Spikeproof carpet: tailor-made for golf clubs

by Scott C. Marlowe

There has never been an alternative to carpeting for clubhouses and pro shops. It is the only floor covering which will satisfy the dictates of aesthetics, noise abatement, safety, and comfort while withstanding the abuse of golf spikes. It's luxury connotation remains, yet today's production methods allow carpet to compete favorably in terms of initial cost, with other types of floor covering and at substantially lower long-term maintenance costs.

New production techniques allow a great variety of surface textures; however, the character of the golf spike dictates a cut pile texture (looped pile textures pull like a ladies nylon stocking when a spike catches in a tuft). Because shags have a low tuft density they are not acceptable. However, denser friezes (sometimes called "twists") and saxony plushes are finding their way into the spikeproof market. Of course, the traditional velvet plush-pile is still the main bill of fare.

It is vitally important to select a carpet with proper weight density, tuft density, pile weight, and color as well as texture. Proper specification of pile fiber is also important as the pile fiber must withstand severe punishment from abrasion, spillage, sunlight, and, in some cases, atmosphere. For maximum longevity, the pile fiber should be colorfast, have texture which does not crush and "walk-out", and is resistant to abrasion. Ideally, the pile fiber should hide soil and be easy to clean — this reduces maintenance costs significantly.

Which fiber's best?

The pile fibers which perform the best in most situations are the advanced generation nylons (Antron III by Dupont, Anso-X by Allied Chemical Co., and Ultron by Monsanto). Nylon is the most abrasion resistant fiber, either natural or synthetic, known to man. These newer nylons are specially treated to minimize the static buildup which was such a problem with first-generation nylons. They are engineered to reduce light reflection which magnifies soil and to increase crush resistance. These fibers are continuous filament, which means they are long individual strands of fiber rather than short, crimped staple fiber which has to be spun into thread before making yarn. This makes carpets with these nylons less prone to fuzzing and pilling.

Polyester has begun to earn a fine reputation in the industry. Fortrel PCP by Celanese, Trevira by Hoechst, and Kodel III by Eastman Chemical are second only to nylon in abrasion resistance. Their appearance is similar to that of wool, they are quite colorfast, and polyester is inherently resistant to static buildup. Polyester also performs well in terms of stain removal, offering complete removal of the stain in 46 of the 50 toughest stain problems.

To my knowledge, polypropylene is not used as a pile fiber in any spikeproof carpeting currently on the market, though it is widely used as the fiber in primary and secondary backing materials.

Wool is the traditional choice of pile fiber. However, it does not perform as well as nylon or polyester, and its cost has become prohibitive.

Acrylic fibers are widely used, but it should be noted that acrylic rates poorly in abrasion resistance, crush resistance, and stain retention when compared to the previous fibers. The best acrylics are Acrilan by Monsanto, and Zefram and Zefchrome by Dow Badische. Modacrylic fibers are not as resilient as acrylics but are used in fiber blends in a flame-retardant capacity. Dynel by Union Carbide and Verel by Eastman Chemical are the best known modacrylics.

Fiber blends are quite common in the carpet industry and are a good concept as qualities of one fiber can be used to reinforce the weaknesses of another and often this reduces cost.

The carpet on this page is "CLub Estates", by Normandy Carpet Mills, an acrylic/nylon pile fiber blend. On the right is "Saint Andrews Stripes," designed by Environs Design Group and made by Normandy to mask soil and hide footprints.

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There are, however, many technical considerations in selecting a proper fiber blend.

Judgments on the utility of a fiber should not be limited to the characteristics outlined above. A fiber's performance is greatly affected by the construction of the finished carpet fabric and use conditions to which it will be subjected.

What is spikeproof?

There are two theories pertaining to what constitutes a spikeproof carpet. One purports that a carpet must have a large amount of thick pile fiber between the spike and the primary backing (the primary backing is the material which retains the pile fiber and prevents the tufts of pile fiber from pulling out). While this approach produces satisfactory results, the fabric (carpet) requires a pile height of at least .53 inch and a pile yarn weight of at least 70 ounces per square yard. This usually results in a carpet which exceeds a flammability rating (according to the ASTM E-84-70 "Steiner Tunnel Test" recognized by most fire codes) of 75 which exceeds the Class "B" rating usually required by fire authorities.

The other approach is to produce a carpet with a great number of individual tufts of pile fiber per square inch (tuft density), the theory being that a great tuft density will prevent spikes from penetrating the backing as the base of each tuft is extremely close to other tufts. This technique requires a pitch (the number of tufts per 27 inches of width) of at least 252 for woven fabrics or a machine gauge (distance between tufts in a fraction of an inch) of slightly less than 1/10 for tufted products and a row (the number of lengthwise yarn tufts per inch) of at least 9 (10 to 12 row is highly recommended). The pile height must be a minimum of .37 inch in this case. The technical difficulties in tufting such a product makes it scarce and woven goods with these specifications are costly. Another consideration is that since the cutting and abrasion action of the spikes and the pulling at the base of the tuft is tremendous, a very tough pile fiber is necessary. This method works but usually requires expensive wool/nylon pile fiber blends. It is also desirable to minimize the abrasive action of soil and cleats to insure the long service life of the carpet.

Professionally, I favor a carpet which incorporates elements of both theories. I believe that a deep, dense pile and a tightly tufted or woven construction almost always guarantees long wear. However, it is important to analyze the performance requirements on a case by case basis in order to select the best carpet for the job at the lowest cost. Actual construction characteristics must be adjusted for specific use conditions.

Before the advent of the tufting process (the manufacturing processes which accounts for about 80 percent of the carpets produced today) golf spikeproof carpeting had to be manufactured on a Wilton or Axminster loom. The Wilton or Axminster weaving process, by its nature, permitted an endless variety of pattern in a multitude of colorways. Tufting does not allow this as it is not a weaving process per se. Tufting machines can be compared to a glorified sewing machine with hundreds of needles each "sewing" pile yarn into a primary backing. Consequently, the process allows only solid colors or various stripes.

Patterns are achieved in tufted carpets through the use of colorset printing process. Unfortunately, this process has technical weaknesses making it unsuitable for the production of patterned carpets for spikeproof installations. However, the new "Millitron" printing process by Milliken looks promising and they offer an alternative to the current unpatterned golf carpeting.

What about installation?

Because carpets produced for golf spikes by the weaving processes are of high quality in terms of construction, they can safely be installed either by the tackless strip method over hair or jute padding or by the less expensive direct glue-down method. Tufted carpets are best installed direct glue down, but it is here that the secondary backing becomes vital. Latex foam is unsuitable and should never be used in a spikeproof carpeting. Jute is acceptable but will deteriorate rapidly when compared with either the unitary backing or so called "Action Back" of polypropylene. The latter is definitely preferred.

Under no circumstances should the carpet tile form of installation be employed. The multitude of seams in such installations will make the carpet deteriorate with great rapidity. Installations should have as few seams as possible and the seams should run against, not with, the majority of traffic passing through the interior space.

Color is an important consideration, not just from an aesthetic point of view but from a soil masking standpoint. The type of soil in the geographic location of a club or resort must be considered when selecting colorway, as well as in determining the best type of pile fiber to use, as different soil types have different abrasion factors. Sand, for example, with its many sharp, glassy edges, is one of the most abrasive soil types.

Generally speaking, medium value and intensity colors, neutrals or earthtones hide soil better than pastels, dark or bright colors. Tweeds

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(speckled) or multi-color carpets conceal footprints, soil, and stains better than do solid colors. The color used in a carpet should blend with color of the local soil when using a solid color. When using a tweed, it is best to have the speckles blend with the soil. The background color should be subdued and mellow for the best results.

Initial cost is an important concern, but long-term cost should be the primary consideration. Should a small club with little traffic invest $70 per square yard in a carpet that will wear for 10 years, but due to atmospheric and sunlight conditions, fade in 5 years, when it can buy a $30 per yard carpet which will service adequately for the same 5 year period? By the same token, a resort club would be ill-advised to purchase a $25 per yard fabric and expect to get 2 years' wear out of it when it can buy a $60 per yard product that will last 5 years.

In the case of the small club, the $70 initial cost divided by a longevity factor of 5 yields a long-term cost of $14 per yard per year. The $30 product divided by 5 years' wear gives a cost of $6 per yard per year, costing less than half of the $70 carpet in the long run.

If the large resort club were to spend $25 per yard on a carpet that will last 2 years, it would be paying $12.50 per year of use, while the $60 carpet lasting for a period of 5 years would cost $12 per year.

These figures must be considered along with installation and underpadding costs, down-time and inconvenience, and maintenance costs to get a reliable picture of the real cost of the carpet specified.

It should also be noted here that expecting a carpet to wear longer than 5 years is unrealistic, as this is seldom possible with stock carpets — though it may be possible with custom-made products. A change is in order after a 5-year period in any case, as an "old hat" product does not contribute positively to the image of the club.

What else to consider?

A major consideration in specifying commercial carpeting is the various governmental regulations that apply to the particular installation. These regulations may be administered either federally, by state, or by locality and enforcement may be accomplished by agencies ranging from the U.S. Department of Commerce to the local fire inspector. The most stringent regulations are those pertaining to flammability. Although the implication of flammability connotes ease of ignition or rapidity of burning, in reality, flammability applies only with respect to performance of a specific carpet fabric subjected to a specific flammability test.

The U.S. Department of Commerce requires a test of flammability, commonly called the "Methenamine Pill Test" (designated DOC FF 1-70 or the alternative ASTM Standard D2859-70T), on all carpets to be sold in the United States before marketing. This test determines the resistance to ignition and surface pile flammability of a carpet when exposed to a small, burning methenamine tablet used as a source of ignition in a draft-free chamber. If the carpet specimen burns 3 inches or more in any direction in the allotted time, it fails the test.

Local fire authorities usually require an additional test of flammability called the "Steiner Tunnel Test" (designated ASTM-E84-70). In this test, a carpet specimen 25 feet long and 1 foot 8 inches wide is mounted upside down in a test tunnel and subjected to heat and flame in a temperature range of 1600° to 1800°F. (871° to 982°C.) under normal draft conditions. The test duration is 10 minutes or until the sample has burned out completely, whichever occurs first. The progress of the flame along the length of the test sample is observed every 15 seconds and the greatest distance of flame spread is then used to calculate a flame-spread rating. Most municipalities use the NFPA 101 Lite Sagety code classifications as follows: A flame spread of 0 to 25 yields a class "A" rating, 26 to 75 is class "B", 76 to 200 is class "C", and 201 to 500 is class "D". Class "A" fabrics are usually required in exit hallways and stains, class "B" is normally required in areas of public assembly, though class "C" is sometimes allowed if the building is sprinklered. It is best to check with the local fire marshal for specifics before specifying a carpet.

The selection of carpet fabric for a golf club is sufficiently complicated to require the assistance of professionals in the field of design who are not committed to the sale of specific products. Salesmen are usually well briefed on their products, but I have seldom had one send me to another source admitting that his products would not suit my requirements.

Guarantees on carpet are meaningless in most cases. Many manufacturers will only guarantee the pile fiber against excessive wear. This is fine, provided the carpet has been properly constructed. The pile fiber could last forever, but if the construction will not retain the fiber, what good is a guarantee? If the construction is guaranteed, find out under what conditions it will be honored. In any case, if you buy a carpet from a dealer who has not been in business very long, you run the risk of losing any guarantee because carpet dealers go in and out of business so fast that even the mills can't keep up with them. You can't enforce a guarantee against a nonexistant entity.

No one in their right mind will guarantee against cuts, spills, stains, or on areas like entrances or stairs where traffic is concentrated, and improper installation may void any guarantee offered.

In summary

Buy carpet from reliable professional dealers — they know the industry and will stand behind their recommendations. Buy the best carpet you can afford. Price is a very good gauge of quality in carpet, but remember that initial cost is not as important as long-term cost. Pick your carpet from the largest sample you can see. Small swatches of carpeting are sometimes difficult to choose from because it is hard to judge color and, in some cases, the overall effect of the pattern. Have reputable carpet installation technicians install your carpet; the appearance and servicability of your new carpet can be harmed by improper or negligent installation. Be sure that the grain of the carpet all lies in the same direction, that the edges are parallel and flush to the walls, that there are no ripples or bumps, and that all pieces are properly joined without seams showing.

Carpet is an investment which, when carefully selected and installed, will serve your club well. □