



Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Gaseous Testing Media Under Pressure (Pneumatic Leak Testing)¹

This standard is issued under the fixed designation F2786; 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 practice provides information on apparatus, safety, pre-test preparation and procedures for conducting field tests of polyethylene pressure piping systems after installation using gaseous testing media such as unodorized inert non-toxic gas or air, and applying pressure to determine if leaks exist in the system (pneumatic leak testing). This practice applies only to testing to discover leakage. Testing for other purposes such as testing to establish operating pressure is beyond the scope of this practice.

1.2 Leak testing with pressurized gaseous testing media shall be used only if one or both of the following conditions exists:

1.2.1 The piping system is so designed that it cannot be filled with a liquid, or

1.2.2 The piping system service cannot tolerate traces of liquid testing fluid.

1.3 Where hydrostatic testing is specified in contract documents or by the authority having jurisdiction, testing using pressurized gaseous testing media (pneumatic) testing shall not be substituted without the express consent and authorization of the authority having jurisdiction.

1.4 Some manufacturers prohibit or restrict testing of their products with pressurized gaseous testing media. Contact component manufacturers for information. Where the manufacturer of a test section component prohibits or restricts testing with pressurized gaseous testing media testing in accordance with this practice shall not be used without the express consent and authorization of the authority having jurisdiction and the component manufacturer.

NOTE 1—Components that are not suitable for testing with gaseous testing fluid may not be suitable for service with pressurized gaseous fluid.

¹ This practice is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.40 on Test Methods.

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1.5 This practice does not address leak testing using pressurized liquids (hydrostatic testing). For field leak testing using pressurized liquids, see Practice F2164.

1.6 This practice does not apply to leak testing of non-pressure, negative pressure (vacuum), or non-PE piping systems. For field acceptance testing of plastic non-pressure sewer lines, see Test Method F1417.

1.7 This practice does not apply to fuel gas piping systems that extend from the point of delivery to the appliance connections. For other than undiluted liquefied petroleum gas (LP-Gas) systems, the point of delivery shall be considered to be the outlet of the service meter assembly or the outlet of the service regulator or service shutoff valve where no meter is provided. For undiluted LP-Gas, the point of delivery shall be considered to be the outlet of the final pressure regulator, exclusive of line gas regulators, in the system. Testing for these systems can be found in NFPA 54 / ANSI Z223.1. This practice does not apply to LP-Gas systems covered under NFPA 58.

1.8 This practice is intended for use with polyethylene pressure piping that conveys gaseous media under pressure (compressed gas) if the owner or operator or installer of the line does not have an established leak testing procedure that is acceptable to the authority having jurisdiction.

1.9 **Warning**—Failure during a pressurized gaseous testing media leak test can be extremely violent and dangerous because energy that is applied to compress the gaseous testing media and to pressurize the system will both be suddenly released.

NOTE 2—To illustrate the violent hazard of failure, assume a 5 Hp compressor is used to raise the test section to test pressure and that it takes 1 h to achieve test pressure. If sudden rupture occurs, energy release may occur in 2 s. Therefore, the horsepower of the energy release would be $5 \text{ HP} \times 1 \text{ h} \times 3600 \text{ sec/h} / 2 \text{ s} = 9,000 \text{ Hp}$. Further, if diameter is doubled, energy release is four times greater. For an example test section that is twice the diameter, energy release would be 36,000 Hp.

1.10 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. Numbered