



Standard Test Method for Composition or Purity of a Solid Waste Materials Stream¹

This standard is issued under the fixed designation E889; 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 determination of the composition of a materials stream in a solid waste resource recovery processing facility. The composition is determined with respect to one or more defined components. The results are used for determining the purity resulting from the operation of one or more separators, and in conjunction with Test Method [E1108](#) used to measure the efficiency of a materials separation device.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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. For hazard statements, see Section 7.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[C566](#) Test Method for Total Evaporable Moisture Content of Aggregate by Drying

[C702](#) Practice for Reducing Samples of Aggregate to Testing Size

[D75](#) Practice for Sampling Aggregates

[D644](#) Test Method for Moisture Content of Paper and Paperboard by Oven Drying (Withdrawn 2010)³

[E1107](#) Test Method for Measuring the Throughput of Resource-Recovery Unit Operations

[E1108](#) Test Method for Determination of the Recovery of a Product in a Materials Separation Device

¹ This test method is under the jurisdiction of ASTM Committee [D34](#) on Waste Management and is the direct responsibility of Subcommittee [D34.03](#) on Treatment, Recovery and Reuse.

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

3. Terminology Definitions

3.1 *binary separator*—a device that separates a single input feed stream into two output or product streams.

3.2 *gross sample*—a sample representing one lot and composed of a number of increments on which neither reduction nor division has been performed.

3.3 *laboratory sample or analysis sample*—a portion of one gross sample representative of a lot and taken at random from the gross sample.

3.4 *polynary separator*—a device that separates a single input feed stream into three or more output product streams.

3.5 *purity*—The purity of a stream is defined in terms of one or more identifiable components, x , y , z , etc. The purity for any component such as x is the mass of x in a stream divided by the total mass of that stream. In some cases, the mass of x must be defined in practical terms that relate to the origin of the feed. For example, the purity of a ferrous product magnetically recovered from refuse can be expressed as the purity of ferrous by proximate analysis. Alternatively, it can be expressed as the purity by manual sorting, with all nonferrous materials that cannot readily be removed by hand as the contaminants. In any case, purity must be defined for each application.

4. Summary of Test Method

4.1 A gross sample of a preselected process stream is taken, and subdivided into four laboratory samples. Two of the laboratory samples are analyzed for composition of the component(s) or item(s) of interest by hand-picking and weighing. The third sample is used if the results of the first two do not agree within specified limits. The composition is computed as the weight ratio of the component(s) of interest to the weight of the sample.

4.2 The composition is expressed as the purity of the stream with respect to the component(s) indicated.

5. Significance and Use

5.1 This method is used to document the ability of solid waste resource recovery separators to concentrate or classify a particular component (or components) present in solid waste.

5.2 The purity determined in this way is used to calculate the recovery achieved by a separator as another measure of its performance, according to Test Method [E1108](#).