



Standard Specification for Thermoplastic Elastomeric Seals (Gaskets) for Joining Plastic Pipe¹

This standard is issued under the fixed designation F 913; 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 thermoplastic elastomeric seals (gaskets) used to seal the joints of plastic pipe and fittings used for gravity and low-pressure applications.² 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 in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units which are provided for information only and are not considered the 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:

- D 412 Test Methods for Rubber Properties in Tension³
- D 471 Test Method for Rubber Property—Effect of Liquids³
- D 573 Test Method for Rubber—Deterioration in an Air Oven³
- D 1149 Test Method for Rubber Deterioration—Surface Ozone Cracking in a Chamber (Flat Specimens)³
- D 1414 Test Methods for Rubber O-Rings⁴
- D 1566 Terminology Relating to Rubber^{3,4}
- D 1600 Terminology for Abbreviated Terms Relating to Plastics⁵
- D 2240 Test Method for Rubber Property—Durometer Hardness³
- D 6147 Test Method for Vulcanized Rubber and Thermo-

plastic Elastomer—Determination of Force Decay (Stress Relaxation) in Compression³

F 412 Terminology Relating to Plastic Piping Systems⁶

F 118 Definitions of Terms Relating to Gaskets⁴

3. Terminology

3.1 *Definitions—*are in accordance with Terminology F 412, and abbreviations are in accordance with Terminology D 1600, unless otherwise specified.

3.2 Terms relating to rubber or elastomer shall be as defined in Terminology D 1566 and Definitions F 118.

3.3 *Definitions of Terms Specific to This Standard:*

3.3.1 *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.

5. Physical Requirements

5.1 The sealing portion of the gasket shall comply with the physical requirements listed in Table 1 when tested in accordance with the methods in Section 8.

NOTE 2—Some gasket incorporated a high durometer elastomeric or

¹ 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 Sept. 10, 2002. Published October 2002. Originally published as F 913 – 86. Last previous edition F 913 – 01.

² Supporting data are available at ASTM Headquarters. Request RR:F17-1035.

³ Annual Book of ASTM Standards, Vol 09.01.

⁴ Annual Book of ASTM Standards, Vol 09.02.

⁵ Annual Book of ASTM Standards, Vol 08.01.

⁶ Annual Book of ASTM Standards, Vol 08.04.