



Designation: D5233 – 92 (Reapproved 2023)

Standard Test Method for Single Batch Extraction Method for Wastes¹

This standard is issued under the fixed designation D5233; 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 test method is applicable to the extraction of samples of treated or untreated solid wastes or sludges, or solidified waste samples, to provide an indication of the leaching potential.

1.2 This test method is intended to provide an extract for measurement of the concentration of the analytes of concern. The measured values may be compared against set or chosen acceptance levels in some applications.

1.3 If the sole application of the test method is such a pass/fail comparison and a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that the chosen acceptance concentration levels could not possibly be exceeded, the test method need not be run.

1.4 If the sole application of the test method is such a pass/fail comparison and an analysis of any one of the liquid fractions of the extract indicates that the concentration of the target analyte is so high that, even after accounting for dilution from the other fractions of the extract, it would be equal to or above an acceptance concentration level, then the waste fails the test. In such a case it may not be necessary to analyze the remaining fractions of the extract.

1.5 This test method is intended to provide an extract suitable for the measurement of the concentration of analytes that will not volatilize under the conditions of the test method.

1.6 Presence of volatile analytes may be established if an analysis of the extract obtained using this test method detects the target volatile analyte. If its concentration is equal to or exceeds an acceptance level for that analyte, the waste fails the test. However, extract from this test method shall not be used to determine the concentration of volatile organic analytes.

1.7 This test method is intended to describe only the procedure for performing a batch extraction. It does not describe all of the sampling and analytical requirements that may be associated with the application of this test method.

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

1.9 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. For a specific precautionary statement, see [Note 8](#).*

1.10 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

[D75/D75M Practice for Sampling Aggregates](#)

[D420 Guide for Site Characterization for Engineering Design and Construction Purposes](#)

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

[D1129 Terminology Relating to Water](#)

[D1193 Specification for Reagent Water](#)

[D2234/D2234M Practice for Collection of a Gross Sample of Coal](#)

[D3370 Practices for Sampling Water from Flowing Process Streams](#)

[E122 Practice for Calculating Sample Size to Estimate, With Specified Precision, the Average for a Characteristic of a Lot or Process](#)

[ES 16 Practice for the Generation of Environmental Data Related to Waste Management Activities³](#)

3. Terminology

3.1 *Definitions*—For definitions of terms used but not defined in this test method, see Terminology [D1129](#).

¹ This test method is under the jurisdiction of ASTM Committee [D34](#) on Waste Management and is the direct responsibility of Subcommittee [D34.01.04](#) on Waste Leaching Techniques.

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² 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.

³ Annual Book of ASTM Standards, Vol 11.04 (see 1991 edition).

4. Summary of Test Method (See Fig. 1)

4.1 For wastes containing <0.5 % dry solid material, the filtrate of the waste, after filtration through a 0.6 to 0.8 μm glass fiber filter, is defined as the method extract. Extraction of the solid is not required for such wastes.^{4,5}

4.2 For wastes containing ≥ 0.5 % dry solid material, the liquid, if any, is separated from the solid phase and stored for later analysis. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. The extraction fluid used is a function of the alkalinity of the solid phase of the waste. Following extraction, the liquid extract is separated from the solid phase by filtration through a 0.6 to 0.8 μm glass fiber filter.

4.3 If compatible (that is, multiple phases will not form upon combination), the initial liquid phase of the waste is added to the liquid extract, and these are analyzed together. If incompatible, the liquids are analyzed separately and the results are combined mathematically to yield a volume-weighted average concentration.

5. Significance and Use

5.1 This test method is intended to generate an extract with a concentration of the target analyte(s) representative of the expected release under the scenario simulated, and which can be compared with concentration levels acceptable in waste disposal, treatment, or production activities.

5.2 The extraction conditions of the test method were chosen to simulate a potential disposal scenario to which the wastes may be exposed.

5.3 One intent of this test method is that the amount of acid in the extraction fluids reflects the acid available from the

⁴ Federal Register, Vol 55, No. 61, March 29, 1990. Toxicity Characteristics Revisions, Final Rule.

⁵ Federal Register, Vol 55, No. 126, June 29, 1990. Toxicity Characteristic Revisions, Final Rule, Corrections.

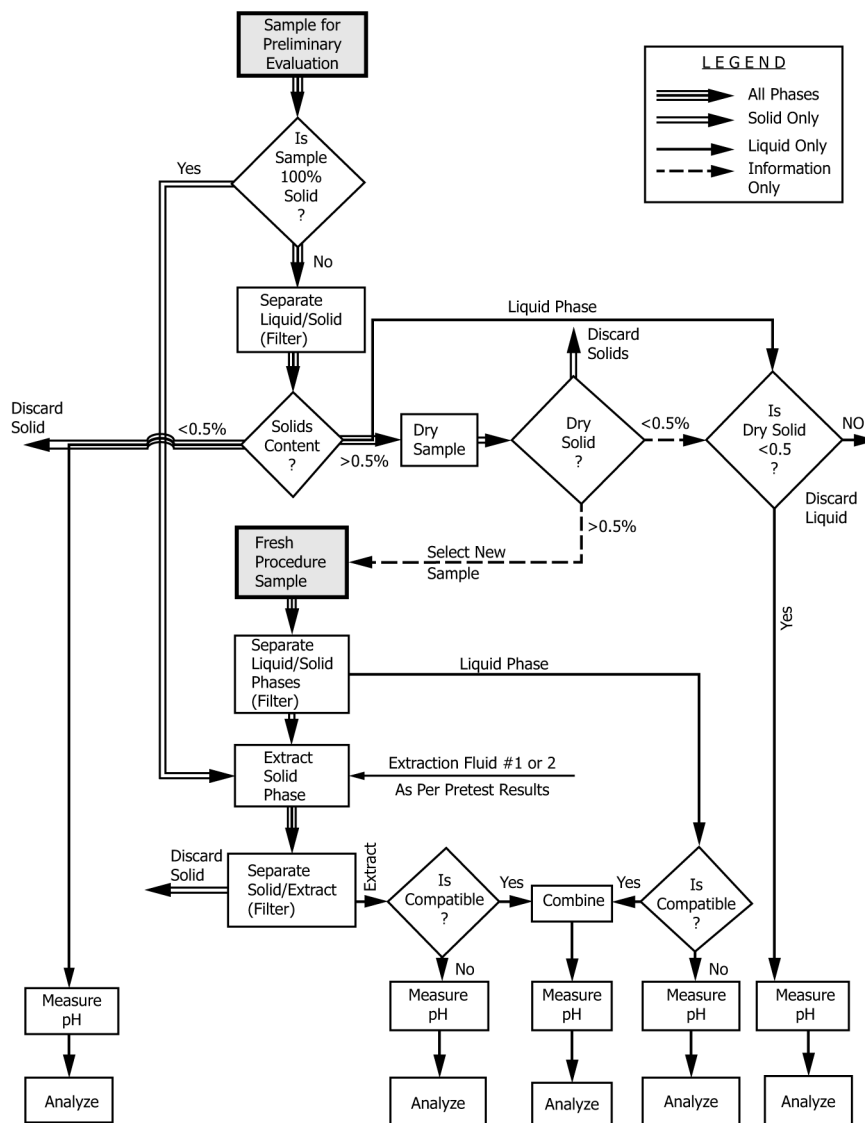


FIG. 1 Method Flow Chart