



Designation: F 655 – 03

An American National Standard

Standard Specification for Test Carpets and Pads for Vacuum Cleaner Testing¹

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1. Scope

1.1 This specification provides construction details and a replacement procedure for the standard carpet and pad to be used when testing vacuum cleaners.

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

2. Referenced Documents

2.1 *ASTM Standards*:²

F 608 Test Method for Evaluation of Carpet-Embedded Dirt Removal Effectiveness of Household/Commercial Vacuum Cleaners³

3. Basis of Selection

3.1 These standard carpets and pads are intended to provide a database and shall meet the following requirements:

3.1.1 Representative of carpets currently in popular use in the United States.

3.1.2 Reasonable anticipation of continued availability.

3.1.3 Compatible with other ASTM Committee F11 methods.

3.1.4 Provide a separation of cleaning effectiveness ratings between products with good reliability and repeatability.

4. Classification

4.1 The carpet types shall be classified according to accepted carpet industry practice, such as shag, multilevel, plush, etc.

5. Physical Requirements

5.1 *Carpets*⁴—The following carpet types and construction have been found acceptable for use in vacuum cleaner testing. They shall be made in accordance with the physical requirements given herein.

5.1.1 Shag Custom Tufted Test Carpet Construction:

Construction type	tufted
Gage	5/16 in. (7.9 mm)
Stitches	4.2/in. (1.65/cm)
Pile height	1 1/16 in. (26.99 mm)
Pile fiber	nylon staple Allied Chemical Type 15U3PR5-15 denier per filament, bright luster, medium dye level, and 8 in. (203.2 mm) staple length
Yarn ply	1.5 count (cotton system) 2-ply tumbled autoclave heat set
Face weight	42.2 oz/yd ² (1431 g/m ²) ± 6 % variance in order to maintain the specified stitching and pile height
Yarn count	1.5/2 cc
Twist	3Z × 2.5S
Heat setting	autoclave
Shift	no
Finish	pure—no type of finish shall be applied to the yarn or carpet
Reference Only	Backing woven polypropylene flat yarn with nylon fibers needle punched onto one surface 5.5 oz/yd ² (187 g/m ²) FLW (reversed fuzzy side down)

5.1.2 Plush Custom Tufted Test Carpet Construction:

Construction type	tufted
Gage	3/16 in. (4.8 mm)
Stitches	7.5/in. (2.95/cm)
Pile height	9/16 in. (14.29 mm)
Pile fiber	filament nylon denier 1184/70 7N66 twist 1.5Z × 2.25S autoclave heat set
Yarn ply	4 ply
Face weight	38.9 oz/yd ² (1319 g/m ²) ± 6 % variance in order to maintain the specified stitching and pile height
Finish	pure—no type of finish shall be applied to the yarn or carpet

¹ This specification is under the jurisdiction of ASTM Committee F11 on Vacuum Cleaners and is the direct responsibility of Subcommittee F11.21 on Cleanability.

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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 *Annual Book of ASTM Standards*, Vol 15.08.

⁴ Test carpets are available from Textile Innovators Corporation, P.O. Box 8, Windsor, NC 27983. The padding (CANNES 2209-68) with the construction described in 5.2 is available from General Felt Industries, Co., 80 Park Plaza West-One, Saddlebrook, NJ 07662-5864.



Reference Only	Backing material:	
	Primary	polypropylene, 3½ oz/yd ² (118.7 g/m ²)
	Secondary	jute, 7 oz/yd ² (237.3 g/m ²)
	Back coating	latex, 24 oz/yd ² (814 g/m ²)
	Finished weight	72 oz/yd ² (2442 g/m ²)

5.1.3 Multilevel Custom Tufted Test Carpet Construction:

Construction type	tufted
Gage	⅝ in. (3.97 mm)
Stitches	6.5/in. (2.56/cm)
Pile height	⅝ in. (14.29 mm)
Pile fiber	filament nylon Allied Chemical Type 1225 denier, 0.75 turns per inch (37041)
Yarn ply	2 ply
Face weight	25.7 oz/yd ² (871 g/m ²) ± 6 % variance in order to maintain the specified stitching and pile height
Finish	pure—no type of finish shall be applied to the yarn or carpet

Reference Only	Backing material:	
	Primary	polypropylene, 3½ oz/yd ² (118.7 g/m ²)
	Secondary	jute, 7 oz/yd ² (237.3 g/m ²)
	Back coating	latex, 24 oz/yd ² (814 g/m ²)
	Finished weight	60.5 oz/yd ² (1715 g/m ²)

5.1.4 Level Loop Test Carpet Construction:

Construction type	woven-level loop-woven through back
Pitch	216
Wires	8/in. (3.15/cm)
Pile height	¼ in. (6.35 mm)
Pile fiber	wool
Yarn ply	3 ply
Face weight	43.9 oz/yd ² (1489 g/m ²)
Finish	pure—no type of finish shall be applied to the yarn or carpet

Reference Only	Backing material:	
	Back coating	synthetic and jute, 15.4 oz/yd ² (436.6 g/m ²)
	Finished weight	latex, 15.4 oz/yd ² (522.14 g/m ²) 73.3 oz/yd ² (2078 g/m ²)

5.2 *Padding*⁴—Sponge rubber type of waffle construction with a reinforcing skrim.

5.2.1 Specification:

Color	rose
Oz weight/yd ²	68 ± 3 %
Belt design	Montego
Roll size	54 in. × 40 ft
Density, pcf	11
Thickness, inclusive	0.530
CLD, psi, at 25 %	0.480
DOC FF 1-70 (Pill Test)	pass

6. Carpet and Pad Selection

6.1 A test carpet or pad specified in this specification that does not satisfy the requirements of Section 3 shall be replaced using the procedures described in 6.2-6.6.

6.2 A three-member task group shall be assigned from Subcommittee F11.21.

6.3 When the task group has tentatively agreed on a replacement carpet, the proposed carpet shall be evaluated. The

laboratories of the three task group members shall gather test data. Testing shall be conducted in accordance with Test Method F 608.

6.3.1 Testing must be done with at least one agitator-type upright vacuum cleaner, one combination cleaner, and one straight air canister cleaner. The test cleaners selected shall be used for testing in all three task group member laboratories. Additional cleaners may be used at the discretion of the task group members.

6.3.2 The proposed replacement test carpet shall be supplied to each of the participating laboratories.

6.3.3 Each test laboratory shall make certain that the same intralaboratory technician (or technicians, if more than one is required) conducts the required series of runs to establish the test score for a cleaner type. The runs required for a test score for a cleaner type shall be a continuous series of runs within a single working day.

6.4 The carpet being selected shall have a construction similar to that specified in Section 5. The proposed test carpet shall be judged equivalent if the average test score of the participating laboratories for each of the cleaner types falls within the specified limits listed when compared to the carpet it is intended to replace.

Amount of Dirt Picked Up	Specified Limits
30 g or more	3 g
10 to 29 g	10 %
9 g or less	1 g

6.4.1 When the subcommittee deems it necessary to replace a specified carpet with a new or different carpet construction, or both, the task group shall conduct a search for the appropriate carpet. Each of the three members of the task group shall be supplied with samples and gather test data in accordance with Test Method F 608. Every effort shall be made to replace the specified carpet with a carpet that meets the limits listed in Section 3. Every effort shall be made to select a carpet that provides pickup performance, cleaner ranking, and ratio of performance between agitator and straight air type vacuum cleaners within 10 % of that measured on the currently specified carpet to be replaced.

6.5 When the task group reaches agreement on the proposed carpet, it will submit its recommendation and test data to Subcommittee F11.21 for approval and subsequent ASTM balloting, including amendments to 5.1.

6.6 If the specified carpet padding becomes obsolete, the procedure specified in Section 6 shall be used to determine an equivalent replacement using all of the standard test carpets listed in 5.1.

7. Keywords

7.1 vacuum cleaners