



## Standard Specification for Tools to Squeeze-off Polyethylene (PE) Gas Pipe or Tubing<sup>1</sup>

This standard is issued under the fixed designation F 1563; 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 the physical requirements for tools used to squeeze-off polyethylene (PE) pipe and tubing. It is limited to squeeze-off procedures set forth by the pipe manufacturer as referred to in Specification D 2513 for gas pressure pipe systems.

1.2 Nothing in this specification shall be construed as recommending practices or systems at variances with governing codes and project specifications.

1.3 Where applicable in this specification, “pipe” shall mean “pipe and tubing,” and “tool” shall mean “squeeze-off tool.”

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

1.5 The following safety hazards caveat pertains only to the test methods portions, Section 5 and Appendix X1 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 638 Test Method for Tensile Properties of Plastics<sup>2</sup>
- D 1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure<sup>3</sup>
- D 1600 Terminology for Abbreviated Terms Relating to Plastics<sup>2</sup>
- D 2513 Specification for Thermoplastic Gas Pressure Pipe Tubing and Fittings<sup>3</sup>
- F 412 Terminology Relating to Plastic Pipe Systems<sup>3</sup>
- F 1041 Guide for Squeeze-off of Polyolefin Gas Pressure Pipe and Fittings<sup>3</sup>

### 3. Terminology

3.1 *General*—Definitions are in accordance with Terminology F 412, unless otherwise specified. Abbreviations are in

accordance with Terminology D 1600, unless otherwise specified.

#### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *squeeze-off*—a technique used to control the flow of gas through a pipe by the compressing action of a mechanical, hydraulic or pneumatic device. Squeeze-off may be used, as recommended by the tool or pipe manufacturer, to reduce the flow of gas to an acceptable rate. Under certain conditions complete stoppage of flow may be obtained.

### 4. Materials and Manufacture

4.1 Tools shall be manufactured from materials that have the structural properties to meet the requirements of this specification.

### 5. Other Requirements

5.1 *Force Mechanism*—The force mechanism (mechanical, hydraulic or pneumatic) shall provide a force of at least 1.25 times the force required to squeeze-off the most rigid pipe size within the squeeze parameters recommended by the manufacturer of the tool. The most rigid pipe is a function of pipe diameter, wall thickness, pipe material and temperature. The tool manufacturer determines which pipe products his tool is suitable for. Power tools such as impact wrenches or pneumatic motored torque multipliers shall not be used.

5.2 *Tool Strength*—A tool shall not be structurally damaged or functionally affected when tested as follows:

5.2.1 Measure the load ( $P$ ) required to squeeze-off the most rigid pipe (largest size, thickest wall, highest density, lowest temperature) within the range of the tool.

5.2.2 Prepare a pipe specimen from this pipe. The specimen length shall be no less than five times the nominal outside diameter of the pipe, but in no case less than 12 in. (305 mm).

5.2.3 Insert the pipe specimen into the tool. Center the specimen in the tool.

5.2.4 Apply the largest load attainable by the force mechanism (without additional mechanical advantage) onto the mechanical stops and then inspect. Any permanent damage or deformation to the mechanical or hydraulic components is cause for rejection of the tool.

5.2.5 Apply a load of  $1.25 \times P$  (see 5.2.1) on the pipe for twenty cycles. A cycle is: apply load, hold load for one minute, remove load. For each cycle, use a new unsqueezed area of pipe, at least three pipe diameters from a previous squeeze.

<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 Oct. 15, 1994. Published December 1994.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 08.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 08.04.