Carpeting Your Educational Facilities: Key Factors in Flooring Performance Introductions

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PATHOSANS THE CLEAN THAT SAYS YOU CARE

Interface[®]

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CARPET CONSTRUCTION

FACE WEIGHT

- + Construction
- + Color
- + Pattern
- + Density
- + Type of Fiber Used
- + Modification Ratio
- + Dye Method
- + Backing

Let's take a look at the most common factors that can affect performance...

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NYLON TYPE 6 vs TYPE 6,6

Nylon 6,6 - Double chain nylon polymer made by combining adipic acid and polyhexamethylene adiamide Nylon 6,6 - Melting point of 263 degree C Nylon 6,6 – Slightly harder surface making it more difficult to dye

Nylon 6 - Single chain nylon polymer made from caprolactam.

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- Nylon 6 Melting point of 220 degree C
- Nylon 6 Better dye affinity and softer hand



FIBER SHAPE

CROSS SECTION: The shape of a fiber when cut perpendicular to its axis.



A circular shape of fiber offers optimal performance but has two distinct disadvantages:

• coarseness of the surface

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magnifying dirt and scratches

VEWS





FIBER SHAPE Modification Ratio

COMMERCIAL GRADE FIBER = MR $1.8 \ge$ RESIDENTIAL GRADE FIBER = MR 2.5+





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CROSS SECTION Prior to accelerated aging test



Fiber with low MR (1.8)

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Fiber with high MR (3.2)



FIBER PERFORMANCE Prior to accelerated aging test





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Performance Testing







ART (Appearance Retention Test)

- Goes beyond standard test methods to predict long-term performance in even the toughest commercial environments.
- This proprietary ART simulates real-world usage over 5, 10 or 15 years.

TARR (Texture Appearance Retention Rating)

- The Hexapod test (shown left) subjects a carpet sample to a set number of impressions within a rotating drum using an eight-pound hexapod ball.
- The sample is graded for appearance on the Carpet & Rug Institute's performance scale.
- This results in a TARR classification of Moderate, Heavy or Severe.





FIBER PERFORMANCE After accelerated aging test



METHODS OF DYING NYLON FIBER

- Printing/Piece Dyed
- Yarn Dyed / Skein Dyed

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Solution Dyed



DYE METHODS Piece Dyed – Printing "Injection"



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DYE METHODS Yarn Dyed – Skein Dyed



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DYE METHODS Solution Dyed



Pigment is added directly to the polymer. Yarn is extruded in colors. Similar to a carrot, color is inherent to the yarn.

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ADVANTAGE OF SOLUTION DYED NYLON Solution-Dyed Nylon - Kool-Aid Test





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ADVANTAGE OF SOLUTION DYED NYLON Solution-Dyed Nylon - Kool-Aid Test





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Quality Color Runs Deep



Solution Dyed Yarn

Solution dying integrates color throughout, not just on the surface.



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Non Solution Dyed Yarn

Surface color will fade over time and with exposure to solvents, revealing the yarn's white core.



ADVANTAGES OF SOLUTION DYED NYLON Solution-Dyed Nylon - Bleach Test



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OTHER PERFORMANCE METRICS

<u>Average Pile Yarn Weight</u> — Mass per unit area of the pile yarn including buried portions of the pile yarn. This is expressed as ounces per square yard.

Gauge — The distance between two needle points expressed in fractions of an inch. Applies to both knitting and tufting. Example: a 1/10th gauge machine has 10 needles per inch.

<u>Stitches</u> — Stitches per inch. Number of yarn tufts per running inch of a single tuft row in tufted carpet.

Tufts or Stitches per square inch – number of stitches times the number of needles Example: a 1/10th gauge product that has 10 SPI has 100 tufts per sq inch.

<u>**Density or Average Pile Density</u>** - the weight of pile yarn in a unit volume of carpet expressed in ounces per cubic yard is given by the formula: $D = W \times 36$ </u>

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In which D is density, W is pile yarn weight in ounces per square yard, and T is pile thickness in inches



Ave Pile Yarn Weight (Oz Weight) vs. Construction Density

"Less is More"- Less ounce weight providing higher performance

CRI – lower pile height + higher pile density = performance enhancement

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PERFORMANCE - BACKING

A building won't last long with a weak foundation.

A carpet tile won't perform long with a weak backing

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Carpet Tile Construction

Tufted Carpet into the Non-Woven Primary Backing

Pre-Coat

Backing Compound

Stabilizing Glass Tissue

Backing Compound

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Backing Built Better



MAINTAINING PERFORMANCE

WALK OFF CARPET TILE



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CARPETING YOUR FACILITIES What You Should Know

· Floor finish housekeeping cost trade-offs

Extraction and pile lifting in lieu of striping and resealing surface

Regular vacuuming in lieu of dry mopping

Spot cleaning in lieu of wet mopping

Supply costs typically reduced

Using the right chemistry; the appropriate carpet cleaning chemicals

Understand carpet manufacturer recommendations to preserve warranty

Consider supplies that have the CRI Seal of Approval.

✤ Do NOT over apply cleaning chemicals – USE WATER TO RINSE AWAY DEBRIS AFTER CHEMICAL RELEASES IT FROM THE FIBER

Invest in the right equipment

Different equipment has different debris removal performance ratings

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Good vacuums picks up 90% to 95% of the debris – USE HEPPA RATED BAGS TO CATCH DEBRIS INSTEAD OF REDISTRIBUTING IT
Carpet extraction needed periodically – LOOK FOR EFFICIENT RECOVERY RATING TO AVOID MIDLEW DEVELOPMENT

Perform pile lifting infrequently as a restorative measure – SOME EXTRACTORS COME WITH A CONVERSION FEATURE BUILT IN



NOISE REDUCTION







Table 3.5 Human Reaction to Change in Level	
Change in Level (dB)	Reaction
1 dB	Noticeable
3 dB	Very Noticeable
6 dB	Substantial
10 dB	Doubling (or halving of sound)
20 dB	Four times louder (or quieter)



Image credit: Architectural Acoustics by Marshall Long. STRONGER TOGETHER. SMARTER TOGETHER.



The Acoustical Society of America recommends a 95% speech recognition level.

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Up to 60% of classroom activities involve speech.





SAFETY



WARMTH & COMFORT



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IMPROVED INDOOR AIR QUALITY





COMMERCIAL CARPET CLEANING FREQUENCY CHART

Traffic Soil Rating	Carpet Owner/ Maintainer		Professional Carpet Cleaner/ Restorer	
	Vacuuming	Spot Cleaning	Interim Maintenance	Restorative Cleaning
Light <500 foot traffics per day	1 to 2x per week	Daily or as soon as spots are noticed	1 to 3x annually	1 to 2x annually
Medium (moderate) 500-1000 foot traffics per day	Daily in traffic areas. Overall 3 to 4x per week	Daily or as soon as spots are noticed	3 to 6x annually	2 to 4x annually
Heavy 500-1000 foot traffics per day	Daily in traffic areas. Overall 4 to 7x per week	Daily or as soon as spots are noticed	6 to 12x annually	3 to 6x annually
Very Heavy >2500 foot traffics per day	1 to 2x daily in traffic areas. Overall to 7x per week	Daily or as soon as spots are noticed	12 to 52x annually	6 to 12x annually



VACUUMING

Daily vacuuming is critical for high traffic areas and helps lift and restore pile.

Recommendations:

- > Look for vacuum equipment with:
 - \checkmark top loading soil bags with HEPA filtration rating
 - \checkmark cylindrical brushes
 - \checkmark dual motors one for brush and one for vacuum

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- > Vacuum slowly and methodically using overlapping strokes.
- > Consider backpack vacuums when manpower can not be provide as a second resort.
- > Look for equipment with The Carpet and Rug Institute's Seal of Approval







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SPOT CLEANING

Immediate action is always the best option.

• Do not rub the stain.

Blot or wipe gently from the outer edge toward the center.

• Use spotting solutions appropriate for the specific type of spot.

Water based, oil based or specifically for gum and other solids. Attach attached stains with the opposite side of the pH scale rating where possible

- •Use spotting solutions sparingly.
- •Use portable extractors to gently rinse and remove the foreign substance.
- Invest in a spot cleaning tool kit for those mystery stains

•Always check any cleaning solution for colorfastness.

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Apply solution to an inconspicuous area and blot with a white cloth. If color transfer is evident, do not use the solution.



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INTERIM CLEANING

•Warm water extraction with low moisture equipment

Consider pre-spraying for controlled chemical quantity introduction to carpet and rinse, rinse, rinse! Consider several suction only passes over surface for enhanced recovery of rinse water. NOTE: Although interim cleaning is effective it will not replace the need for a deep cleaning hot water extraction with pile lifting.

• Pile Lifting

An effective method for lifting crushed pile and loosening dry soil.

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• Take control the drying process to avoid mold and mildew development

Consider high volume air movers blowing over surface Consider a dehumidification sequence of operation on your HVAC system to enhance dehumidification



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RESTORATIVE CLEANING The CHAT principal Chemical Heat Agitation Time

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RECOMMENDED EXTRACTION PROCESS

- 1. Thoroughly vacuum carpet
- 2. Pre-spray carpet with a commercial-grade detergent solution
- 3. Agitate solution into carpet using a counter-rotating brush machine
- 4. Allow 10 minutes dwell time

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- 5. Extract carpet using plain hot water making multiple wet and dry passes
- 6. Allow carpet to dry completely before allowing foot traffic



DO'S & DON'TS

• Don't use bonnet machines, carpet shampooers, or any other type of rotary motion on the carpet surface. This will leave chemical residue and damage the fibers and will void the warranty.

•Don't over-wet the carpet. The wetter the carpet...the longer the dry time....and the higher the risk of mold/mildew development.

• Don't allow foot traffic before carpet is completely dry.

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•Do clean and maintain all equipment periodically. Check belts, hoses, spray nozzles, and replace bags or filters when necessary.

•Do replace extractors every 8 - 10 years and vacuum cleaners every 4 – 5 years.





MODULAR CARPET BENEFITS

MULTIPLE STYLE & INSTALLATION OPTIONS

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LESS WASTE

•Modular carpet installation typically produces more than 90% less waste than conventional carpet



Less waste means less material is required



Non-directional installation waste = 1.5%



Typical broadloom installation waste = 14%

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Questions and Answers

We thank you for your time!

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