



Standard Specification for Test Carpets and Pads for Vacuum Cleaner Testing¹

This standard is issued under the fixed designation F655; 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 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

F555 Test Method for Motor Life Evaluation of an Upright Vacuum Cleaner

F608 Test Method for Evaluation of Carpet Embedded Dirt Removal Effectiveness of Household/Commercial Vacuum Cleaners

F922 Test Method for Motor Life Evaluation of an Electric Motorized Nozzle

F1284 Test Method for Evaluating Carpet Embedded Dirt Removal Effectiveness of Residential Central Vacuum Cleaning Systems

F1334 Test Method for Determining A-Weighted Sound Power Level of Vacuum Cleaners

F1409 Test Method for Straight Line Movement of Vacuum Cleaners While Cleaning Carpets

F1411 Practice for Presenting Selected Information on Vacuum Cleaners for Consumer Use

F1601 Test Method for Motor Life Evaluation of an Electric Motorized Nozzle for Central Vacuum Cleaning Systems

F1692 Test Method for Life Evaluation of a Turbine-Powered Nozzle for Household Central Vacuum Cleaning Systems

F2609 Test Method for Litter-Cleaning Effectiveness of Vacuum Cleaners

F2756 Test Method for Determining Energy Consumption of Vacuum Cleaners

F2797 Test Method for Evaluating Edge Cleaning Effectiveness of Vacuum Cleaners

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*³—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 in Table 1, Table 2 and Table 3.

NOTE 1—A variance of $\pm 7\%$ in face weight is allowable per HUD guidelines. When a new construction is needed, the proposed custom tufted test carpets should be subjected to construction verification as well as cleanability testing prior to acceptance for use.

5.2 *Padding*⁴—Sponge rubber type of waffle construction with a reinforcing skim. See Table 4 for a description of the construction.

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 The central source for the test carpets at this time is SDL Atlas, 3934 Airway Drive, Rock Hill, SC 29732. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

⁴ The sole source of supply of the padding (Grandstand) is General Felt Industries, Co., 80 Park Plaza West-One, Saddlebrook, NJ 07662-5864. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.



TABLE 1 Custom Carpet Construction Specifications

	Plush	Multi-Level	Shag	Level Loop
Construction	Tufted	Tufted	Tufted	Woven (through back)
Gauge/Pitch	1/8 in., no shift	1/10 in., no shift	1/8 in., no shift	216
Pile Height	17/32 in. as tufted	0.416 in.	0.919	1/4 in. (6.35 mm)
Stitches/Wires	25 stitches/3 in.	12.4 stitches/inch	7.6 stitches/inch	8/in. (3.15/cm)
Face Weight	46 oz/yd ²	56.5 oz/yd ²	76.5 oz/yd ²	43.5 oz/yd ²
Finish	Sheared	Sheared/Pure	Sheared	Pure
Backing	15 pick or better woven polypropylene coated with latex and a synthetic secondary back			
Yarn	Invista 1710 denier (Type 896AS) or equivalent	Invista 1288/2 solution dyed	Invista 1710 denier (Type 896AS) or equivalent	
Ply	2-Ply	2-Ply	2-Ply	3-Ply
Material	Nylon	Nylon	Nylon	Wool
Twist	3.5 by 3.5	4.5 by 4.5	6.0 by 6.0	
Heatset	Superba Straight Set	Superba Straight Set	Superba Stuffer Box	
ASTM Standards where used	F608	F608	F608	F555
	F1284	F1284	F1284	F608
	F1409	F1334	F1409	F922
	F1411	F1409	F1411	F1284
		F1411		F1409
				F1411
				F1601
				F1692
				F2756

TABLE 2 Wilton Carpet Construction Specifications

Pile Composition	Wool 8,6/2*2
Method of Manufacturing	Wilton Fabric
Color	Dark, one color
Backing	Jute and Cotton + latex
Type	Cut-pile
Total Height	7.5 mm
Pile Height	6.4 mm
Total Weight/m ²	2100 g/m ²
Pile Weight/m ²	1500 g/m ²
Number of Knots/m ²	96 000 knots/m ²
Reed	320 r/m
Shots	300 sh/m
Standard width	400 cm
Tolerances	±5 %

TABLE 3 Extractor Carpet Construction Specification

Style Name	Atherton Plus
Description	Saxony Cut Pile
Fiber Content	100 % Continuous Filament Nylon
Face Weight	25 oz/yd ²
Finished Pile Thickness	0.53 in.
Gauge	5/32
Tufts/in.	8
Primary Backing	Polypropylene
Secondary Backing	Classicbac
Total Weight	56 oz/yd ²
Density	1698 oz/yd ²
Twist	3.4 Fiber
Protection	None

TABLE 4 Carpet Pad Construction Specification

Weight	90 ± 3 oz/yd ²
Material	Waffle Rubber
Density	20 lb/ft ³
Thickness	0.36 in.

carpet, the proposed carpet shall be evaluated using one of the procedures described in 6.2 or 6.3.

6.2 Option 1:

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

6.2.2 The laboratories of the three task group members shall gather test data. Testing shall be conducted in accordance with Test Method F608.

6.2.2.1 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.

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

6.2.2.3 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.

6.2.3 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
10 g or more	10 %
9 g or less	1 g

6.2.3.1 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 of the appropriate carpet.

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. When the task group has tentatively agreed on a replacement