



DURABILITY

Performance Testing

Proving Durability For Every Product

At Mannington Commercial, we understand that durability is one of the key drivers of flooring performance. In commercial spaces where products must endure years of constant use, lasting quality depends on how flooring is designed and constructed. That's why we measure every product against rigorous performance tests and independent standards—so designers, facility managers and everyone who relies on our products can be confident it will stand up to the demands of their space.



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Key Performance Characteristics

Every commercial environment brings its own challenges. A school corridor, a hospital room, and an office lobby all put unique stresses on flooring, from rolling loads to spills to constant foot traffic. That's why we focus on a core set of performance characteristics that predict how a floor will respond to these challenges over time.

LVT & Resilient Sheet Performance Testing

Performance Characteristic	How It's Tested	Why It Matters
Wear Resistance	Simulated foot traffic and rolling loads measure long-term durability.	Floors maintain their appearance over years of use.
Abrasion Resistance	Surface finishes are scuffed, scratched, and rubbed repeatedly.	Ensures clarity and texture aren't lost under daily use.
Indentation Resistance	Heavy static loads are applied, then floors checked for recovery.	Strong backing and surface layers prevent dents from furniture and equipment.
Impact Resistance	Dropped-weight tests mimic accidents and sudden force.	Flooring resists cracks, chips, or visible damage from dropped objects.
Dimensional Stability	Exposure to heat and moisture tests whether floors maintain their shape, size, and flatness after installation.	Construction and backing systems keep flooring from curling, gapping, or shifting under environmental changes.
Soil, Stain, and Fade Resistance	Samples are exposed to spills, cleaners, and UV light.	Colors stay vibrant and surfaces resist staining over time.
Slip Resistance	Traction is measured in both wet and dry conditions.	Engineered textures and coatings create safer walking surfaces for visitors to your space.



Understanding Wear Layer Thickness

In Luxury Vinyl Tile (LVT), durability is largely determined by the wear layer—the clear protective surface that guards against scratches, scuffs, and stains. Commercial LVT is typically specified at **20 mil** or greater, with heavier traffic areas calling for wear layers up to **30 or 40 mil**.

A thicker wear layer means:

- Better resistance to daily wear and abrasion
- Longer retention of color and clarity
- Lower long-term maintenance and replacement costs

Wear Layer	Typical Use
12 mil	Light commercial or residential spaces
20 mil	Medium- to High-traffic commercial settings
30 mil	High-traffic commercial spaces
40 mil	High to heavy duty commercial use

How We Apply It

Most Mannington Commercial LVT products are produced with a **minimum 20 mil wear layer** and often enhanced with **Quantum Guard Elite® technology** to deliver superior scratch, stain, and scuff resistance.



Carpet Performance Testing

Performance Characteristic	Test Name	How It's Tested	Why It Matters
Appearance Retention	ASTM D5252 – Hexapod Tumble Drum (TARR)	Simulates years of foot traffic using a rotating drum and metal hexapod to measure texture change.	Confirms how well carpet retains its appearance and performance over time.
Dimensional Stability	ASTM D7570 – Dimensional Stability (AACHEN)	Evaluates size and shape changes under controlled temperature and humidity conditions.	Ensures carpet tiles stay flat and properly aligned after installation.
Stain Resistance	AATCC 175 – Stain Resistance: Pile Floor Coverings	Standard staining agents are applied, allowed to set, and cleaned per defined procedures. The level of residual staining is then rated visually.	Verifies that spills and common soils can be easily removed without leaving discoloration.
Colorfastness to Air Pollutants	AATCC 23 – Colorfastness to Burnt Gas Fumes	Carpet samples are exposed to controlled combustion gases for several hours, then compared to unexposed control samples.	Confirms colors resist yellowing or dulling in environments with air pollutants.
Compression and Recovery	ITTS-303 – Compression and Recovery	Samples are compressed under a static or dynamic load for a set period, then released and measured for height recovery over time.	Demonstrates the carpet's resilience to crushing from foot traffic and furniture.
Colorfastness to Crocking (Rubbing)	AATCC 165 – Colorfastness to Crocking (Rubbing)	A white test cloth is rubbed across the carpet surface under consistent pressure, and the degree of transferred color is evaluated.	Ensures color does not rub off onto clothing or surfaces.
Colorfastness to Light	AATCC 16.3 – Colorfastness to Light (Xenon Arc)	Exposes carpet to a xenon arc lamp that simulates natural sunlight and any color change is compared to a control using standardized gray scales.	Confirms color stability and resistance to fading under prolonged light exposure.
Topical Moisture Resistance	Carpet Moisture Penetration by Dynamic Impact	A liquid is dropped onto the carpet surface and impacted repeatedly by a metal weight to test if moisture passes through to the backing.	Validates protection against spills reaching the subfloor, reducing risk of mold or odor.
Fire Resistance (Radiant Panel)	ASTM E648 – Critical Radiant Flux (Flammability)	A flooring specimen is exposed to a radiant heat panel and a pilot burner and flame spread distance is measured to calculate critical radiant flux required to extinguish it.	Confirms compliance with Class I or Class II fire ratings for commercial installations.

Performance Characteristic	Test Name	How It's Tested	Why It Matters
Colorfastness to Ozone	AATCC 129 – Colorfastness to Ozone	Samples are placed in a sealed chamber containing ozone at high humidity for a set period of time and then compared to controls.	Demonstrates color durability in environments with fluctuating ozone levels.
Ignition Resistance (Pill Test)	ASTM D2859 – Ignition Characteristics (Pill Test)	A small methenamine tablet is ignited on the carpet surface and the flame spread is measured to determine pass/fail.	Ensures carpets meet federal flammability requirements.
Slip Resistance	ASTM C1028 – Static Coefficient of Friction	A Neolite heel assembly is pulled across the carpet surface and the horizontal force required to initiate movement is recorded.	Confirms traction and walking safety under dry and wet conditions.
Smoke Density	ASTM E662 – Smoke Density of Burning Materials	Carpet samples are burned in a sealed chamber and light obscured by accumulating smoke is measured using a photometric sensor.	Ensures compliance with smoke emission limits for safe building environments.
Static Control	AATCC 134 – Electrostatic Propensity	Samples are walked on in a controlled laboratory environment and static charge is measured using an electrode on the test subject.	Confirms static buildup remains below comfort and safety thresholds.
Colorfastness to Water	AATCC 107 – Colorfastness to Water	Samples are soaked under controlled conditions with multifiber test fabric, placed between two pressure plates, and then evaluated for color transfer.	Verifies colors won't bleed or fade when exposed to moisture.
Construction Quality	Construction Analysis	Samples are deconstructed and measured to ensure the product meets the published specifications	Confirms product construction supports performance and durability expectations.
Delamination Strength	ASTM D3936 – Delamination Strength	A mechanical testing machine pulls apart the primary and secondary backings to determine the required force to separate them.	Ensures backings remain securely bonded and resist separation during installation and use.
Tuft Bind	ASTM D1335 – Tuft Bind	Individual tufts are gripped and pulled vertically until removed and the force required is measured in pounds.	Indicates resistance to pulls, snags, and unraveling for long-term durability.

Understanding TARR Ratings

Carpet durability is measured by the Texture Appearance Retention Rating (TARR), developed by the Carpet and Rug Institute. The test uses a rotating drum and hexapod to simulate footsteps over 12,000 revolutions, then rates the carpet's appearance change on a scale from 1 to 5. The higher the number, the longer the carpet retains its texture and looks new.

Most of our carpets achieve a TARR of 3.5, with all products rated at least 3.0. This means your flooring will:

- Maintain texture and appearance longer.
- Withstand constant foot traffic.
- Require fewer replacements over time.

TARR CLASSIFICATION	TRAFFIC LEVEL CLASSIFICATION	INSTALLATION TYPE
MODERATE	> 2.5 TARR	PRIVATE OFFICES AND LOWER-TRAFFIC ADMINISTRATIVE AREAS
HEAVY	> 3.0 TARR	OPEN OFFICES, CORRIDORS, & CONFERENCE ROOMS
SEVERE	> 3.5 TARR	PUBLIC AREAS, DINING FACILITIES, & LOBBIES
EXTREME/SPECIAL USE	> 4.0 TARR	TRANSPORTATION SERVICE AREAS, AIRPORTS OR BUS STATIONS

How We Achieve It

Mannington Commercial carpets consistently earn higher TARR ratings through deliberate design and construction. Premium fibers resist crushing, durable backings absorb impact, and careful attention to pile height, loop construction, and pattern design all help extend appearance retention in heavy-use spaces.



How Mannington Commercial Ensures Performance

At Mannington Commercial, performance isn't just promised—it's proven. Every product is backed by testing that validates how it will perform in real-world environments.

- **Third-party validation.** All Mannington flooring is independently tested to confirm performance claims, so specifiers and facility managers can make decisions with confidence.
- **Exceeding industry standards.** Our products are proven to outperform industry standards.
 - **Carpet Products** – Exceed standards for appearance retention, texture retention, fire safety factors, and static generation—and our modular carpet exceeds industry standards in dimensional stability.
 - **LVT & Resilient Sheet Products** – Surpass standards for resistance, indentation, fading from light, and deterioration from chemicals.
 - **Rubber Products**– Mannington's rubber flooring exceeds industry standards under a range of standardized tests - including Dimensional Stability, Hardness, Static Load, and Chemical Resistance - ensuring long-term performance.
- **Product-specific performance.** Each flooring type is tested against the stresses it's most likely to face:
 - **Luxury Vinyl Tile (LVT) & Resilient Sheet**– Quantum Guard Elite® is a holistic performance solution proven to provide the industry's best scratch resistance.
 - **Carpet** – All commercial carpets achieve a TARR rating of 3.0 or greater, meaning they're engineered to withstand heavy to severe traffic conditions.
 - **Rubber** – Superior thermoset rubber retains color, resists indentation and cracking, and is quiet underfoot. No finishing or stripping lowers maintenance costs.
- **Transparent data.** Test results inform the specifications and product data sheets we provide, giving architects and designers measurable proof to back their flooring choices.

What to Ask Your Sales Rep About Performance Testing

When evaluating flooring, here are the questions that help you separate claims from proven performance:

- Has the product been **third-party tested**, or are results only from internal labs?
- What **benchmarks** does it meet or exceed?
- Can you share the **test data or product sheet** that supports these claims?
- How is the product tested for the **specific stresses** it will face in my space?
- How does **product performance and warranty coverage** connect back to the testing?

Choosing flooring with these factors in mind gives you confidence that what you specify today will continue to perform for years to come.

Learn more about our approach
to performance testing at
manningtoncommercial.com.

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