

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

RAIL TRANSIT CAR CARPET SPECIFICATION

(Revised: April 17, 2014)

1.0 SCOPE:

1.1 Terminology:

Herein the following terminology applies for this carpet specification: The "Authority" and "WMATA" refer to the Washington Metropolitan Area Transit Authority. "Contract" refers to the agreement for supplying materials according to this specification. "Contractor" refers to the organization which is a candidate for fulfilling the Contract. "Vendor" refers to the manufacturer of the carpet which may or may not be the Contractor.

1.2 General:

1.2.1 This specification establishes the requirements for performance, design, testing requirements and qualifications of carpet material used by the Authority in its transit rail cars. There are generally four (4) different types of carpet which are used in the various car series.

1.2.2 It is important to state that the selection and approval of rail car carpet was conducted at the level of the Board of Directors of the Washington Metropolitan Area Transit Authority. The carpeting, which is unique in North American transit rail cars, is viewed as an important statement of quality and commitment to exemplary service to the customer, which is not equaled by any other transit authority's equipment. In keeping with this commitment to the highest quality, the Contractor shall submit the required carpet certifications, along with other contract documents, as a requirement for consideration of their bid package (See Section 4.0, Quality Assurance). The Contractor shall also submit proof of their capability in place to perform the required functions, as well as a proven background in producing / providing carpet to the Transit Industry.

1.3 Intended Use:

1.3.1 Function:

The carpet shall provide a durable, cleanable, and resilient walking surface. The carpet shall, in all respects, be suitable for the purpose intended.

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1.3.2 Location:

The carpet is intended to cover the upper surface of the floor in rail transit cars operated by the Authority in its Metrorail System in greater Washington, D.C., Suburban Maryland, and Northern Virginia, USA.

1.3.3 Environment:

The carpet is intended to function in an environment which will have a temperature range from 0°F to 140°F at a maximum relative humidity of 100%, which will include heavy rain. During winter operations (which may be experienced as much as 5 months a year) there will be numerous periods of constant ice and snow for several weeks at a time during which the carpet will be subject to de-icing materials such as rock salt, calcium carbonate, sodium nitrate, and other commercial deicers, as well as abrasive sand typically used to provide traction on icy surfaces. Additionally, the carpet will be exposed to runoff of caustic cleaning solutions used on other portions of the car.

2.0 APPLICABLE DOCUMENTS:

2.1 Industry Standards:

The following is a list of standards which will be used to evaluate or prepare the materials furnished for this specification. This list is not all-inclusive and may not show requirements listed elsewhere in this specification. All standards used shall be the latest revision available from the standard agency. If a standard has been discontinued or cancelled by the standard agency, the last revision released shall be used for purposes of this specification.

AATCC Test Method 20A	Fiber Analysis: Quantitative
ASTM D418	Standard Methods of Testing Pile Yarn Floor Covering Construction
ASTM D1335	Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings

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Industry Standards (Continued)

ASTM D3936	Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering
ASTM D5252	Standard Practice for the Operation of the Hexapod Drum Tester
CRI-TM101	Carpet and Rug Institute Appearance Retention Grading Scale
GSA-FSS-DDD-C-0095	Shrinkage Test Section- Carpet and Rugs, Wool, Nylon, Acrylic, Modacrylic Polyester, Polypropylene
AATCC Test Method 6	Colorfastness to Acids and Alkalis
AATCC Test Method 16	Colorfastness to Light (Option E)
AATCC Test Method 165	Colorfastness to Crocking: Carpets-AATCC Crockmeter Method
AATCC Test Method 164	Colorfastness to Oxides of Nitrogen in the Atmosphere Under High Humidity
AATCC Test Method 129	Colorfastness to Ozone in the Atmosphere Under High Humidity
AATCC Test Method 134	Electrostatic Propensity of Carpets
ASTM E648	Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
ASTM E662	Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
ASTM D1116	Standard Procedure for Moth-Proofing
Bombardier SMP 800-C	Toxic Gas Sampling and Analytical Procedures

3.0 REQUIREMENTS:

3.1 Design and Construction:

3.1.1 Material:

Pile: The pile yarn shall be 100% pure virgin wool.

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3.1.1 Material: (Continued)

Backing: The backing shall be at least 1/8 inch thick foam padding and shall have a weight of at least 38 ounces per square yard.

3.1.2 Construction:

Carpet shall be level loop pile, four ply wool, having a synthetic back and a face weight of at least 56.25 ounces per square yard, not including bonding and padding. The carpet shall be woven through the back and shall be bonded to the padding over its entire area, when padding is required. The carpet shall have a pile height of 0.205 inches, a stitch rate of 10 rows per inch, and a 216 pitch.

3.1.3 Edge Treatment:

All edges shall be latex sealed to prevent unraveling. Other methods may be used subject to the Authority's approval.

3.1.4 Color:

The color and pattern of the carpet item shall be as specified in appendix A, B, C and D, and shall conform with samples held at the Authority which are available upon request. As it was stated previously, the selection and approval of the carpet color/patterns was dictated at the level of the Board of Directors for the Washington Metropolitan Area Transit Authority and will be strictly adhered to.

3.1.5 Protective Treatment:

3.1.5.1 The pile yarn shall be permanently mothproofed in accordance with ASTM Specification D1116.

3.1.5.2 The carpet shall be processed to prevent the growth of mildew and other fungi.

3.1.6 General Dimensions:

The final delivered carpet shall be nominally 10' - 0" wide by 75' random length roll.

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3.2 Maintainability:

Carpet fabrics shall be cleanable by standard commercial methods suitable for the specific wool material construction, surface effect and color of the fabric identified by this specification.

3.3 Functional Characteristics:

The performance of the proposed carpet shall be certified through the successful passage of the following tests. (See Section 4.0, Quality Assurance.)

<u>Characteristics</u>	<u>Test Method</u>	<u>Criteria</u>
Fiber Composition	AATCC Test Method 20A	Verify 100% Wool fiber
Average Pile Yarn Weight	ASTM D418	56.25 ounces per square yard
Tufts Per Square Inch	ASTM D418	10 rows per inch, 216 pitch
Pile Thickness/ Tuft Height	ASTM D418	0.205 inches
Tuft Bind	ASTM D1335	3.8 lbs. min.
Delamination Strength of Secondary Backing	ASTM D3936	2.5 psi
Wear Resistance	ASTM D5252	Rating of 3 minimum on the L.,RI-TM101 scale after 12,000_ cycles
Shrinkage	GSA-FSS-DDD-C-0095	<1% max., Length or Width
Colorfastness to Acids and Alkalis	AATCC Test Method 6	Rating of 2 minimum for all reagents on the AATCC gray scale for color change
Colorfastness to Light	AATCC Test Method 16, Option E- water-cooled xenon-arc lamp, continuous light	Rating of 4 minimum on the AATCC gray scale for color change after 40 AATCC fading units

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Functional Characteristics (Continued)

<u>Characteristics</u>	<u>Test Method</u>	<u>Criteria</u>
Colorfastness to Crocking	AATCC Test Method 165	Rating of 4 minimum, wet and dry, on the AATCC color transference scale
Colorfastness to Oxides of Nitrogen	AATCC Test Method 164	Rating of 3 minimum on the AATCC gray scale for color change after 2 cycles
Colorfastness to Ozone	AATCC Test Method 129	Rating of 3 minimum on the AATCC gray scale for color change after 2 cycles
Electrostatic Propensity	AATCC Test Method 134	< 3.5 Kilovolts © 70F and 20% Rel. Hum.
Radiant Panel Test	ASTM E648	CRF 0.5 W/ sq.cm.
Smoke Density	ASTM E662	D _s (1.5) s 100 D _s (4.0) s 200
Toxic Gas Sampling	Bombardier SMP-800C	CO ppm <3500 CO ₂ ppm <90000 NO ₂ ppm <100 SO ₂ ppm <100 HCl ppm <500 HF ppm <100 HBr ppm <100 HCN ppm <100

4.0 QUALITY ASSURANCE:

4.1 Required Tests:

To ensure compliance with industry standards, the Authority requires that the Contractor shall comply with the following criteria at no cost to the Authority:

- 4.1.1 All tests listed under Section 3.3 shall be performed by an independent laboratory, or laboratories, using the test methods and requirements stipulated in Section 3.3.

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- 4.1.2** All independent laboratories selected to perform tests shall be currently accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) for product testing of Carpet and Carpet Cushion.
- 4.1.3** The Authority shall have access to all test facilities and all original data. Also, WMATA shall be allowed to witness any and all testing, at its option, and shall be notified at least 14 days prior to the test to allow suitable scheduling time.
- 4.1.4** Laboratory results of all tests shall be submitted in the form of a letter, or letters, from the independent laboratory which performed the test. These letter reports shall be submitted to the Authority as a part of the original bid package as proof of the vendor's ability to conform to required quality levels.
- 4.1.5** Tested carpet that does not pass the criteria stipulated in Section 3.3 for the appropriate test is not acceptable under the terms of this specification.
- 4.1.6** Vendor must demonstrate the ability to properly perform all work required under the scope provide in (attached):
- QAAW procedures #113-05, Receiving and Inspection
 - QAAW procedures #113-06, First Article Inspection (FAI)
 - QAAW procedures #113-19, Supplier Shipping and Delivery
 - QAAW procedures #100-8 (113-12), QAAW Warranty Management Process

4.2 Other Certification: The Contractor shall certify by letter to the compliance with the requirements for moth-proofing and mildew and fungus treatments.

4.3 Responsibility for Approved Test:

Approval by WMATA of any test acceptance or certification submitted under this Contract shall not relieve the vendor from responsibility for meeting all specifications and performance requirements applicable to this Contract.

4.4 Advance Representation:

A sample of the vendor's carpet used in initial testing described in Section 3.3 shall be submitted with test data and reports of certification at the time of the submittal offering. These samples (three each, 2 feet square, and clearly

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4.4 Advance Representation: (Continued)

identified) **do not** have to be of the same color and pattern as the carpet to be supplied.

As a condition of WMATA's **Final Acceptance** of the end item **prior to production**, the vendor shall supply an additional three samples of carpet, each 2 feet square, clearly identified, for WMATA's approval, and **these samples shall be of the proper color and pattern**. WMATA will issue a written acceptance or rejection within 20 calendar days. A copy of the vendor's QA manual must be submitted with its bid.

5.0 PREPARATION FOR DELIVERY:

5.1 Packaging and Packing:

Shipping wrapping and packing shall be of adequate strength to withstand dock handling and transportation as required for the specific end item. A description of the desired method shall be submitted for WMATA approval at least 90 days prior to the first shipment.

5.2 Marking and Shipments:

6.0 Past Performance and Experience

Bidder must demonstrate experience in supplying carpet to other transportation industries with billing in the amount of \$ annually. Contact information including contact number, contact person and telephone number. At WMATA's discretion, the organization may be contacted for reference.

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Appendix A

C18116002

First Used on:	5000 series
Location Used:	Doorway, Vestibule
Grade:	VB 6718 38517
Pattern:	99707 (This color is generally a red/white/blue speckled-stripe, with no specific name, and is somewhat darker than that used in the passenger area-aisle way.)
Construction:	Woven / POB
Pitch:	216
Rows Per Inch:	10
Wire Size:	.205" all loop
Yarn:	100% virgin wool
Ply:	4 ply cabled (2 ply, 2 ends)
Yarn Weight:	56.25 oz. per sq. yd.
Backing:	Duraloc MG Cushion
Total Weight:	94.25 oz. per sq. yd.
Width:	10' - 0" nominal

Note: The specification listed above is for carpet proprietary to MOHAWK Industries Inc., and shall be considered acceptable. An "approved equal" must meet these minimum requirements, as well as those outlined in the body of the specification, and must receive the approval of the Authority.

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Appendix B

C18116001

First Used on: 5000 series

Location Used: Passenger Area, Aisle way

Grade: VB 6718 38515

Pattern: 02652 (This color is generally a red/white/blue speckled-stripe, with no specific name, and is somewhat lighter than that used in the doorway-vestibule.)

Construction: Woven / POB

Pitch: 216

Rows Per Inch: 10

Wire Size: .205" all loop

Yarn: 100% virgin wool

Ply: 4 ply cabled (2 ply, 2 ends)

Yarn Weight: 56.25 oz. per sq. yd.

Backing: Duraloc MG Cushion

Total Weight: 94.25 oz. per sq. yd.

Width: 10' - 0" nominal

Note: The specification listed above is for carpet proprietary to MOHAWK Industries Inc., and shall be considered acceptable. An "approved equal" must meet these minimum requirements, as well as those outlined in the body of the specification, and must receive the approval of the Authority.