



Designation: E1107 – 10

Standard Test Method for Measuring the Throughput of Resource-Recovery Unit Operations¹

This standard is issued under the fixed designation E1107; 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 for measuring the throughput, or mass flowrate, of a resource-recovery unit operation, or series of unit operations.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.2.1 *Exception*—Section 9.1.2 indicates the equivalent weight in pounds for samples with particle size greater than 90 mm.

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.* Specific precautionary information is given in Section 7.

2. Referenced Documents

2.1 *ASTM Standards*:²

D75 Practice for Sampling Aggregates

E868 Test Methods for Conducting Performance Tests on Mechanical Conveying Equipment Used in Resource Recovery Systems

3. Terminology

3.1 *Definitions of Terms Specific to This Standard*:

3.1.1 *binary separator*—a mechanical device that separates single input feed stream into two output feed streams.

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

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.

3.1.3 *processor*—a type of resource recovery unit operation with a single input feed stream and single output stream. Its function is to alter the physical or physico-chemical properties of the input feed stream. The mass flow rates of input and output streams should be equal unless moisture is lost.

3.1.4 *throughput*—the mass flowrate through a unit operation, expressed, preferably, in units of kilograms per hour (kg/h) or alternatively in units of pounds per hour (lb/h).

3.1.5 *unit operation*—a basic step in a larger process consisting of multiple steps.

4. Summary of Test Method

4.1 The output streams of a separator or processor are collected over a measured period of time and weighed. Collection of the output stream is either in containers or by stopping, then clearing, portions of conveyor belts or chutes. For processing equipment in which materials separation is not accomplished, the input stream may be sampled if this is more convenient.

5. Significance and Use

5.1 This test method is used to document the mass flowrate of a resource recovery unit operation in a plant and as a means of relating operation to design objectives.

5.2 This test method is also used in conjunction with measurements of the performance of materials separators (particularly recovery and purity). As such, throughput should not generally be measured by sampling the feed since this may change its performance. Processing equipment that does not perform separations can be sampled at either the feed or product streams.

6. Apparatus

6.1 *Collection Bins*—Several size collection bins are required. The size is determined by the size of sample, which in turn, is determined by the throughput of the plant. Some streams can be sampled into drums or barrels.

6.1.1 All containers must be clean and in good mechanical condition, and not have rusting, flaking, or mechanically weakened sections. Containers should be cleaned with water or an air hose prior to use. (**Warning**—Air hoses must be used with appropriate safety equipment to avoid personal injury.)