



Standard Test Method for Determining the Stability of Compost by Measuring Oxygen Consumption¹

This standard is issued under the fixed designation D 5975; 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 covers the stability of a compost sample by measuring oxygen consumption after exposure of the test compost to a well-stabilized compost under controlled-composting conditions on a laboratory scale involving active aeration. This test method is designed to yield reproducible and repeatable results under controlled conditions that resemble the end of the active composting phase. The compost samples are exposed to a well-stabilized compost inoculum that is prepared from municipal solid waste or waste similar to the waste from which the test materials are derived. The aerobic composting takes place in an environment where temperature, aeration, and humidity are monitored closely and controlled.

1.2 This test method yields a cumulative amount of oxygen consumed/g of volatile solids in the samples over a four-day period. The rate of oxygen consumption is monitored as well.

1.3 This test method is applicable to different types of compost samples including composts derived from wastes, such as municipal solid waste, yard waste, source-separated organics, biosolids, and other types of organic wastes that do not have toxicity levels that are inhibitory to the microorganisms present in aerobic composting systems.

1.4 The values stated in SI units are to be regarded as the standard.

1.5 There is no similar or equivalent ISO method.

1.6 *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.* Specific hazard statements are given in Section 8.

2. Referenced Documents

2.1 *ASTM Standards:*²

D 515 Test Methods for Phosphorus in Water

D 883 Terminology Relating to Plastics

D 1293 Test Methods for pH of Water

D 1888 Test Methods for Particulate and Dissolved Matter in Water

D 2908 Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography

D 3590 Test Methods for Total Kjeldahl Nitrogen in Water

D 4129 Test Method for Total and Organic Carbon in Water by High-Temperature Oxidation and Coulometric Detection

D 5338 Test Method for Determining Aerobic Biodegradation of Plastic Materials Under Controlled Composting Conditions

2.2 *APHA-AWWA-WPCF Standards:*

2540 D Total Suspended Solids Dried at 103°–105°C³

2540 E Fixed and Volatile Solids Ignited at 550°C³

3. Terminology

3.1 Definitions of terms in this test method appear in Terminology D 883.

4. Summary of Test Method

4.1 This test method consists of the following:

4.1.1 Selecting a compost sample for the determination of the stability.

4.1.2 Producing a fully stabilized compost from a similar waste stream under well-controlled laboratory conditions.

4.1.3 Exposing the compost test samples to the fully stabilized compost under controlled composting conditions.

4.1.4 Measuring the oxygen consumption rate and determining the cumulative oxygen consumption.

4.2 Obtaining the level of stability from the cumulative oxygen consumption.

5. Significance and Use

5.1 A measurement of compost stability is needed for several reasons. It aids in assessing whether the composting process has proceeded sufficiently far to allow the finished

¹ This test method is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.07 on Municipal Solid Waste.

Current edition approved Aug. 10, 1996. Published October 1996.

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 "Standard Methods for the Examination of Water and Wastewater," 17th Edition, 1989, American Public Health Association, 1740 Broadway, New York, NY 19919.

