



Standard Guide for Soil Sampling from the Vadose Zone¹

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ε¹ NOTE—Paragraph 1.7 was added editorially January 1999.

1. Scope

1.1 This guide addresses procedures that may be used for obtaining soil samples from the vadose zone (unsaturated zone). Samples can be collected for a variety of reasons including the following:

- 1.1.1 Stratigraphic description,
- 1.1.2 Hydraulic conductivity testing,
- 1.1.3 Moisture content measurement,
- 1.1.4 Moisture release curve construction,
- 1.1.5 Geotechnical testing,
- 1.1.6 Soil gas analyses,
- 1.1.7 Microorganism extraction, or
- 1.1.8 Pore liquid and soils chemical analyses.

1.2 This guide focuses on methods that provide soil samples for chemical analyses of the soil or contained liquids or contaminants. However, comments on how methods may be modified for other objectives are included.

1.3 This guide does not describe sampling methods for lithified deposits and rocks (for example, sandstone, shale, tuff, granite).

1.4 In general, it is prudent to perform all field work with at least two people present. This increases safety and facilitates efficient data collection.

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

1.6 *This standard does not purport to address all of the safety problems, 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.*

1.7 *This guide offers an organized collection of information or a series of options and does not recommend a specific course of action. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this guide 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 of this document means only that the document has been approved through the ASTM consensus process.

2. Referenced Documents

2.1 ASTM Standards:

- D 420 Practice for Investigating and Sampling Soil and Rock for Engineering Purposes²
- D 653 Terminology Relating to Soil, Rock, and Contained Fluids²
- D 1452 Practice for Soil Investigation and Sampling by Auger Borings²
- D 1586 Method for Penetration Test and Split-Barrel Sampling of Soils²
- D 1587 Method for Thin-Walled Tube Sampling of Soils²
- D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)²
- D 2607 Classification of Peats, Mosses, Humus, and Related Products²
- D 3550 Method for Ring-Lined Barrel Sampling of Soils²
- D 4083 Practice for Description of Frozen Soils (Visual-Manual Procedure)²
- D 4220 Practice for Preserving and Transporting Soil Samples²

3. Terminology

3.1 Definitions:

3.1.1 Except where noted, all terms and symbols in this guide are in accordance with the following publications. In order of consideration they are:

3.1.1.1 Terminology D 653.

3.1.1.2 *Compilation of ASTM Standard Terminology*,³ and

3.1.1.3 *Webster's New Collegiate Dictionary*.⁴

3.1.2 For definitions and classifications of soil related terms used, refer to Practice D 2488 and Terminology D 653. Additional terms that require clarification are defined in 3.2.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *cascading water*—perched ground water that enters a

¹ This guide is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.21 on Ground Water and Vadose Zone Investigations.

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² *Annual Book of ASTM Standards*, Vol 04.08.

³ *Compilation of ASTM Standard Terminology*, Sixth edition, ASTM, 1916 Race St., Phila., PA 19103, 1986.

⁴ *Webster's New Collegiate Dictionary*, Fifth edition, 1977.