



Standard Guide for Selection of Soil and Rock Sampling Devices Used With Drill Rigs for Environmental Investigations¹

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1. Scope

1.1 This guide covers guidance for the selection of soil and rock sampling devices used with drill rigs for the purpose of characterizing in situ physical and hydraulic properties, chemical characteristics, subsurface lithology, stratigraphy and structure, and hydrogeologic units in environmental investigations.

1.2 This guide does not specifically address selection of soil sampling devices for use with direct-push sampling systems, but the information in this guide on thick-wall and thin-wall samplers is generally applicable to direct-push soil sampling.

1.3 This guide should be used in conjunction with referenced ASTM guides, practices, and methods on drilling techniques for geoenvironmental investigations and use of sampling devices referenced in 2.1, and with Guide D 5730.

1.4 This guide does not address selection of sampling devices for hand-held soil sampling equipment, and soil sample collection with solid-stem augering devices, or collection of grab samples or hand-carved block samples from accessible excavations. Refer to Appendix X1.2 for guidance on these topics. This guide should be used in conjunction with Guide D 4700 when thin-walled, split barrel, ring-lined barrel and piston samplers with solid- and hollow-stem augers are used in the unsaturated zone.

1.5 This guide does not address devices for collecting cores from submerged sediments or sampling devices for solid wastes. Refer to Guide D 4823 for guidance on these topics.

1.6 The values stated in SI units are to be regarded as the standard. However, dimensions of materials used in the drilling industry are given in English units by convention, therefore, English units are used where necessary in this guide.

1.7 *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.*

1.8 *This guide offers an organized collection of information or series of options and does not recommend a specific course of action. This document cannot replace education and experience*

and should be used in conjunction with professional judgement. The word "Standard" in the title of this document means that the document has been approved through the ASTM consensus process.

2. Referenced Documents

2.1 ASTM Standards:

- D 657 Specification for Isopropyl Acetate²
- D 1452 Practice for Soil Investigation and Sampling by Auger Borings³
- D 1586 Test Method for Penetration Test and Split-Barrel Sampling of Soils³
- D 1587 Practice for Thin-Walled Tube Sampling of Soils³
- D 2113 Practice for Diamond Core Drilling for Site Investigation³
- D 3550 Practice for Ring-Lined Barrel Sampling of Soils³
- D 3694 Practice for Preparation of Sample Containers and for Preservation of Organic Constituents⁴
- D 4220 Practices for Preserving and Transporting Soil Samples³
- D 4452 Methods for X-Ray Radiography of Soil Samples³
- D 4700 Guide for Soil Sampling from the Vadose Zone³
- D 4823 Guide for Core-Sampling Submerged, Unconsolidated Sediments⁴
- D 5079 Practices for Preserving and Transporting Rock Core Samples⁵
- D 5084 Test Method for Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter⁵
- D 5088 Practice for Decontamination of Field Equipment Used at Nonradioactive Waste Sites⁵
- D 5434 Guide for Field Logging of Subsurface Exploration of Soil and Rock⁵
- D 5730 Guide to Site Characterization for Environmental Purposes with Emphasis on Soil, Rock, the Vadose Zone and Ground Water⁵
- D 5781 Guide to the Use of Dual-Wall Reverse-Circulation Drilling for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices⁵
- D 5782 Guide for the Use of Direct-Air Rotary Drilling for

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 Discontinued; see 1979 Annual Book of ASTM Standards, Vol 06.01.

³ Annual Book of ASTM Standards, Vol 04.08.

⁴ Annual Book of ASTM Standards, Vol 11.02.

⁵ Annual Book of ASTM Standards, Vol 04.09.