

# Select

CARPET APPEARANCE INDEX  
COLOR REFLECTANCE CHART

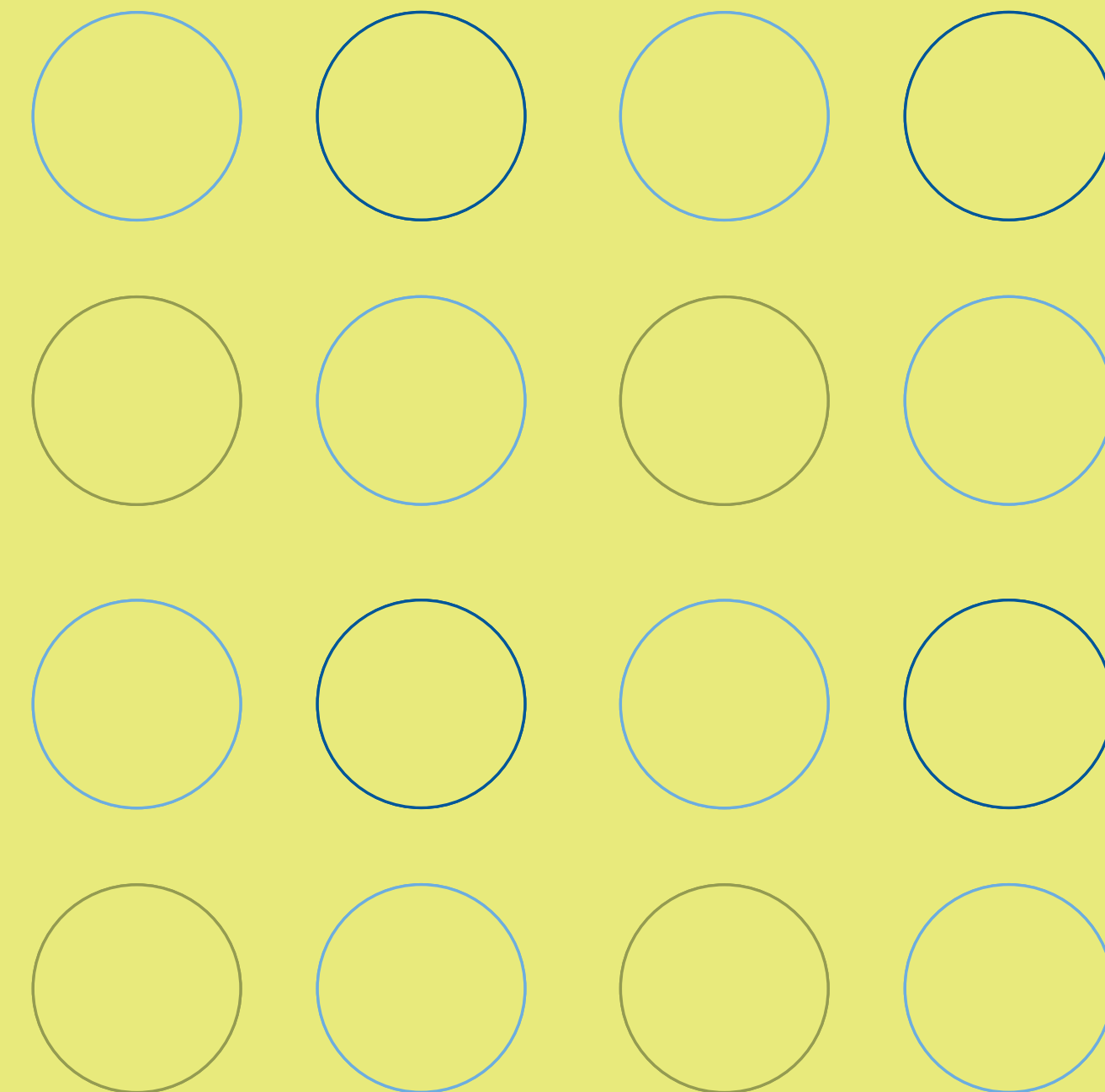
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Antron®  
carpet fiber



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CARPET SPECIFICATION GUIDE

# Specify



**It begins with the right fiber.**

The carpet fiber you specify today will greatly affect how carpet will look and perform over its lifetime. Yet, to complete the performance equation, you need to be aware of other variables within your control.

This Carpet Specification Guide has been designed as a tool to provide comprehensive information about carpet construction and carpet performance criteria.



## Carpet Construction Terminology

Understanding the components of carpet construction and how they influence appearance and performance is an essential part of the specification process. Some elements contribute primarily to aesthetics, while others impact performance. A description of each element follows:

For more heavily trafficked areas, multicolored carpets with medium-value colors and random patterns should be considered for optimal performance.

For high-traffic areas, loop, cut and loop with mostly loop, or tip shear with mostly loop yield the best performance.

Antron® nylon provides superior resistance to crushing, matting, stains and soil, plus Antron® nylon has built-in static protection. In addition, Antron Lumena® solution dyed nylon offers unsurpassed acid stain cleanability.

## Color and Pattern

Color is an important aesthetic consideration, but it also determines the degree of soil hiding in carpet. While light colors show soil more readily, dark colors show light-colored soil and lint. Medium-value colors most effectively reduce the visible effects of soiling.

Pattern also plays a role in hiding soil. Solid colors show soil most easily, followed by heathers and tweeds. Regular patterns hide soil even more effectively, and random patterns provide the best soil hiding.

For more information on color and pattern, see the enclosed Carpet Appearance Index.

## Texture

Texture is the second major aesthetic factor to consider in creating the overall look of the carpet. With carpet of Antron® nylon, you can choose from a wide variety of textures:

### Level loop

loop pile with one pile height

### Textured loop

loop pile with slight height variation

### Multilevel loop

loop pile with more than one pile height

### Cut and loop

combination of cut pile tufts and loop pile tufts

### Tip shear

a multilevel loop with the high loops sheared to give a cut and loop look

### Cut pile

all tufts cut—can be one or more than one pile height

## Fiber Type

Your choice of fiber plays an essential role in determining carpet appearance and performance. Fiber impacts everything from soil and stain resistance to matting and crushing.

Generic terms you can specify:

### Type 6,6 nylon

provides unsurpassed resistance to crushing, matting and abrasive wear

### BCF

(bulked continuous filament) fiber in a continuous form—can be used in cut and/or loop pile

### Staple

short lengths of fiber that have been cut from a continuous filament tow—must be spun into yarn before tufting—cut pile only

### Solution dyed nylon

BCF yarn with pigment added to the polymer—color is built in and resists fading and the effects of harsh cleaners

Antron® nylon fibers are engineered to scatter light (making soil less visible) and to resist trapping of soil.

## Fiber Shape

Fiber shape determines how the fiber hides soil and how much it can trap and hold soil. Fiber shape also determines the extent of crushing and matting.

### Hollow filament

used in the BCF form of Antron® Legacy nylon and Antron Lumena® solution dyed nylon—the smooth, uniform outer surface with rounded corners eliminates crevices where soil can be trapped. Voids scatter light most effectively to make soil less visible

### Delta

used primarily in the staple form of Antron® Legacy nylon—reduces soil-trapping crevices while scattering light to minimize the appearance of soil

### Trilobal

conventional shape used for most commercial carpet yarns

## Density/Pile Weight

In **loop pile** carpets, crushing can occur if the density is too low. It is important to specify a minimum average pile density consistent with expected traffic conditions.

In general, with a similar backing system, a higher density will provide better texture retention. Density is measured in ounces per cubic yard and is calculated as follows:

$$\text{Pile Density} = \frac{36 \times \text{finished pile weight (oz/yd}^2\text{)}}{\text{finished average pile thickness or pile height (inches)}}$$

In this calculation, either pile thickness or pile height can be used. When comparing several carpets, make sure all carpets are evaluated using the same method.

In **cut pile** carpets, yarn twist level and pile height determine texture retention. A higher twist level and a higher pile height should be used in heavy-traffic areas.

## Carpet Backing

The carpet backing offers stability as well as other advantages to the carpet, depending on the material used. Contact your local mill representative for specific backing performance attributes.

### Conventional backing

made of a primary fabric attached to a secondary with latex

### Woven

the same yarns make up the face and the backing

### Unitary

single-fabric backing

### Urethane

resin that creates a foam-like texture when applied to the primary backing (can be hardback or cushion)

### Vinyl

compound applied to primary backing—used for tile or 6' goods (can be hardbacked or closed-cell)

### Thermoplastic

molten resin or vinyl applied to back of carpet

## Construction Type

You should make your choice between tufted or woven, broadloom or modular carpet based on styling preference, budget considerations, backing performance needs and facility requirements (installation, floor access).

### Tufted broadloom

carpet manufactured on a tufting machine—a row of needles inserts yarn into primary backing

### Woven broadloom

carpet manufactured on a loom

### Six-foot

carpet tufted or woven in 6' widths—available in attached cushion or hardback

### Modular tile

carpet manufactured in sizes measuring 18"x 18", 36"x 36", or 36"x 18"

### Fusion-bonded tile

yarns sandwiched between two backings, then split to form two carpets simultaneously (cut pile only)

Your local flooring contractor or mill representative can help you evaluate options for your specific environment.



## Carpet Performance Specifications

Carpet performance can be predicted on the basis of laboratory test procedures that evaluate carpets against set standards. The following guidelines describe the test methods and ratings needed for typical carpet applications. The test methods are standard tests from ASTM (American Society for Testing and Materials), AATCC (American Association of Textile Chemists and Colorists) or the CRI (Carpet and Rug Institute). You can write these standards into your specification for texture retention, soil resistance, stain resistance, static control, colorfastness, tuft bind, delamination and flammability.

### Texture Retention

Texture retention is the ability of a carpet to withstand crushing and matting. Although accelerated test methods do not directly compare with actual floor performance, they do give an indication of the ability of a carpet to withstand crushing and matting.

**Vettermann drum**—ASTM D 5417

For 22,000 cycles (loop pile), 5,000 cycles (cut pile).

- specify a minimum CRI TM 101 Reference Scale rating of 3

**Hexapod drum**—ASTM D 5252 For 12,000 cycles (loop pile), 8,000 cycles (cut pile).

- specify a minimum CRI TM 101 Reference Scale rating of 3

### Soil Resistance

Soil resistance is the ability of a carpet to resist dry soil and maintain its original appearance after intermittent or restorative cleanings.

**Fluorine Specification**—AATCC 189

Measures the amount of soil resistance chemical on the fiber.

**Initial Fluorine Specification**—

- specify a carpet with a minimum of 500 ppm fluorine by weight based on an average of 3 fluorine analyses of a single composite sample

**Fluorine Durability Specification**—

- specify a carpet with a minimum of 400 ppm fluorine by weight after 2 AATCC 171 hot water extraction cleanings based on an average of 3 fluorine analyses of a single composite sample

### Stain Resistance

The amount of stain absorbed into the fiber.

**Stain Resistance Test**—AATCC 175

- specify a minimum AATCC Red Dye 40 Stain Scale rating of 6 if staining is a concern
- specify a minimum AATCC Red Dye 40 Stain Scale rating of 8 if staining is an important issue

(Some manufacturers use a topical stain resist treatment. Specify AATCC 138 shampoo test to determine the durability of the stain resist treatment.)

## Static Control

The ability of a carpet to dissipate shock.

### Static Control Test—AATCC 134

- specify a static discharge that does not exceed 3.5 kV\*  
(Some manufacturers use a topical treatment to achieve static control. AATCC 171 Hot Water Extraction should be specified with up to 5 washings prior to AATCC 134 to determine the durability of the topical treatment.)

\* In some environments where electronic components are being assembled or where sensitive mainframe computers are used, static control much lower than 3.5 kV may be required. Generally these areas will also necessitate the use of other static-control measures, such as humidity control, special shoes, wrist straps and antistatic smocks. In these cases, please contact your mill representative for details.

## Colorfastness

The ability of a carpet to maintain its original color. Color may be lost due to exposure to light or atmospheric contaminants, or by rubbing off when wet or dry.

### Lightfastness—AATCC 16E

#### For conventionally dyed nylon

- specify an International Gray Scale for Color Change rating of no less than 3 after 80 AFUs

#### For solution dyed nylon

- specify an International Gray Scale for Color Change rating of 3–4 or better after 160 AFUs (For direct sunlight exposure areas such as atriums, 4 or better may be required.)

### Crockfastness—AATCC 165

- specify a minimum International Gray Scale for Staining rating of 4 for both wet and dry crocking

### Atmospheric Fading—AATCC 129—Ozone and AATCC 164—Oxides of Nitrogen

- specify a minimum International Gray Scale for Color Change rating of no less than 3 after two cycles

## Tuft Bind

The force required to pull a tuft from the carpet backing.

### Tuft bind (loop pile)—ASTM D 1335

- specify a minimum of 10 lbs (average)
- specify a higher level if necessary for extra-heavy traffic

### Tuft bind (cut pile)—ASTM D 1335

- specify a minimum of 5 lbs (average)

## Delamination

A deterioration of tufted carpet when the primary backing and face yarns separate from the secondary backing.

### Delamination Test—ASTM D 3936

- specify a minimum of 3.0 lbs/in

## Flammability

The amount of smoke or flames created when a carpet is ignited.

### Methenamine Pill Test—CPSC FF 1-70—ASTM D 2859

- federal flammability requirement that all carpets must pass

### Flooring Radiant Panel Test—ASTM E 648

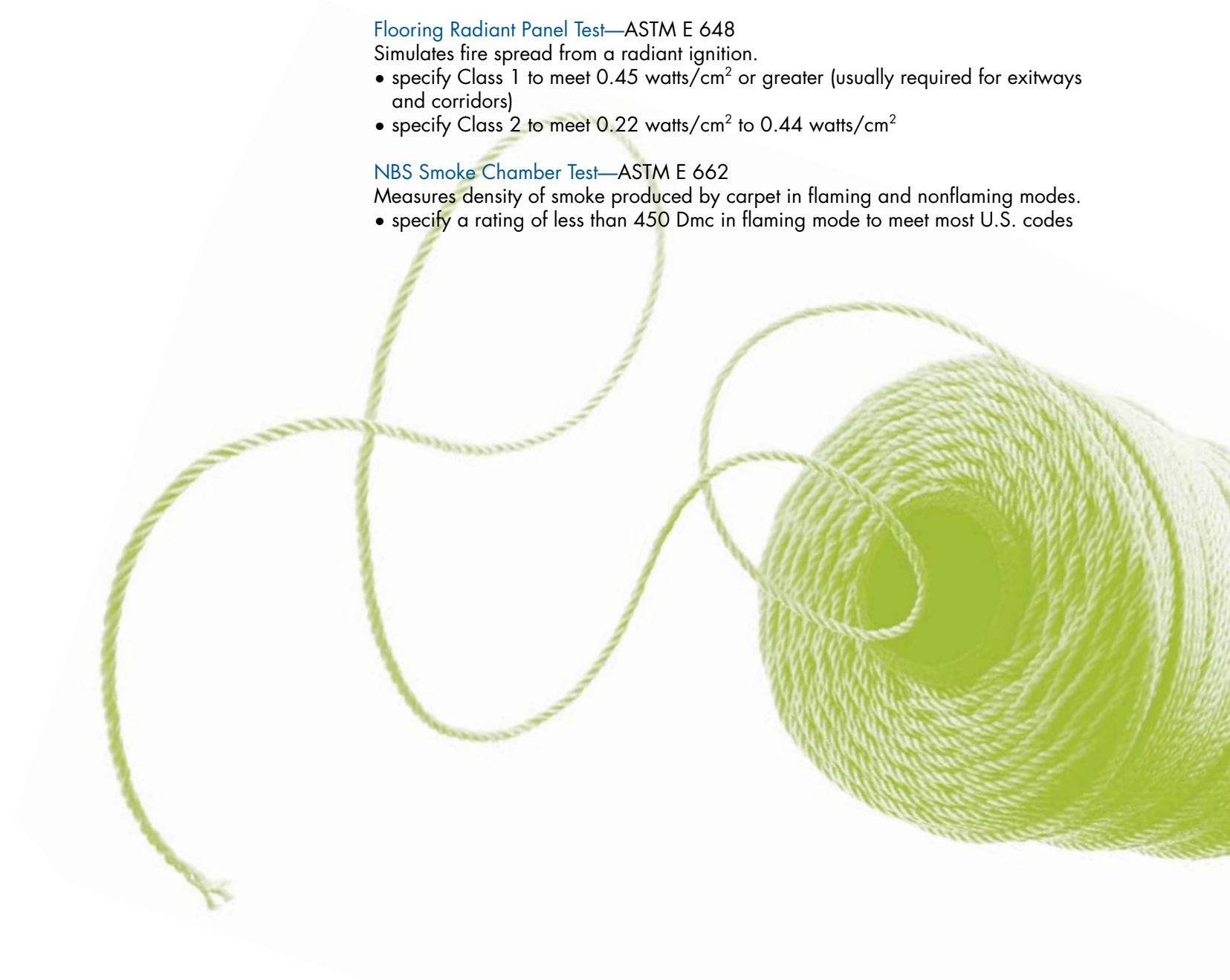
Simulates fire spread from a radiant ignition.

- specify Class 1 to meet 0.45 watts/cm<sup>2</sup> or greater (usually required for exitways and corridors)
- specify Class 2 to meet 0.22 watts/cm<sup>2</sup> to 0.44 watts/cm<sup>2</sup>

### NBS Smoke Chamber Test—ASTM E 662

Measures density of smoke produced by carpet in flaming and nonflaming modes.

- specify a rating of less than 450 Dmc in flaming mode to meet most U.S. codes



## Resources

### The Carpet Appearance Index

The Carpet Appearance Index is a tool that allows you to predict the performance characteristics of a carpet based on its design and construction, which will help determine how well its appearance will be retained over the life of the carpet.

The Carpet Appearance Index uses five key carpet components—color, pattern, texture, density and fiber—and produces two ratings that allow you to compare one carpet against another in terms of soiling and texture retention.

### Using the Carpet Appearance Index

Use the Carpet Appearance Index to analyze the performance characteristics of a carpet prior to selection. The Appearance Index can help eliminate future maintenance problems or early replacements due to crushing and matting. By comparing the carpet's attributes with the anticipated traffic level, the Appearance Index is designed to guide you to choices that will optimize carpet performance with your aesthetic requirements. A copy of the Carpet Appearance Index is included with this brochure.

## We're Here When You Need Us

We offer several resources to help you solve specific floor-covering challenges or learn more about the latest carpet trends and technology.

### Antron® Design Consultants

Located in major metropolitan areas across North America, our Antron® Design Consultants are available to provide:

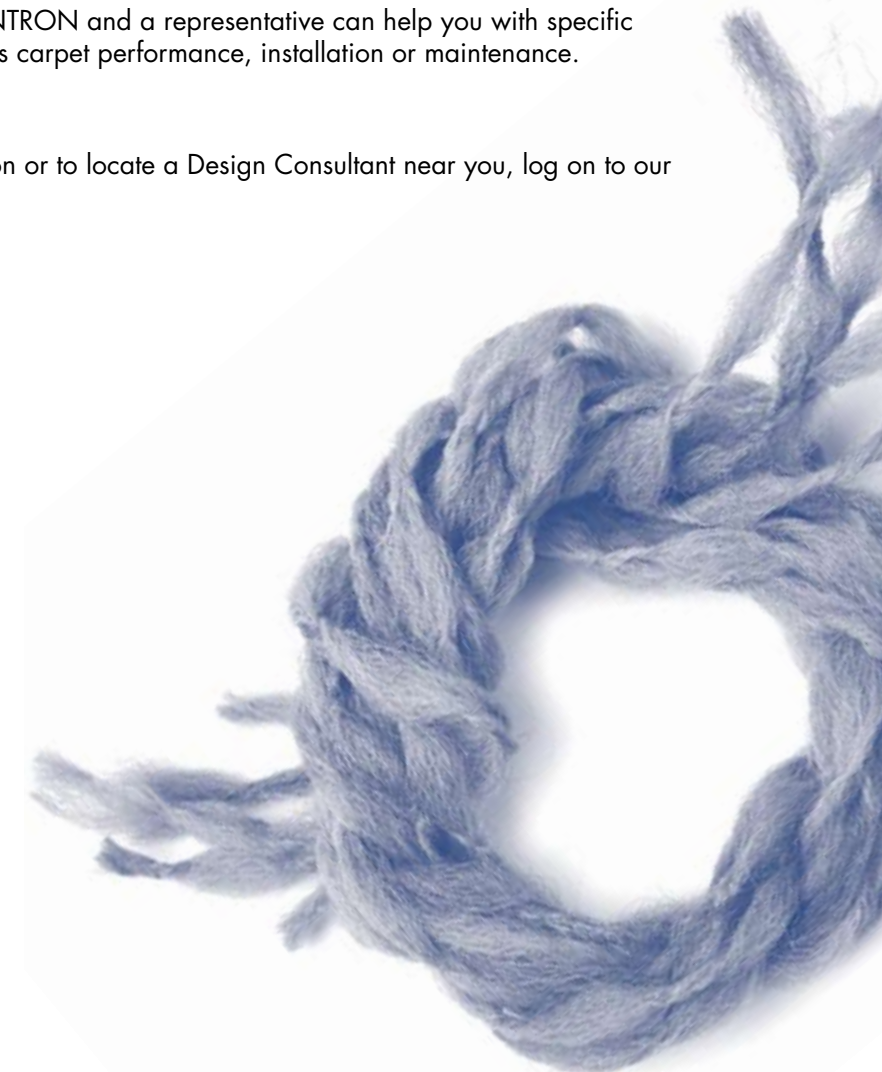
- educational programs for the designer, architect and specifier, including seminars eligible for IIDA/ASID CEUs and AIA/CES Learning Units
- assistance with selecting the right carpet for your specific needs
- performance information on the various fiber types
- information on the latest carpet styles and emerging color trends for commercial interiors
- up-to-date information on maintenance technology and carpet reclamation

### Technical Resources

One call to 1-877-5-ANTRON and a representative can help you with specific technical issues, such as carpet performance, installation or maintenance.

### antron.net

For technical information or to locate a Design Consultant near you, log on to our web site at [antron.net](http://antron.net).



[antron.net](http://antron.net)

## Environmental Considerations

### Longer Product Life

The evaluation of the total environmental impact of all products and services specified should be an important consideration. Selecting commercial carpet that will perform for the longest time actually lessens the total environmental impact of the carpet. Carpet of Antron® nylon is engineered to last longer on the floor—meaning less waste goes to landfills over time.

### Environmentally Preferable Products

Environmentally Preferable Products are products that have a lesser or reduced effect on the environment when compared to competing offerings that serve the same purpose. Antron® nylon is third party certified as an Environmentally Preferable Product.



### Reclamation

Reclamation is an alternative method of disposing used carpet so it is not placed in a landfill. Carpet reclamation can be included in your overall project specification. Call 1-877-5-ANTRON or visit our web site, [antron.net](http://antron.net), to access the INVISTA™ Reclamation Specification.

### Indoor Air Quality

The CRI Green Label is a designation given to carpets that have total VOCs (volatile organic compounds) of less than 0.5 mg/m<sup>2</sup>-hr. This can be specified as the CRI Green Label, based on environmental chamber testing per ASTM D5116.