



Standard Test Method for Characterizing the Performance of Refuse Size-Reduction Equipment¹

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1. Scope

1.1 This test method covers measuring the performance of solid waste size reduction equipment.

1.2 This test method can be used to measure the flow (that is, throughput) of solid waste through the size-reduction equipment, energy usage of the size-reduction device, and particle size of the shredded product.

1.3 This test method includes instructions for measuring energy usage, solid waste throughput, net processing time, and particle size distribution.

1.4 This test method applies only to size reduction equipment that produces a shredded product with a size corresponding to 90 % cumulative passing in the range of 0.5 to 15 cm (0.2–6 in.) on an air-dry weight basis. For material with nominal sizes outside of this range, the precision and bias statements for particle size designation (Section 14) may not apply.

1.5 This test method can be applied to size reduction equipment located anywhere within a processing line.

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

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. See Section 7 for specific hazard information.*

2. Referenced Documents

2.1 ASTM Standards:

E 828 Test Method for Designating the Size of RDF-3 From Its Sieve Analysis²

E 929 Test Method for Measuring Electrical Energy Requirements of Processing Equipment²

3. Terminology Definitions:

3.1 *characteristic product size*—the screen size corresponding to 63.2 % cumulative passing by weight.

3.2 *discrete throughput method*—the method whereby average throughput is calculated as the average of a number of discrete throughput measurements conducted during a test period.

3.3 *idling time*—time periods during which a size reduction device is freewheeling, that is, not processing refuse.

3.4 *net processing time*—the time during which refuse is processed through the size reduction device.

3.5 *nominal product size*—the screen size corresponding to 90 % cumulative passing by weight.

3.6 *size reduction device or equipment*—a device which size reduces (Synonyms: shredder, grinder, pulverizer, and mill).

3.7 *stationary belt method*—a method of gross sample collection in which the conveyor belt is stopped and the sample of material is removed manually.

3.8 *time-averaged throughput method*—the method whereby the average throughput is calculated by dividing the total mass size reduced by the net processing time.

3.9 *test interval*—a test interval is equal to one-quarter of the test period.

3.10 *test period*—the test period is two to four continuous h of net-processing time.

4. Summary of Test Method

4.1 The duration of the test period is established and refuse is prepared for processing.

4.2 An energy measuring system is installed.

4.3 Solid waste is processed through the size reduction equipment, energy usage and throughput is measured, and samples for analysis of product particle size distribution are collected.

4.4 Average throughput, power requirements, specific energy, and particle size of the shredded product are calculated.

4.5 Two methods (Time-Averaged Throughput Method and Discrete Throughput Method [Section 10]) for measuring the performance of size reduction equipment are described. The selection of a particular method is governed by the layout of the processing equipment, the location of the size-reduction equipment relative to the other processing equipment, and the preference of the parties conducting the test.

5. Significance and Use

5.1 Throughput, power and energy requirements, and product size are key parameters that describe the operation and

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² Annual Book of ASTM Standards, Vol 11.04.