



Standard Practice for Field Pneumatic Slug (Instantaneous Change in Head) Tests to Determine Hydraulic Properties of Aquifers with Direct Push Groundwater Samplers¹

This standard is issued under the fixed designation D7242/D7242M; 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.

^{ε1} NOTE—Designation was editorially corrected to match units information in December 2013.

1. Scope*

1.1 This standard practice covers the field methods used to conduct an instantaneous change in head (slug) test when pneumatic pressure is used to initiate the change in head pressure within the well or piezometer. While this practice specifically addresses use of pneumatic initiation of slug tests with direct push tools these procedures may be applied to wells or piezometers installed with rotary drilling methods when appropriate.

1.2 This standard practice is used to obtain the required field data for determining hydraulic properties of an aquifer or a specified vertical interval of an aquifer. Field data obtained from application of this practice are modeled with appropriate analytical procedures (Test Methods [D4104](#), [D5785](#), [D5881](#), [D5912](#), Ref ([1](#))²).

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.4 *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.*

1.5 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may*

be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "standard" in the title means that the document has been approved through the ASTM consensus process.

2. Referenced Documents

2.1 ASTM Standards:³

[D653 Terminology Relating to Soil, Rock, and Contained Fluids](#)

[D2434 Test Method for Permeability of Granular Soils \(Constant Head\)](#) (Withdrawn 2015)⁴

[D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction](#)

[D4104 Test Method \(Analytical Procedure\) for Determining Transmissivity of Nonleaky Confined Aquifers by Overdamped Well Response to Instantaneous Change in Head \(Slug Tests\)](#)

[D5084 Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter](#)

[D5092 Practice for Design and Installation of Groundwater Monitoring Wells](#)

[D5521 Guide for Development of Groundwater Monitoring Wells in Granular Aquifers](#)

[D5785 Test Method for \(Analytical Procedure\) for Determining Transmissivity of Confined Nonleaky Aquifers by Underdamped Well Response to Instantaneous Change in Head \(Slug Test\)](#)

[D5856 Test Method for Measurement of Hydraulic Conductivity of Porous Material Using a Rigid-Wall,](#)

¹ This practice is under the jurisdiction of ASTM Committee [D18](#) on Soil and Rock and is the direct responsibility of Subcommittee [D18.21](#) on Groundwater and Vadose Zone Investigations.

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² The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ The last approved version of this historical standard is referenced on www.astm.org.

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