



Standard Test Method for Determining Energy Consumption of Vacuum Cleaners¹

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1. Scope

1.1 This test method covers only a laboratory test for determining the energy usage-of household and commercial upright, canister, stick, and wet/dry vacuum cleaners operating on carpet when tested under specified conditions.

1.1.1 Vacuum cleaners, other than upright vacuum cleaners, that provide a carpet-cleaning function are tested in accordance with the carpet-cleaning instructions provided in the manufacturer's instruction manual. If the manufacturer's instruction manual does not contain instructions for a carpet-cleaning function, the vacuum cleaner is not within the scope of this procedure.

1.2 This test method is applicable to household and commercial types of vacuum cleaners.

1.3 The values stated in SI units are to be regarded as standard. The inch-pound units given in parentheses are mathematical conversions that are provided for information only and are not considered standard.

1.4 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

F655 Specification for Test Carpets and Pads for Vacuum Cleaner Testing

2.2 Other Standards:

IEC 60312 Vacuum cleaners for household use - Methods of measuring the performance, Fourth Edition³

UL 1017 Vacuum Cleaners, Blower Cleaners, and House-

hold Floor Finishing Machines⁴

3. Terminology

3.1 Definitions:

3.1.1 *energy usage, n*—amount of electrical energy consumed by a vacuum cleaner during cleaning, measured in Joules (Watt-seconds). There are 3600 watt-seconds in one watt-hour.

3.1.2 *model, n*—designation of a group of vacuum cleaners having identical mechanical and electrical construction with only cosmetic or nonfunctional differences.

3.1.3 *population, n*—total of all units of a particular model vacuum cleaner being tested.

3.1.4 *repeatability limit, r, n*—value below which the absolute difference between two individual test results obtained under repeatability condition may be expected to occur with a probability of approximately 0.95 (95 %).

3.1.5 *repeatability standard deviation, Sr, n*—standard deviation of test results obtained under repeatability conditions.

3.1.6 *reproducibility limit, R, n*—value below which the absolute difference between two test results obtained under reproducibility conditions may be expected to occur with a probability of approximately 0.95 (95 %).

3.1.7 *reproducibility standard deviation, SR, n*—standard deviation of test results obtained under reproducibility conditions.

3.1.8 *sample, n*—group of vacuum cleaners taken from a large collection of vacuum cleaners of one particular model which serves to provide information that may be used as a basis for making a decision concerning the larger collection.

3.1.9 *strip, n*—width covered during one stroke, defined by the extreme outside geometric width of the power head or nozzle.

3.1.10 *test run, n*—definitive procedure that produces a singular measured result.

3.1.11 *unit, n*—single vacuum cleaner of the model being tested.

3.1.12 *watt-hour meter, n*—meter that measures and registers the integral, with respect to time, of the active power of the circuit in which it is connected; the unit of measurement is usually the kilowatt-hour.

¹ This test method is under the jurisdiction of ASTM Committee F11 on Vacuum Cleaners and is the direct responsibility of Subcommittee F11.20 on Performance (Test Methods).

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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 Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

⁴ Available from Underwriters Laboratories (UL), 333 Pfingsten Rd., Northbrook, IL 60062-2096, http://www.ul.com.