



Standard Test Method for Motor Life Evaluation of an Electric Motorized Nozzle for Central Vacuum Cleaning Systems¹

This standard is issued under the fixed designation F 1601; 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 motorized nozzle used in household or commercial central vacuum cleaning systems.

1.2 This test method provides a test for determining operating motor life in hours by an accelerated laboratory procedure. The motors are tested while mounted and operated in the motorized nozzle.

1.3 This test method covers only the motorized nozzle. The system used to provide the airflow source is not under consideration.

1.4 This test method is limited to the determination of motor life for an electrically powered household or commercial motorized nozzle.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

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.*

2. Referenced Documents

2.1 ASTM Standards:

D 75 Practices for Sampling Aggregates²

E 337 Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet-Bulb and Dry-Bulb Temperatures)³

F 431 Specification for Air Performance Measurement Plenum Chamber for Vacuum Cleaners⁴

F 608 Laboratory Test Method for Evaluation of Carpet-Embedded Dirt Removal Effectiveness of Household Vacuum Cleaners⁴

F 655 Specification for Test Carpets and Pads for Vacuum Cleaner Testing⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *motor life*—limited by failure of the motor; failure is motor stoppage.

3.1.1.1 *Discussion*—Any failure integral with the motor, such as armature assembly, field assembly, housing(s) bearings, motor cooling fan, carbon brush assemblies, motor-mounted non-resettable thermal protective devices, or any other component judged to be integral with the motor, shall be judged as motor stoppage.

4. Significance and Use

4.1 The test results provide an indication of the motor life of an electric motorized nozzle in operating life. The end of motor life will be judged in accordance with Section 3.

5. Apparatus and Materials

5.1 *Voltage Regulator*, which must be capable of maintaining 120 ± 2 V rms or rated voltage of the motorized nozzle with a wave form that is essentially sinusoidal, with 3 % maximum harmonic distortion for the duration of the test.

5.2 *Voltmeter*, to provide measurements accurate to within ± 1 %.

5.3 *Timer and Switch*, having the capacity to control the off/on duty cycle of the nozzle and air flow source during the life test.

5.4 *Wattmeter*, to provide measurements accurate to within ± 1 %.

5.5 *Sharp Edge Orifice Plate*, with a 1¼-in. (32-mm) diameter and in accordance with the orifice plate illustrated in Specification F 431.

5.6 *Plenum Chamber*, conforming to the plenum chamber specifications given in Specification F 431.

5.7 *Water Manometer*, or equivalent instrument, measuring in increments of 0.1 in. (2.54 mm).

5.8 *Barometer*, with an accuracy of ± 0.05 in. (1.27 mm) Hg, capable of measuring the uncorrected barometric pressure (test station pressure) with scale divisions of 0.02 in. (0.51 mm) or finer.

5.9 *Thermometer*, having a range of at least 18 to 80°F (−8 to +27°C) and graduated in 1°F (0.5°C) increments.

5.10 *Psychrometer*, meeting the requirements of Test

¹ This test method is under the jurisdiction of ASTM Committee F-11 on Vacuum Cleaners and is the direct responsibility of Subcommittee F11.30 on Durability-Reliability.

Current edition approved June 10, 1996. Published August 1996.

² *Annual Book of ASTM Standards*, Vol 04.03.

³ *Annual Book of ASTM Standards*, Vol 11.03.

⁴ *Annual Book of ASTM Standards*, Vol 15.07.