial seal.

1.2 Requirements are given for thermoplastic elastomers.

1.3 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.

1.4 The following precautionary caveat pertains only to the test methods portion, Section 8, 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*:<sup>3</sup>

**D412** Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

**D471** Test Method for Rubber Property—Effect of Liquids

**D573** Test Method for Rubber—Deterioration in an Air Oven

**D1149** Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment

**D1414** Test Methods for Rubber O-Rings

**D1566** Terminology Relating to Rubber

**D1600** Terminology for Abbreviated Terms Relating to Plastics

**D2240** Test Method for Rubber Property—Durometer Hardness

**D6147** Test Method for Vulcanized Rubber and Thermoplastic Elastomer—Determination of Force Decay (Stress Relaxation) in Compression

**F412** Terminology Relating to Plastic Piping Systems

**F118** Definitions of Terms Relating to Gaskets

## 3. Terminology

3.1 *Definitions*:

3.1.1 Definitions are in accordance with Terminology **F412**, and abbreviations are in accordance with Terminology **D1600**, unless otherwise specified.

3.1.2 Terms relating to rubber or elastomer shall be as defined in Terminology **D1566** and Definitions **F118**.

3.2 *Definitions of Terms Specific to This Standard*:

3.2.1 *gravity and low pressure applications, n*—pressure below 150 kPa (21 psi) or (50-ft) head of water.

## 4. Materials and Manufacture

4.1 The gasket shall be fabricated from a high-grade thermoplastic elastomer meeting the requirements in **Table 1**.

4.2 The gasket shall meet the force decay (stress relaxation) requirements of **5.1.3**.

4.3 The thermoplastic elastomer used must be noncrazing to pipe. The gasket shall not cause craze marks, pits, or blisters in contact with the plastic pipe. Staining of the plastic pipe in the area of gasket contact is acceptable. Test in accordance with **8.8** to qualify thermoplastic elastomers for pipe made from the plastic polymer in question.

4.4 Where the particular joint design utilizing a TPEL gasket dictates the use of lubricant to facilitate assembly, the lubricant shall be of such composition that will in no way damage the gasket or pipe due to prolonged exposure and shall not adversely affect the sealing capability of the gasket.

NOTE 1—By agreement between the purchaser and the manufacturer, chemical analysis may be required and limits established for elements or compounds not specified.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee **F17** on Plastic Piping Systems and is the direct responsibility of Subcommittee **F17.20** on Joining. Current edition approved April 1, 2014. Published May 2014. Originally published as approved in 1986. Last previous edition approved in 2008 as F913 – 02(2008). DOI: 10.1520/F0913-02R14.

<sup>2</sup> Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR:F17-1035.

<sup>3</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.