



**DEPARTMENT OF THE AIR FORCE**  
**HEADQUARTERS AIR FORCE CIVIL ENGINEER SUPPORT AGENCY**

28 MAR 2007

FROM: HQ AFCESA/CES  
139 Barnes Drive  
Tyndall AFB, FL 32403-5319

**SUBJECT: Engineering Technical Letter (ETL) 07-4: Air Force Carpet Standard**

**1. Purpose.** This ETL provides technical and aesthetic selection criteria for acquisition, installation, maintenance, and eventual disposal of broadloom carpet, carpet tiles, and carpet pad. It supersedes ETL 03-3, *Air Force Carpet Standard*, 16 April 2003.

**Note:** This ETL is substantially revised and should be completely reviewed.

**2. Application:** Approved areas of all Air Force facilities, regardless of fund source.

**2.1. Authority:**

- Air Force Policy Directive (AFPD) 32-10, *Installations and Facilities*
- Air Force Instruction (AFI) 32-1023, *Design and Construction Standards and Execution of Facility Construction Projects*
- AFI 32-7080, *Pollution Prevention Program*
- Unified facilities Criteria (UFC) 4-510-01, *Design: Medical Military Facilities*
- UFC 3-120-10, *Interior Design*

**2.2. Effective Date:** Immediately.

**2.3. Intended Users:**

- Installation civil engineer (CE) personnel
- Project managers (PM)
- Interior designers
- Facility managers
- Design consultants
- Design agents

**2.4. Coordination:** Air Force major command (MAJCOM)/installation interior designers, the Army Corps of Engineers and Naval Facilities Engineering Command.

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### 3. References.

#### 3.1. Public Law:

- Code of Federal Regulations (CFR) Part 1630, *Standard for the Surface Flammability of Carpets and Rugs (FF 1-70)*,  
[http://www.access.gpo.gov/nara/cfr/waisidx\\_99/16cfr1630\\_99.html](http://www.access.gpo.gov/nara/cfr/waisidx_99/16cfr1630_99.html)
- Americans with Disabilities Act (ADA) of 1990,  
<http://www.ada.gov/pubs/ada.htm>

#### 3.2. Federal Government:

- Americans with Disabilities Act Accessibility Guidelines (ADAAG),  
<http://www.access-board.gov/adaag/html/adaag.htm>
- Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities  
<http://www.access-board.gov/ada-aba/final.htm>
- Uniform Federal Accessibility Standards (UFAS),  
<http://www.access-board.gov/ufas/ufas-html/ufas.htm>
- Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines (CPG), <http://www.epa.gov/cpg>
- Federal Acquisition Regulation (FAR), <http://www.arnet.gov/far/>
- General Services Administration (GSA) *Technical Requirements Booklet for Carpet, Carpet Tiles and Carpet Cushion*, 3FNE 00-591a, April 30, 2002,  
[http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA\\_DOCUMENT&contentId=9767&noc=T](http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_DOCUMENT&contentId=9767&noc=T)
- Department of Housing and Urban Development (HUD) *Use of Materials Bulletin (UM) 72a, HUD Building Product Standards and Certification Program for Carpet Cushion*,  
[http://www.hudclips.org/sub\\_nonhud/cgi/pdfforms/UMBS/um72a.pdf](http://www.hudclips.org/sub_nonhud/cgi/pdfforms/UMBS/um72a.pdf)

#### 3.3. Department of Defense (DOD):

- UFC 4-510-01, *Design: Medical Military Facilities*  
[http://www.wbdg.org/ccb/DOD/UFC/ufc\\_4\\_510\\_01.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_510_01.pdf)
- UFC 3-120-10 *Interior Design*,  
[http://www.wbdg.org/ccb/DOD/UFC/ufc\\_3\\_120\\_10.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_120_10.pdf)

#### 3.4. Air Force:

- AFD 32-10, *Installations and Facilities*,  
<http://www.e-publishing.af.mil/pubfiles/af/32/afpd32-10/afpd32-10.pdf>
- AFI 32-1023, *Design and Construction Standards and Execution of Facility Construction Projects*,  
<http://www.e-publishing.af.mil/pubfiles/af/32/afi32-1023/afi32-1023.pdf>
- AFI 32-7080, *Pollution Prevention Program*,  
<http://www.e-publishing.af.mil/pubfiles/af/32/afi32-7080/afi32-7080.pdf>
- *Carpet Selection Handbook*,  
<http://www.afcee.brooks.af.mil/dc/dcd/interior/intdespu.asp>

- *Military Family Housing Guide*,  
<http://www.afcee.brooks.af.mil/dc/dch/mfhguide/guide.asp>

### 3.5. Private Industry.

#### 3.5.1. American Society for Testing and Materials (ASTM):

- ASTM D1335, *Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings*
- ASTM D5823, *Standard Test Method for Tuft Height of Pile Yarn Floor Coverings*
- ASTM D5252, *Standard Practice for the Operation of the Hexapod Drum Tester*
- ASTM D6859, *Standard Test Method for Pile Thickness of Finished Level Pile Yarn Floor Covering*
- ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source*
- ASTM E662, *Standard Method for Specific Optical Density of Smoke Generated by Solid Materials*

Order from <http://www.astm.org>

#### 3.5.2. American Association of Textile Chemists and Colorists (AATCC):

- AATCC Test Method (TM) 16, *Colorfastness to Light*,  
[http://www.aatcc.org/Technical/Test\\_Methods/scopes/tm16.cfm](http://www.aatcc.org/Technical/Test_Methods/scopes/tm16.cfm)
- AATCC TM 134, *Electrostatic Propensity of Carpets*,  
[http://www.aatcc.org/Technical/Test\\_Methods/scopes/tm134.cfm](http://www.aatcc.org/Technical/Test_Methods/scopes/tm134.cfm)
- AATCC TM 138, *Cleaning - Washing of Textile Floor Coverings*,  
[http://www.aatcc.org/Technical/Test\\_Methods/scopes/tm138.cfm](http://www.aatcc.org/Technical/Test_Methods/scopes/tm138.cfm)
- AATCC TM 171, *Carpets: Cleaning of; Hot Water Extraction Method*,  
[http://www.aatcc.org/Technical/Test\\_Methods/scopes/tm171.cfm](http://www.aatcc.org/Technical/Test_Methods/scopes/tm171.cfm)
- AATCC TM 174, *Antimicrobial Activity Assessment of Carpets*,  
[http://www.aatcc.org/Technical/Test\\_Methods/scopes/tm174.cfm](http://www.aatcc.org/Technical/Test_Methods/scopes/tm174.cfm)
- AATCC TM 175, *Stain Resistance: Pile Floor Coverings*,  
[http://www.aatcc.org/Technical/Test\\_Methods/scopes/tm175.cfm](http://www.aatcc.org/Technical/Test_Methods/scopes/tm175.cfm)

#### 3.5.3. Carpet and Rug Institute (CRI):

- CRI TM 101, *Assessment of Carpet Surface Appearance Change Using the CRI Reference Scales*,  
[http://www.carpet-rug.org/technical\\_bulletins/0307\\_CRI\\_TM\\_101.pdf](http://www.carpet-rug.org/technical_bulletins/0307_CRI_TM_101.pdf)
- CRI 104-2002, *Standard for Installation Specification of Commercial Carpet*, [http://www.carpet-rug.org/pdf\\_word\\_docs/104.pdf](http://www.carpet-rug.org/pdf_word_docs/104.pdf)
- CRI 105-2002, *Standard for Installation of Residential Carpet*,  
[http://www.carpet-rug.org/pdf\\_word\\_docs/105.pdf](http://www.carpet-rug.org/pdf_word_docs/105.pdf)

#### 4. Acronyms and Terms:

AATCC	- American Association of Textile Chemists and Colorists
ABA	- Architectural Barriers Act
ADA	- Americans with Disabilities Act
ADAAG	- Americans with Disabilities Act Accessibility Guidelines
AFI	- Air Force Instruction
AFNAF	- Air Force non-appropriated funds
AFPD	- Air Force Policy Directive
APYD	- Average Pile Yarn Density
ARR	- Appearance Retention Rating
ASTM	- American Society for Testing and Materials
CE	- civil engineer
CFM	- contractor-furnished material
CFR	- Code of Federal Regulations
CPG	- Comprehensive Procurement Guidelines
CRI	- Carpet and Rug Institute
DFAR	- Defense Federal Acquisition Regulation
DOD	- Department of Defense
E.O.	- Executive Order
EPA	- Environmental Protection Agency
ETL	- Engineering Technical Letter
FAR	- Federal Acquisition Regulation
GFM	- government-furnished material
GOQ	- general officer quarters
GSA	- General Services Administration
HQ AFCEE	- Air Force Center for Engineering and the Environment
HQ AFMSA/SGSF	- Air Force Medical Support Agency, Health Facilities Division
kV	- kilovolt
MAJCOM	- major command
MFH	- military family housing
NAF	- non-appropriated funds
O&M	- operation and management
oz/yd <sup>2</sup>	- ounce per square yard
PET	- polyethylene terephthalate
PTT	- polytrimethylene terephthalate
PM	- project manager
PVC	- polyvinyl chloride
RFHO	- Regional Health Facilities Office
TM	- Test Method
UFAS	- Uniform Federal Accessibility Standards
UFC	- Unified Facilities Criteria
VOC	- volatile organic compounds

**5. Technical Assistance.** See the Air Force *Carpet Selection Handbook*.

## **6. Waivers.**

**6.1. Medical Facilities.** Request waivers through the Regional Health Facilities Office (RHFO) to the Air Force Medical Support Agency, Health Facilities Division (HQ AFMSA/SGSF).

**6.2. Family Housing.** Unless unusual circumstances apply, carpeting should provide at least seven years of use in family housing. Replacing carpet in general officer quarters (GOQ) more often than every seven years requires approval in advance from the MAJCOM commander in accordance with established policy. In no case will individuals exercise authority for their own residence.

**6.3. Other Facilities.** Contact the installation or MAJCOM interior designer.

## **7. Authorized Areas.**

**7.1. Medical Facilities.** See UFC 4-510-01, Appendix A.

**7.2. Military Family Housing (MFH).** Carpet is authorized for all living areas except kitchens, baths, and patios/porches exposed to weather elements. See *Military Family Housing Guide*, paragraph 4-14.2.1.

**7.3. Other Facilities.** Carpet is authorized for most areas, with these exceptions: service, maintenance and industrial areas; food preparation areas; toilets and bathrooms; and areas requiring frequent cleaning. Do not use carpet in heavily trafficked areas (such as malls) or areas prone to flooding.

## **8. Fund Source.**

**8.1. Appropriated Funds.** Carpet purchased with appropriated funds and furnished as government-furnished material (GFM) may be acquired through a GSA contract or from open market sources. Open market source acquisition must be in accordance with the FAR. If the carpet is acquired by a construction contractor and furnished as contractor-furnished material (CFM), it may be purchased from open market sources. Under certain circumstances, construction contractors may be able to access GSA schedules for carpet; however, the contractor should obtain further information from their contracting officer.

**8.2. Non-appropriated Funds (NAF).** Carpet provided from NAF resources may be purchased from an Air Force non-appropriated funds (AFNAF) contract, GSA contract, or open market sources.

**8.3. MFH Funds.** Housing funds pay for all new construction carpet purchases. Family housing operations and maintenance (O&M) funds pay for all replacement carpet.

## **9. Selection Criteria.**

### **9.1. Primary Considerations.**

**9.1.1.** All carpet must comply with applicable health and safety codes, ADAAG, and UFAS (see paragraph 3.2).

**9.1.2.** Federal agencies are required by law, Executive Orders (E.O.), FAR, Defense Federal Acquisition Regulation (DFAR), and Air Force policy to consider environmentally preferable products. This includes items that are reused and certain EPA-designated carpet products manufactured with recycled or recovered materials. See the EPA CPG on recycled carpet products (see paragraph 3.2).

**9.1.3.** Review and revise carpet specifications to allow the use of recovered materials when the materials meet technical and aesthetic requirements. Compliance with EPA guidelines for recycled product specifications (AFI 32-7080) is mandatory unless the recycled-content product:

- Is unreasonably priced (costs more than comparable non-recycled products).
- Does not meet technical requirements.
- Is not available competitively (from two or more vendors).
- Is not available in a reasonable amount of time.

Consider carpet reuse or regeneration programs that are now being introduced by some manufacturers.

### **9.2. Minimum Warranties:**

- Fifteen-year warranty against 10 percent loss of face fiber.
- Fifteen-year warranty against edge raveling, snags, picks, runs, and delamination.

### **9.3. Authorized/Recommended Floor Coverings.**

**9.3.1.** Use carpet tiles in open office areas with furniture systems and areas with raised flooring or flat cable electrical systems. (Equipment is available which allows carpet tile replacement without disassembling system furniture.)

**9.3.2.** Carpets and carpet tile featuring antimicrobial effectiveness and electrostatic propensity guaranteed for the life of the carpet are required for use in medical facilities and child development centers.

**9.3.3.** Carpet fibers must be solution-dyed or bleach-resistant for medical and child development centers. This is also recommended for lodging facilities and youth centers.

**9.3.4.** Carpet or carpet tile in child development centers and youth centers must have a soft, non-abrasive surface texture. Cut pile or cut loop type carpet is suggested.

**9.3.5.** Carpet tile or its associated 1.83-meter (6-foot) -wide rolled goods is recommended for installation in corridors.

**9.3.6.** Use broadloom carpet or carpet tile that contains a pattern or bold, multi-colored tweed, except as noted in paragraphs 9.3.6.1 and 9.3.6.2. Tone-on-tone coloration does not meet criteria as a multi-colored carpet—the pattern acts as a camouflage to mask spots and spills until they can be cleaned. A random multi-colored pattern performs better than geometric patterns or tweed. The pattern must cover a majority of the carpet surface. Avoid patterns with definite lines or a design that repeats in a distinctively linear pattern (vertical or horizontal) in corridors, small rooms, or areas with angled walls. These designs are difficult to install parallel to walls. A bold tweed must contain a minimum of three distinctly different colors, e.g., gray, blue, and burgundy.

**Note:** Order an additional 10 percent of replacement tiles and roll goods to allow cutting and matching of carpet pattern repeats.

**9.3.6.1.** Solid colors are approved for general officer's or wing/base commander's suites, chapels, and distinguished visitor quarters in lodging. Solid colors may also be used as borders and accents.

**9.3.6.2.** In residential spaces, carpet or carpet tile must be a neutral color, such as beige or taupe, in a light to medium value. It should provide a flexible background to coordinate with the décor of successive occupants. White, off-white, or very dark shades are not permitted. Use either solid colors or tone-on-tone tweeds that are muted, i.e., all of the colors in the tweed mix are very close in hue and value.

#### **9.4. Technical Specifications.**

**9.4.1. Construction.** Broadloom carpet and carpet tile will be tufted, woven, needlebonded or fusion-bonded.

##### **9.4.2. Surface Fibers:**

- Nylon: Fiber manufacturer continuous filament nylon 6,6 or nylon 6 with a cross-section modification ratio no greater than 2.5.
- Wool and wool/nylon blends (except in medical facilities, child development centers, and youth centers).
- Polyester: Family housing only
  - Polyethylene terephthalate (PET)
  - Polytrimethylene terephthalate (PTT)

**9.4.3. Pile Height.** Reference ADAAG, Section 4.5.3, *Carpet*, for detailed requirements (no higher than 12.7 millimeters [0.5 inch], measured to the backing).

**9.4.3.1. Medical Facilities.** Use a low pile height carpet and/or carpet tile in medical facilities to facilitate wheelchair movement or patients using walkers.

**9.4.3.2. Family Housing.** There is no restriction on pile height in family housing except within units designated as accessible to the disabled in compliance with the ADA.

**9.4.4. Average Pile Yarn Density (APYD).** APYD is an index expressed as weight per unit volume in ounces per total pile yarn per cubic yard. It is a useful decision tool used in conjunction with other carpet specifications. It is determined by pile weight (specified in finished ounces per square yard), pile thickness or tuft height. Pile thickness and tuft height are laboratory means of determining what is commonly known as pile height. **Note:** Pile height is sometimes measured with a small ruler, but only gives rough determinations and should not be considered accurate.

The higher the APYD, the better the expected carpet performance. Average pile yarn density for commercial carpet under this specification must exceed 4,000. The method for calculating density is:

$$\text{For loop pile} \quad \text{APYD} = \frac{36 \times \text{pile weight (oz/yd}^2\text{)}}{\text{pile thickness}^* \text{ (inches)}}$$

or

$$\text{For cut pile} \quad \text{APYD} = \frac{36 \times \text{pile weight (oz/yd}^2\text{)}}{\text{tuft height}^{**} \text{ (inches)}}$$

\* Determined in accordance with ASTM D6859.  
\*\* Determined in accordance with ASTM D5823.

Minimum density is 4,000 in all facilities except family housing.

**9.4.5. Tuft Bind (Minimum).** As tested by ASTM D1335, *Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings*:

Commercial application:

- 10 pounds for loop pile broadloom
- 3 pounds for cut pile broadloom
- 8 pounds for modular carpet tile

Residential application:

- 6.2 pounds for loop pile broadloom
- 3.0 pounds for cut pile

**9.4.6. Backings.**

**9.4.6.1.** For tufted carpet, primary and secondary backings (or unitary backing) must be synthetic material. Jute backings are not authorized.

**Note:** For medical facilities, child development centers, and other selected end uses (including any facility in a location with high humidity), a moisture barrier may be specified.

**9.4.6.2.** Use of attached cushion back is optional. Open-cell urethane cushion or closed-cell vinyl backings are authorized.

**Note:** If a PVC (polyvinyl chloride) backing is specified, use an adhesive recommended by the manufacturer and check for compatibility with any sealants or old adhesives during installation to prevent reaction with the carpet.

**9.4.6.3.** Carpet systems (carpet installed with separate carpet cushion) must include a non-textured slab rubber cushion with a minimum density of 22 pounds per cubic foot); recycled pad must meet this criterion. In medical facilities, carpet systems are authorized only in the command suite, administrative areas, pharmacy, and record departments.

**9.4.6.4.** For carpet cushion in family housing, use 12.7-millimeter (0.5-inch) bonded urethane cushion with a clear poly web backing and a density of 7.5 to 8 pounds per cubic foot. Also see HUD UM72a, *HUD Building Product Standards and Certification Program for Carpet Cushion*.

**9.4.7. Testing.**

**9.4.7.1.** Colorfastness. Colorfastness to light (fading) will comply with AATCC TM 16, *Colorfastness to Light*, and will have a minimum of 4 after 40 AATCC fading units using the AATCC gray scale for color change.

**9.4.7.2.** Electrostatic Propensity (Maximum):

- 3.5 kilovolts (kV) or less for general commercial areas.
- 2.0 kV or less for critical environments (e.g., equipment/technical rooms of communication facilities) as tested by AATCC TM 134, *Electrostatic Propensity of Carpets*, using step option with Neolite sole only.
- 5.0 kV or less for residential areas.

### 9.4.7.3. Fire Resistance.

**9.4.7.3.1.** Carpet for all areas must conform to CFR Part 1630, *Standard for the Surface Flammability of Carpets and Rugs (FF 1-70)* (pill test).

**9.4.7.3.2.** Carpet and carpet systems (carpet and cushion) for corridors must be tested in accordance with ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source*, and ASTM D662, and meet the following criteria:

- Minimum average critical radiant flux of 0.45 watt per square centimeter (Class I) or greater within fire egress routes in unaccompanied personnel housing, child development centers, detention and correctional facilities, lodging facilities, and hospitals.  
**Note:** If protected by a sprinkler system, Class II may be installed.
- Minimum average critical radiant flux of 0.22 watt per square centimeter (Class II) in all other facilities.
- Smoke density, when necessary to meet specific application, shall be tested in accordance with ASTM E662 and shall have a maximum specific optical density not exceeding 450 (flaming mode exposure).

**9.4.7.3.3.** Carpets and carpet tiles to be installed in foreign locations must meet flammability and smoke density requirements that exceed or conform to the tests listed in paragraphs 9.4.7.3.1 and 9.4.7.3.2.

**9.4.7.4.** Appearance Retention Rating (ARR). The end-use application of a carpet will determine carpet wear classification and ARR. For commercial carpet, ARR evaluation is based on a 12,000-cycle Hexapod drum test performed in accordance with ASTM D5252, *Standard Practice for the Operation of the Hexapod Drum Tester*. Commercial carpets shall have a rating of:

- Moderate: Classification has a 2.5–3.0 ARR.
- Heavy: Classification has a 3.0–3.5 ARR.
- Severe: Classification has a 3.5–4.0 ARR.

The ARR scale must be used in accordance with the recommended practice outlined in CRI TM-101, *Assessment of Carpet Surface Appearance Change Using the CRI Reference Scales*.

**Note:** For residential carpets, Hexapod-recommended levels have not been developed due to lack of carpet industry consensus for testing parameters.

**9.4.7.5.** Soil Resistance. Soil resistance is the ability of a carpet to resist dry soil and maintain its original appearance after intermittent or restorative cleanings. Carpet soil resistance depends on many factors: polymer type; yarn engineering; carpet construction; type of dyeing; colors and patterns;

and carpet finishing (e.g., topical treatment and backing system). In addition, carpet installation, traffic level, type of soil, use of walk-off mats, and maintenance programs determine how well the carpet retains its original appearance. More information on specific carpet selection can be obtained from the carpet manufacturer. **Note:** Specification of fluorine content level is not recommended due to the aforementioned variables.

**9.4.7.6. Stain Resistance.** Stain resistance refers to the amount of stain absorbed into the fiber. Carpet should meet a minimum rating of 8 using the AATCC red 40 stain scale after 2 HWE (hot water extraction) using the AATCC 171, *Carpets: Cleaning of; Hot Water Extraction Method*, test method followed by the AATCC 175, *Stain Resistance: Pile Floor Coverings*, stain test.

**9.4.7.7. Indoor Air Quality.** Carpet, carpet cushion (if used), and flooring adhesives should be certified as CRI “Green Label” or “Green Label Plus.”

## **10. Installation.**

**10.1. Contractor Qualifications.** All work will be performed by contractors/installers who are CFI Certified Floorcovering Installers (International Certified Floorcovering Installer Association) or manufacturer’s approved installers. Foremen on the jobsite must be “Certified C-II Minimum.”

### **10.2. Methods.**

**10.2.1.** For warranties to be valid, install all carpet in accordance with the installation guidelines set forth by the manufacturer and/or the minimum guidelines set forth in CRI 104-2002, *Standard for Installation Specification of Commercial Carpet*, and CRI 105-2002, *Standard for Installation of Residential Carpet*.

**10.2.2.** See the *Air Force Carpet Selection Handbook* for descriptions of the various methods of installing broadloom carpet and carpet tile.

**10.2.3.** When recommended by the manufacturer, consider alternative carpet installation systems that use dry adhesives or mechanical bonding to eliminate emissions of odor and volatile organic compounds (VOC), or use low-emitting wet adhesives without a solvent base.

**10.2.4.** In family housing, install carpeting over a separate cushion—direct “glue-down” is not allowed.

**10.2.5.** Provide transition strips or protective edges where carpet meets other flooring materials.

**10.2.6.** Provide a soil walk-off area or mat for carpet in entry areas and elevators—it will collect dirt before it reaches the carpeted area. Ensure the mats cover the distance of several footsteps.

**10.3.** Environmental Conditions. Follow the manufacturer's recommendations for proper environmental conditions that must be maintained before, during, and after the installation. For good indoor air quality, provide adequate ventilation and air exchange during installation and for 48 to 72 hours thereafter to dissipate new installation odors.

**10.4.** Recordkeeping. The base civil engineer (BCE) will keep the following information for each carpet installation:

- Location (address, building number, and room).
- Name of carpet manufacturer, pattern, and color.
- Carpet certification/record that the carpet conforms to this ETL.
- Date of installation.
- Method of installation and substrate.
- Disposal certification.

## **11. Maintenance.**

**11.1.** Carpet should be cleaned and maintained according to the manufacturer's recommendations. Both preventive and corrective maintenance must be performed to retain the original appearance and antimicrobial characteristics. See the *Air Force Carpet Selection Handbook*, Chapter 7.

**11.2.** Identify and remove stains and spillage immediately.

**11.3.** Establish a maintenance program for periodic vacuuming and professional cleaning.

**11.3.1.** Regular vacuuming will remove light soils that can damage carpet fibers.

**11.3.2.** Obtain carpet manufacturer's guidelines for frequency of professional cleaning. Hot water extraction methods, using only hot water, are recommended for most carpets. Do not saturate carpet. Bonnet cleaning is not recommended due to potential damage to carpet pile. The CRI Seal of Approval on chemicals, extractors and systems should be followed.

**11.3.3.** Remove furniture before cleaning or place plastic or aluminum foil under and around furniture to prevent rust and stains from forming on the carpet. Leave plastic or foil in place until carpet is completely dry.

## 12. Removal and Disposal.

**12.1.** In accordance with EPA guidelines to reduce landfilling, provide for carpet and carpet installation waste handling in the project's overall waste management plan. When feasible, all carpet and carpet installation waste disposal should require a certification that the products were not deposited in a landfill. There are carpet reclamation centers in most major cities. Other sources for carpet reclamation can be found by contacting the carpet manufacturer/provider for their reclamation/recycling options. Also see Carpet America Recovery Effort (CARE) at <http://www.carpetrecovery.org/waste.php>.

**12.2.** Carpet containing hazardous substances (e.g., carpet from medical facilities or from flooding) must be disposed of in accordance with hazardous waste regulations.

**13. Point of Contact.** Recommendations for improvements to this ETL are encouraged and should be furnished to: HQ AFCEE/TDB, 3300 Sidney Brooks, Brooks City-Base, TX 78235-5112, Air Force Interior Design Program Manager, DSN 240-4201, commercial (210) 536-4201, FAX 240-2239, e-mail [afcee.td.carpet@brooks.af.mil](mailto:afcee.td.carpet@brooks.af.mil).

BRENT HILL, COL, USAF  
Director of Engineering Support

2 Atch  
1. Appearance Retention and End User  
Application Chart  
2. Distribution List

## Appearance Retention and End-Use Applications

Appearance Retention Rating Determination for Commercial Carpet (based on a 12,000-cycle Hexapod drum)	
≥ 2.5 ARR	Moderate
≥ 3.0 ARR	Heavy
≥ 3.5 ARR	Severe

End-Use Application	Minimum Use Classification
<b>Banks and Credit Unions</b>	
Entrances and customer banking space	Severe
Open office space, private offices	Heavy
<b>Bowling Centers</b>	
Concourses (excluding food service, working, and storage areas)	Severe
<b>Chapels and Other Religious Facilities</b>	
Educational wing, worship areas	Heavy
<b>Clubs</b>	
All areas	Severe
<b>Gymnasiums</b>	
All areas	Severe
<b>Laboratories and Research Facilities</b>	
Computer work areas	Severe
Closed private office	Heavy
Open work areas, dry labs	Severe
<b>Libraries</b>	
Conference rooms	Severe
Corridors	Severe
<b>Lodging Facilities and Dormitories</b>	
Conference rooms	Severe
Combination living/sleeping rooms	Heavy
Dining facilities	Severe
Offices	Heavy
Public areas, lobbies, lounges, TV rooms, day rooms	Severe
Sleeping rooms	Heavy
<b>Medical Facilities (excluding patient treatment areas)</b>	
Assisted living areas	Heavy
Classrooms	Heavy

<b>Medical Facilities (Continued)</b>	
Clinical waiting areas (e.g., outpatient, pharmacy, ancillary zone)	Severe
Chapels	Moderate
Corridors, elevators	Severe
Dining facilities	Severe
Entrance areas (walk-off mats should be used)	Severe
Libraries	Moderate
Lobbies	Severe
Offices, private and semi-private	Severe
Lounges	Heavy
Patient rooms	Heavy
Playrooms at OB/gyn and pediatric clinics	Severe
Staff sleeping and watch areas	Moderate
<b>Military Housing</b>	
Single Family	
Family rooms, living rooms, dining rooms	Heavy
Sleeping rooms	Moderate
Combination living/sleeping rooms	Heavy
Multi-family	
Common areas, lobbies, lounges	Severe
Corridors	Severe
Family rooms, living rooms, dining rooms	Heavy
Multi-purpose areas	Severe
Sleeping rooms	Moderate
Combination living/sleeping rooms	Heavy
Unaccompanied Officer's Quarters	
Sleeping and living rooms	Moderate
Public areas, lobbies, lounges	Severe
Dining facilities	Severe
Offices	Moderate
Unaccompanied Enlisted Quarters	
Sleeping and living rooms	Severe
Public areas, lobbies, lounges	Severe
Dining facilities	Severe
Offices	Heavy
<b>Museums</b>	
All areas	Severe
<b>Music or Drama Centers</b>	
All areas	Severe
<b>Offices (including administrative areas)</b>	
Closed private office	Heavy
Corridors	Severe

<b>Offices (continued)</b>	
Conference rooms	Heavy
Open plan office: circulation areas	Severe
Open plan office: work areas	Heavy
<b>Restaurants (excluding work spaces)</b>	
Dining areas	Severe
Cafeteria-type dining areas	Severe
Enlisted canteens	Severe
Office areas	Heavy
<b>Retail Stores</b>	
Offices	Heavy
Restaurant and cafeteria dining areas	Severe
Sales areas	Severe
<b>Theaters</b>	
All areas	Severe
<b>Training Buildings and Educational Facilities (including dependents' schools)</b>	
Classrooms	Severe
Corridors	Severe
Staff and administration offices	Heavy
<b>Youth Centers</b>	
All areas	Severe

**Note :** Use lower wear classification only where applicable based on expected wear.

## DISTRIBUTION LIST

### DEPARTMENT OF DEFENSE

Defense Commissary Service Design and Construction Division 2250 Foulis St., Suite 2 Lackland AFB, TX 78236	(1)	AAFES ATTN: RE-C PO Box 660202 Dallas, TX 75266-0202	(1)
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### SPECIAL INTEREST ORGANIZATIONS

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