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Antron®
carpet fiber

CARPET AND FIBER GLOSSARY **glossary**



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carpet and fiber glossary terms

A

AATCC (American Association of Textile Chemists and Colorists): A widely recognized association whose work focuses on development of standards of testing dyed and chemically treated fibers and fabrics.

Abrasive wear: Wear or texture change to an area of carpet that has been damaged by friction caused by rubbing or foot traffic.

Acid dyeable nylon: Nylon polymer that has been modified chemically to make the fiber receive acid dyes. Acid dyeable yarns are available in different dye levels (light, medium and deep).

Adipic acid: A base ingredient in the production of Type 6,6 nylon. Adipic acid has a chain of six carbon atoms. It is reacted with hexamethylene diamine, which also has six carbon atoms, to polymerize Type 6,6 nylon.

Aesthetics: Properties perceived by touch and sight, color, luster and texture of carpet.

Affinity: The tendency for two elements or substances to combine chemically. An example is the affinity of acid dyes for nylon fiber.

Air-entangling (also known as intermingling, commingling or heathered): A method of producing yarn by combining two or more BCF fibers together. Fibers are “locked” together via air jets at regular or irregular intervals. The process is used to obtain special effect yarn (i.e., mixing dye variants to get heather effects upon subsequent dyeing or combining different colors of solution dyed fiber). Various air-entangling processes exist making it possible to produce a wide range of aesthetics in finished yarns, from highly blended, near solid looks to yarns where individual colors are accented and color separation mimics that of plied yarns.

Antimicrobial: An agent that kills microbes.

Amine end groups: The terminating (-NH₂) group of a nylon polymer chain. Amine end groups provide dye sites for nylon (polyamide) fibers.

Antistatic properties: Resisting the tendency to produce annoying static electric shocks in situations where friction of the foot tread builds up static in low-humidity conditions. Some nylon fibers introduce a conductive filament in the yarn bundle to conduct or dissipate static charges from the human body. Olefin fiber is inherently static-resistant, as it is similar to the surface of most shoe soles (only dissimilar surfaces rub to create a static charge).

There are two basic methods for controlling the buildup of static in nylon carpets:

(1) Treating the carpet with a topical spray. This is not permanent and creates a tendency for the carpet surface to soil. (2) Adding a carbon composite nylon filament into the bundle of yarn to act as a dissipating rod carrying the static charge away from the person generating it.

Antron® nylon: The most specified brand of commercial carpet fiber. Antron® nylon combines a superior Type 6,6 polymer substrate, fiber engineering, DuraTech® advanced soil resistance technology, and INVISTA performance testing and construction standards, resulting in carpet fibers that perform well in the most demanding commercial environments.

Antron® Legacy nylon: The best-performing white dyeable fiber for most commercial applications, with all the qualities of Antron® Type 6,6 nylon fiber. Brings exceptional soil resistance to the largest and most specified range of commercial carpets. See “Antron® nylon.”

Antron® Brilliance™ nylon: In the family of the best-performing white dyeable fibers for most

The Carpet and Fiber Glossary has been compiled and produced by INVISTA. It is intended to serve as a reference guide and information source for anyone involved in specifying within the commercial interiors industry. The information contained herein is based on accepted industry definitions and terminology.

For more specific information or to learn more about the most specified brand of commercial carpet fiber, call **1-877-5-ANTRON** or visit **antron.net**.

commercial applications, Brilliance™ nylon offers richer, more vivid color with all the qualities of Antron® Type 6,6 nylon fiber and most specified range of commercial carpets. See “Antron® nylon.”

Antron with StainRESIST™ fiber

technology: In the family of the best-performing white dyeable fibers for most commercial applications, StainRESIST™ offers stain resistance properties with all the qualities of Antron® Type 6,6 nylon and most specified range of commercial carpets. See “Antron® nylon.”

Antron Lumena® solution dyed nylon: The best-performing solution dyed fiber for many demanding commercial applications, with all the qualities of Antron® Type 6,6 nylon fiber. Antron Lumena® nylon gives carpets unsurpassed stain cleanability. Most stains can be removed without the use of harsh cleaning agents. See “Antron® nylon.”

ASTM (The American Society for Testing and Materials):

One of the largest voluntary standards development organizations in the world. ASTM is a not-for-profit organization that provides a forum for the development and publication of voluntary consensus standards for materials, products, systems and services.

Atmospheric fading test: A test that indicates a change of shade or hue of dyed fabric caused by a chemical reaction between certain dyes and acid gases. Recommended test methods for carpets (AATCC 129—Ozone and AATCC 164—Oxides of Nitrogen) would specify a minimum rating, after two cycles, of no less than International Gray Scale for Color Change rating of 3.

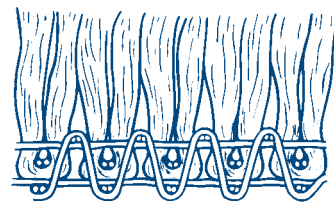
Autoclave: (1) An oven-like apparatus for use in yarn heatsetting operations. Under pressure in a superheated steam atmosphere, yarn is given a “memory” of its twist. Autoclave heatsetting is a batch, not a continuous, method. (2) An apparatus for making polymer under heat and pressure.

Average pile density: The weight of pile yarn in a unit volume of carpet. It is expressed in ounces per cubic yard in the formula: **Density** = pile yarn Weight

(in ounces per square yard) times 36 divided by pile Thickness or pile Height (in inches). Average pile density factors for commercial carpets range from 4200 to 8000.

$$D = \frac{W \times 36}{T \text{ or } H}$$

Axminster: A weaving method that originated in the 18th century in Axminster, England. In this method, individual pile tufts are inserted from spools of colored yarns, making possible an almost endless variety of colors and geometric or floral patterns.



B

Back coating: An adhesive compound applied for the purpose of locking pile yarn tufts into a carpet backing, bonding a secondary backing to a primary backing, increasing the fabric body or stiffness, and increasing dimensional stability.

Backing: Materials comprising the back of the carpet, as opposed to the carpet pile or face.

For fusion-bonded carpets: Backing material for fusion-bonded carpet is a system of layered vinyl or plastic compound and fiberglass scrim for dimensional stability.

For tufted carpets: (1) Primary backing—In tufting, a woven or nonwoven fabric in which the pile yarn is inserted by the tufting needles. Usually woven or nonwoven polypropylene for carpet. In the past woven jute was used. (2) Secondary backing—Fabric laminated to the back of carpet to reinforce and increase dimensional stability. Usually woven or nonwoven polypropylene.

For woven carpets: Backings of woven carpets are the “construction yarns” comprising chain warp, stuffer warp, and shot or fill, which are interwoven with the face yarn during carpet fabric formation.

Backing fabric: A fabric into which a pile yarn is inserted, or a reinforcing layer that is adhered to the reverse side of a fabric.

Backing systems:

Attached cushion: Padding, such as foam rubber or polyurethane, that is made as an integral part of the backing.

Conventional backing: Carpet with a primary and secondary latex-laminated woven or nonwoven fabric. Sometimes referred to as ActionBac®.

PVC hard-backed or closed-cell PVC (polyvinyl chloride): Used mostly in carpet tile or 6' wide goods due to its weight and stiffness. PVC gives a stiff, stable backing with little cushioning but excellent tuft bind and stability.

Thermoplastic: A molten resin process that permanently adheres the primary and secondary backing. This backing system is branded as Unibond® by Lees Carpets.

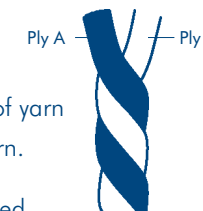
Unitary: A single lamination of fabric backing with high rubber content latex or hot-melt resin compound for increased tuft bind. Used primarily with loop pile carpet.

Urethane (polyurethane): A polymeric resin applied by the carpet mill in the finishing process. In the heat and curing chamber it reacts and creates a foam-like texture. This backing encapsulates the yarn for extra tuft bind with a cushion attached.

Bale: A container of approximately 650 pounds of staple fibers, wrapped and ready to be shipped to the yarn spinner or carpet mill with yarn spinning capacity.

Barber-pole: Two different colors of yarn twisted together to form a two-ply yarn.

BCF yarn: An abbreviation for Bulk Continuous Filament yarn, referring to synthetic fibers in a continuous form. BCF yarn can be used in cut or loop pile construction.



Beam: A large cylinder on which carpet yarns, usually predyed, are wound prior to feeding onto tufting, weaving or fusion bonding equipment.

Beck dye: Dyeing of tufted greige carpet in a large vat of dye liquor. In this process, the carpet roll is sewn into a loop and then is continuously rotated and immersed in the heated vat for several hours. Most commonly used for cut pile carpet, it offers good custom color flexibility. See “Dye methods.”

Bleeding: Loss of color by a fabric or yarn when immersed in water or a solvent, as a result of improper dyeing or the use of dyes of poor quality. Fabrics that bleed will stain white or lightly shaded fabrics that come in contact with them when wet.

Blend: A mixture of two or more fibers or yarns.

Blending: The mixing of staple fibers before they are carded, drafted and spun into yarn. Blending is done for consistency in the final yarn and is a critical step to avoid “streaks” in a carpet.

Boucle: (1) An uneven yarn of three plies, one of which forms loops at intervals. (2) A fabric made of boucle yarns and having a looped or knotted surface.

Branded fiber: Synthetic fiber produced by a fiber manufacturer who also produces the raw ingredients and polymer and who has quality control of the entire process. Branded fiber is warranted by the fiber manufacturer.

Bright: The opposite of dull or matte when describing luster.

Broadloom: Denotes carpet tufted or woven in widths greater than six feet.

Bulk development: The process of a textured or latent crimp yarn to achieve maximum bulk. Carpet fibers develop maximum bulk during wet processing such as dyeing.

Bulking: Also known as crimping or texturizing. Bulking imparts texture/fullness to the fiber or yarn during production. Bulking is done to increase the coverage and bloom the yarn will have in the carpet face. Bulking also adds to fiber resiliency (“spring back”). See “Texturizing.”

C

Cabled yarn: A yarn formed by twisting together two or more plied yarns.

Caprolactam: The single basic ingredient in the production of Type 6 nylon. Caprolactam has a chain of six carbon atoms. It is a petrochemical.

Carding: The step after blending in the staple spinning process which combs out the loose fibers and arranges them in orderly strands called sliver. Sliver is drawn and blended, then twisted and further drawn into yarns.

Carpet tile: See "Modular carpet."

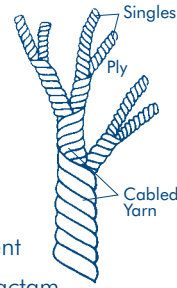
Cationic dyeable nylon: Nylon polymer that has been modified chemically to make the fiber receptive to cationic (basic) dyes. Cationic dyeable yarns are used in conjunction with acid dyeable yarns to produce multicolors in piece dye methods.

Cleanability: The ability or degree that a stain is removed from a carpet.

Colorfastness: The ability of a fiber or carpet to retain color when exposed to (1) ultraviolet light, (2) crocking (wet or dry) and (3) atmospheric conditions (according to manufacturers' and government test standards).

ColorLink: An INVISTA technology that combines fibers to create random placement of color similar to a space dye aesthetics in the finished carpet. ColorLink technology is used for carpets of Antron® Legacy nylon, Antron® Brilliance™ nylon and Antron Lumena® solution dyed nylon.

Color matching: The proper coordination of color and shade. Critical to color matching are: (1) The light under which the colors are compared. (The light source being used in the real conditions of the commercial environment should be used to match colors.) (2) The surface texture of the object being matched (cut pile carpet can appear darker than loop made of the same yarn). (3) The surface luster of the object being matched (higher yarn luster can look darker than lower luster fibers).

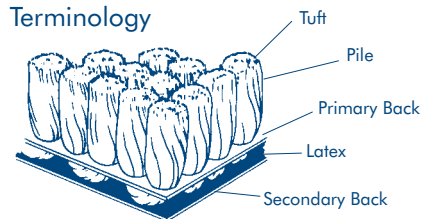


Commercial matching: Matching of colors within acceptable tolerances, or with a color variation that is barely detectable to the naked eye.

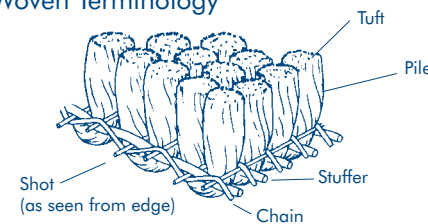
Commingled yarn: See "Air-entangled."

Construction: (1) The carpet manufacturing method, usually tufted, woven or bonded. The key terms are illustrated on page 8. See also "Fusion Bonding." (2) The term also can refer to the specific details of a particular carpet's specification, including fiber type, yarn twist level, density, method of dyeing, etc.

Tufted Terminology



Woven Terminology



Continuous dyeing: Dyeing of carpet (greige) while it travels continuously through a dye range. The process is frequently referred to by the name of one of the prime machinery manufacturers, Eduard Kuster (pronounced "Kooster"). Continuous dyeing can produce multicolored or solid-colored carpet. Multicolored carpet is achieved by using yarns of varied dye affinity, or with various accessories that can give a pattern or overprint. Advantages include large dye lots, relatively low cost and color flexibility. However, this method is more critical than beck dyeing or yarn dyeing for side-to-side matching consistency (the carpet must be installed in roll sequence).

Continuous filament: Unbroken strand of synthetic fiber, such as filament nylon or olefin. Nylon and olefin are made by extruding molten polymer through a

spinnerette (similar to a showerhead). The fibers are cooled, then stretched and textured into bundles referred to as yarn. This yarn can be plied or commingled with other yarn and then tufted.



Continuous heatsetting: The process of applying heat to yarns to "set" or retain bulk, twist and spring introduced by spinning and/or twisting. Continuous heatsetting can be applied to staple or continuous filament yarns. The two primary types of continuous heatsetting equipment are the Superba, which uses steam and pressure, and the Suessen, which uses dry heat. See "Heatsetting."

Converter: An intermediate that usually buys raw fiber, processes it to a carpet manufacturer's specification, then sells the finished product to the carpet manufacturer.

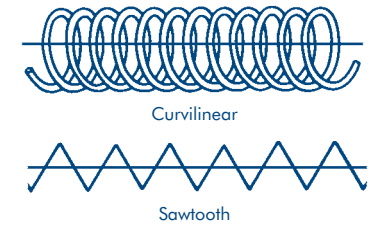
Cotton count: The yarn numbering system based on length and weight originally used for cotton yarns and now employed for most staple yarns. It is based on a unit length of 840 yards, and the count of the yarn is equal to the number of 840-yard skeins required to weigh one pound. Under this system, the higher the number, the finer the yarn. A typical carpet yarn might be a three cotton count two-ply, written as 3.0/2c.c.

Creel: The rack or frame located behind a tufting machine which holds the cones of pile yarn that feed into the needles of a tufting machine.

CRI (The Carpet and Rug Institute):

A national trade association representing the carpet and rug industry.

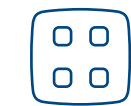
Crimp: In fiber, a nonlinear configuration, such as a sawtooth, zigzag or random curl relative to the fiber axis. Most synthetic fibers, both staple and filament, used in carpets are crimped. Fiber crimp increases bulk and cover and facilitates interlocking of staple fibers in spun yarns. See "Texturizing."



Crockfastness: The resistance of transfer of colorant from the surface of a colored yarn or fabric to another surface, or to an adjacent area of the same fabric, principally by rubbing.

Crocking: The removal of dye from a fabric by rubbing. Crocking can be caused by insufficient dye penetration or fixation, the use of improper dyes or dyeing methods, or insufficient washing and treatment after the dyeing operation. Crocking can occur under dry or wet conditions.

Cross section: The shape of a fiber when cut perpendicularly to its axis. Man-made fiber cross sections vary to produce a wide variety of physical effects such as soil-hiding characteristics, soil releasing, luster, and fineness or coarseness. Hollow filament fiber shapes are highly engineered and are among the most advanced filament cross sections. The delta is among the most advanced staple cross section.



Example Hollow Filament



Example Delta Shape



Example Modified Delta Hollow Filament

Crushing: The collapsing of pile yarns, resulting in carpet matting and loss of resilience. This form of carpet failure usually occurs in the areas of heaviest traffic. It is also called "matting" and "walking out." It can be minimized by the use of more resilient fibers, denser construction, and somewhat higher weight, and (in cut pile) higher tuft twist and proper heatsetting.

Curvilinear crimp: The three-dimensional crimp patented by INVISTA for its BCF yarn. This texture is added to the yarn by a series of air jets. See "Texturizing." Curvilinear crimp gives consistency, bulk and spring-back memory that is needed in the manufacture of cut pile filament carpets and streak-free loop carpets.

Cushion-backed carpet: Carpet having a cushion, padding or underlay material as an integral part of its backing.

Cut and loop pile: Carpet whose face shows a pattern, either geometric or floral, made up of a combination of loop pile tufts and cut pile tufts. The carpet can be dyed solid or multicolored.

Cut pile: A pile surface created by cutting the loops of yarn in a tufted, woven or fusion-bonded carpet.



D

Decitex: The metric equivalent to denier; equals the total weight in grams of 10,000 meters. Decitex is used in Canada and Europe.

Deep-dyeing fibers: Fibers made from polymers that have been chemically modified to increase their dyeability. Carpets made of deep dye fibers can be dyed more easily to a darker color depth.

Delamination: A form of deterioration of tufted carpet in which the primary back and face yarns separate from the secondary back.

Deluster: To subdue or dull the natural luster of a textile material by chemical or physical means. The term often refers to the use of titanium dioxide or other white pigments used in textile materials.

Delustering: Synthetic fibers with polymer additives and/or cross section design modifications that limit its natural brightness or reflectivity. Delustering improves soil-hiding characteristics, as it limits the soil magnification that would occur with clear or shiny fiber.

Denier: A weight-per-unit-length measure of filament fibers or yarns. Denier is numerically equal to the weight in grams of 9,000 meters of fiber. Denier is a direct numbering system in which the lower numbers represent the finer sizes and the higher numbers the coarser sizes. In the U.S., the denier system is used for numbering filament yarns and man-made fiber staple (but not spun yarns). The following denier terms are in use:

Denier per filament (dpf): The size of an individual filament (BCF or staple). Dpf is the weight in grams of 9,000 meters of the individual filament. It can be calculated by taking the yarn denier and dividing it by the number of filaments in the yarn bundle. Common range of commercial carpet dpf is 15 dpf to 28 dpf.

Yarn denier (bundle): The total weight in grams of 9,000 meters of a filament yarn bundle. Common commercial carpet yarn deniers range from ~1,200d to 5,000d.

Density: See "Average pile density."

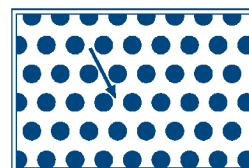
Differential dyeability: Fibers that have different dye affinities combined together to produce multicolor carpet from a single dyeing.

Dimensional stability: The ability of carpet to retain its size and shape once installed. Typically, dimensional stability is obtained in tufted carpet by the application of a secondary back. In woven carpet, dimensional stability is normally provided by choosing stable backing yarns, especially the stuffer and filling, as well as by application of latex to the completed carpet.

Drawing (third stage of nylon production):

(1) The process of fiber stretching to align molecules after extrusion. This process gives fibers greater tensile strength. This is done in synthetic fiber production after the molten fiber strands harden. (2) The process of pulling and thinning of sliver (combed staple fiber strands) in the spinning of staple yarn. Multiple ends of sliver are blended by feeding them through rollers at a slower speed than their uptake. This causes the fibers to be pulled or drawn and parallelized. The resultant finished sliver is ready to be spun into yarn.

Drop match: A drop match is a pattern that continues across the carpet diagonally or at a 45-degree angle to the edge of the seam.



Dull: A term applied to manufactured fibers that have been chemically or physically modified to reduce the brightness of the fiber.

DSDN® solution dyed nylon: Carpets of DSDN® nylon provide the right balance of stain resistance, color fastness and value for budget sensitive installations. It is ideal for tenant improvement (TI) and hospitality (rooms carpet).

DuraTech® soil resistant treatment: DuraTech® soil resistant treatment is a durable fluorochemical/soil release product and is only available on carpets of Antron® nylon. DuraTech® soil resistant treatment is applied during the final step of the carpet manufacturing process. The high temperature to which the carpet is exposed during this final step helps the DuraTech® soil resistant treatment physically bond with Antron® nylon. As part of INVISTA performance testing, the amount of DuraTech® soil resistant treatment applied is evaluated for each Antron® nylon style.

Dye lot: A quantity of carpet dyed at one time or made from yarn dyed at one time which is consistent in color throughout the fabric.

Dye methods:

Beck dyed: A method of batch dyeing carpet. A piece dye method. The carpet is sewn into a loop, then hung on a large reel in the dye beck unit which moves the carpet through the dye liquor. This process is continued for a set time and achieves excellent color uniformity throughout the carpet.

Continuous or "Kuster" dyed: A method of continuously dyeing carpet. A piece dye method. Kuster manufactures a continuous dye machine that is commonly used. Printing is another continuous dyeing process. Large lots of a single dye series are possible with continuous dyeing, but side-to-side color consistency should be verified.

Continuous solid color dyed: A process of dyeing singles or plied yarn using dye rolls. The application of dye is similar to continuous space dye process except that a single color is applied to the yarn. These solid color yarns can be tufted into multicolored carpets.

Package dyed: This is similar to skein dyeing in as much as undyed yarn is wound on perforated tubes and the packages are dyed by passing dye liquor through the packages under pressure.

Pad dyed: A process of dyeing carpet, yarn or fiber stock continuously. The material to be dyed passes through a trough containing the dye liquor and then between heavy rollers that squeeze the dye liquor evenly into the material.

Skein dyed: A method of dyeing yarn. Undyed spun or filament yarns are plied and heatset, then reeled into skein form and dyed in skein dye kettles.

Solution dyed: Pigment is added to the molten polymer from which the filaments are made. The fiber is extruded in colored form.

Space dyed: A method of dyeing yarn. Space dye refers to yarn with multiple colors printed on each strand. There are three basic processes used to create this effect: the warp system, the knit-de-knit process and the continuous dye process. (1) In the warp system, multiple strands of yarn are continuously printed at spaced intervals with different colors. These yarns usually have "long" spaces of each color. (2) In the knit-de-knit process, the yarn is first knitted into a tubular fabric (sock), then dyed to a solid color and then overprinted with up to seven different colors. These yarns usually have "short" spaces of color. (3) In the continuous dye process, yarn is dyed as singles or plied yarn and color is applied either by air jet or dye rolls. This process allows for yarns to have either long or short spaces of color.

Stock dyed: Used for staple fiber only. Undyed, loose staple fibers are dyed in a vat. They are then blended, carded and spun into yarn.

Dye sites: Functional groups within a fiber that provide sites for chemical binding with the dye molecule. Dye sites may be either in the polymer chain or in chemical additives included in the fiber.

E

End: (1) An individual fiber making up a yarn to be tufted into carpet (2) An individual pile yarn in a tufted carpet or a roll. (3) An end or short length of carpet or remnant.

Extra-heavy traffic: More than 10,000 traffics per day or more than 2,000,000 traffics for the life of the carpet. Could also include some directional, nondirectional, pivoting and rolling traffic, as well as tracked-in dirt. See "Foot traffic units."

Extrusion (second stage of nylon production):

The process of forcing molten material through a spinnerette (similar to a showerhead). Once exposed to air cooling, the fiber strands harden. It is at the extrusion stage that many of the fiber engineering improvements take place: cross section design, shape, size and uniformity to give better soil hiding, soil releasing, and strength. All synthetic carpet fibers are extruded.

F

Face weight: The total weight of the face (above the backing) yarns in the carpet.

Fadeometer: A standard laboratory testing machine, which uses gas, light or ozone to conduct fading tests.

Fading: Loss of color caused by sunlight or artificial light, atmospheric gases including ozone, nitrogen dioxide and hydrogen sulphide, cleaning and bleaching chemicals such as sodium hypochlorite, and other household and industrial products. Commercial installations in areas where such exposures occur require care in selection of colorfast carpet.

Fading tests: Laboratory tests designed to predict the likelihood of carpet fading under actual use conditions. Fading is usually caused either by ultraviolet light or by exposure to ozone or nitrogen oxide gas. Carpet can be tested in laboratory for results against fading agents. Dye stuff, hue or fiber can affect fading. A specific carpet being considered for a critical installation should be tested prior to final selection.

Fiber: A unit of matter, either natural or man-made, that forms the basic element of fabrics. The term refers to units that can be spun into a yarn or felting and can be processed by weaving, tufting, knitting or fusion bonding. Important properties include elasticity, fineness, uniformity, durability, soil resistance, luster, and denier.

Fiber engineering: Refers to improvements to the fiber including: (1) Polymer characteristics. (2) Polymer additives (delusterant or solution dye pigments). (3) Cross section design. (4) Fiber finishes (low surface energy fluorochemical coatings for soil release).

Fiber shape: Refers to the cross section and size of individual filaments. Fiber shape impacts soil hiding and soil release (cleanability). See "Cross section" and "Extrusion."

Fiber size: Refers to the denier per filament (dpf) or thickness of a filament. Fiber size impacts soil-trapping and soil-releasing capabilities.

Filament: Fiber which has been extruded and is then converted into yarn fiber, staple or tow.

Filament count: The number of individual filaments that make up an extruded yarn fiber, staple or tow.

Finishing: Processing of carpets after tufting (weaving) and dyeing is called finishing. Processes include application of secondary backing, application of attached foam cushion, application of soil-resistant treatment, shearing, brushing, dyeing, printing and others.

Flame resistance tests (also called "flammability tests"): Procedures that have been developed for assessing the flame resistance of carpets. The most commonly accepted are:

Methenamine Pill Test: A carpet flammability test described in federal regulations CPSC1-70 and CPSC 2-70. It measures the size of the burn hole produced by an ignited methenamine tablet under controlled conditions. Also used on the back of carpet. All carpet sold in the U.S. must pass the CPSC 1-70 flammability test.

Radiant Panel Test: A test for the flammability of carpets or rugs in which the specimen is mounted on the floor of the test chamber and exposed to intense radiant heat from above. The rate of flame spread is assessed. (ASTM E-648 Class I .45 watts/cm; Class II .22 watts/cm.)

Flame-resistant: A term used to describe a material that burns slowly or is self-extinguishing after removal of an external source of ignition. A fabric or yarn can be flame-resistant because of the innate properties of the fiber, the twist level of the yarn, the fabric construction, the presence of flame retardants or a combination of these factors.

Fluorine analysis: A measurement of the amount of soil resistance chemical (fluoro-chemical) applied to the fiber during the carpet manufacturing process. This can be performed for the initial application of the fluorochemical as well as for the durability of the chemical to remain after hot water extraction cleaning.

Fluorochemical: Low-surface-energy technology used as a soil resistance treatment for carpet. The DuraTech® soil resistant treatment is used on all carpets made of Antron® nylon. DuraTech® soil resistant treatment attaches to the chemical structure of the fiber after being heated during the finishing step to protect the carpet from soiling.

Foot traffic units: One foot traffic unit is described as a pedestrian walking across a measured section of carpet, one time. Foot traffic is classified as follows:

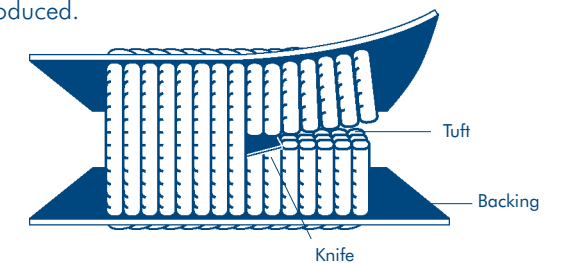
Light	less than 100/day
Moderate	100 –1,000/day
Heavy	1,000 –10,000/day
Extra Heavy	more than 10,000/day

See individual traffic rating for details.

Frames: Racks at back of a Wilton loom that hold spools from which yarns are fed into the loom. Each frame holds separate colors; e.g., a three-frame Wilton has three colors in the design.

Frieze: A yarn that has been very tightly twisted to give a rough or nubby appearance to the finished carpet pile.

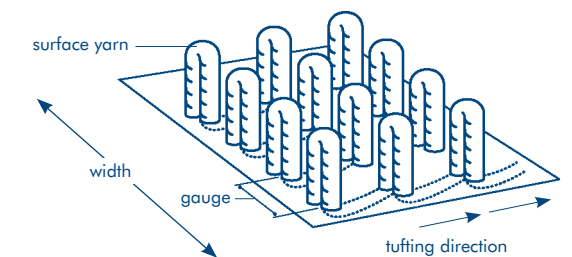
Fusion bonding: Fabrication of carpet for a 6' wide or modular tile. It uses a thermoplastic process that implants yarn in a liquid vinyl compound to two backing materials in a sandwich configuration. A knife splits the sandwich to create two carpets simultaneously. Spun yarn is used in this process, and only cut pile carpets are produced.



Fuzzing: A hairy effect on the carpet surface caused by fibers working loose under foot traffic or by slack yarn twist. This can be caused by poor latex penetration, poor yarn spinning, poor twisting and heatsetting, or improper maintenance. Not to be confused with initial shedding, a normal phenomenon associated with spun cut pile construction.

G

Gauge/pitch: The number of ends of surface yarn counting across the width of carpet. In tufted carpet, gauge is the number of ends of surface yarn per inch counting across the carpet; e.g., 1/8 gauge = 8 ends per inch. In woven carpet, pitch is the number of ends of yarn in 27 inches of width; e.g., 216 pitch divided by 27 = 8 ends per inch. To convert gauge to pitch, multiply ends per inch by 27; e.g., 1/10 gauge is equivalent to 270 pitch, or 10 ends per inch.



Graphics machine: A form of tufting machine capable of producing patterns, usually by the use of shifting needle bars that may be individually controlled

or by individually controlled needles or a combination of the two. Major refinements using computer technology have been engineered into “graphics machines.” Each new machine improvement brings tufting patterns nearer to those of woven capability.

Greige goods: (Pronounced “gray” goods.) Term designating carpet in an undyed or unfinished state.

H

Hand: How the carpet feels to the touch. Factors determining how the carpet feels include weight, stiffness, fiber type, dpf, density and backing.

Heather: A subtle multicolored effect produced by commingling (intermingling) yarns or spinning blended fibers of different colors together.

Heatsetting: Process for stabilization and setting a memory of twist in plied yarns. “Autoclave” treats skeins with pressurized steam in a batch operation. “Superba” uses conditions similar to the autoclave but it is a continuous process. “Suessen” is a continuous dry heatsetting method used most commonly for spun yarn heatsetting. See “Continuous heatsetting.” See illustration on page 13.

Heavy traffic: 1,000 to 10,000 traffics per day or up to 2,000,000 traffics for the life of the carpet. Could also include some directional, nondirectional and rolling traffic, as well as tracked-in dirt. See “Foot traffic units.”

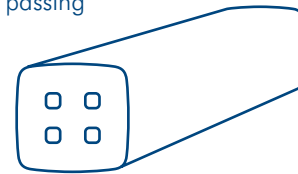
Heddle: A frame of parallel wires (like needles) through which warp yarns are threaded. The heddle is raised and lowered to interlace face yarns.

Hexamethylene diamine: A chemical compound, with a chain of six carbon atoms, that is reacted with adipic acid to make Type 6,6 nylon. It is a petrochemical.

Hexapod drum test: An instrument to test pile floor coverings to produce changes in appearance and color due to changes in surface structure by mechanical action. This accelerated test, primarily used in Canada,

provides a specific rating of the ability of the carpet to withstand crushing and matting.

Hollow filament fibers: Refers to filaments with interior voids. Hollow-core fibers improve the soil-hiding ability of nylon by diffusing light passing through the fiber. The diagram shown is one of the fiber shapes used for Antron® nylon.



Hybrid carpet: A carpet in which two or more different yarn types are combined in the carpet construction.

I

Intermingling: See “Air-entangling.”

International Gray Scale for Color Change:

A standard comparison to rate degrees of color change from 5 (no change) to 1 (severe change).

International Gray Scale for Staining: A standard comparison to rate degrees of staining from 5 (no stain) to 1 (severe stain).

INVISTA: As the producer of Antron® carpet fiber, INVISTA is the world’s leading integrated fibers business with brands like STAINMASTER® carpet, LY-CRA®, COOLMAX® and many more.

ISO (The International Organization for Standardization):

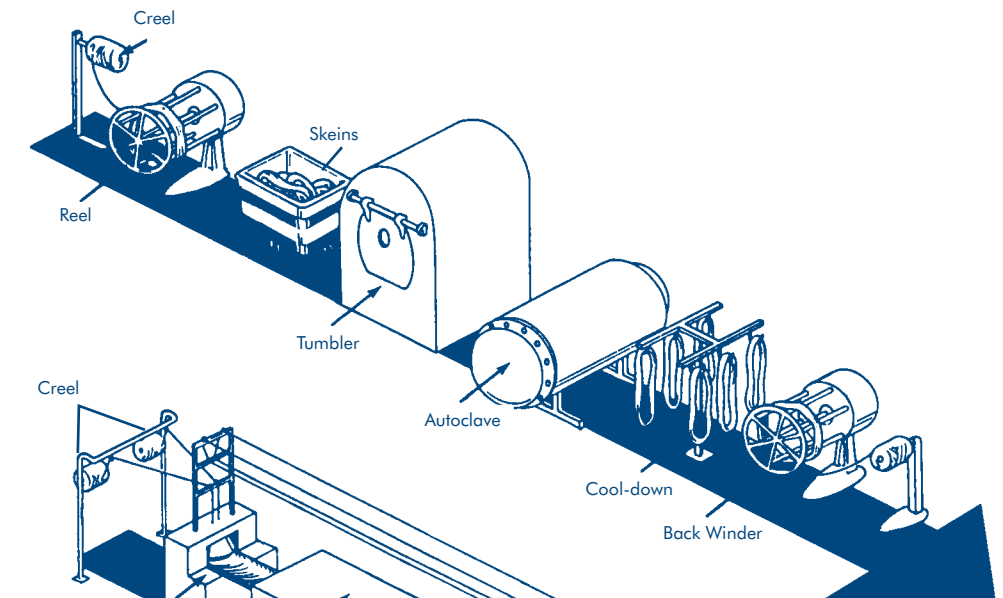
A non-governmental, worldwide organization whose work results in international agreements that are published as International Standards.

J

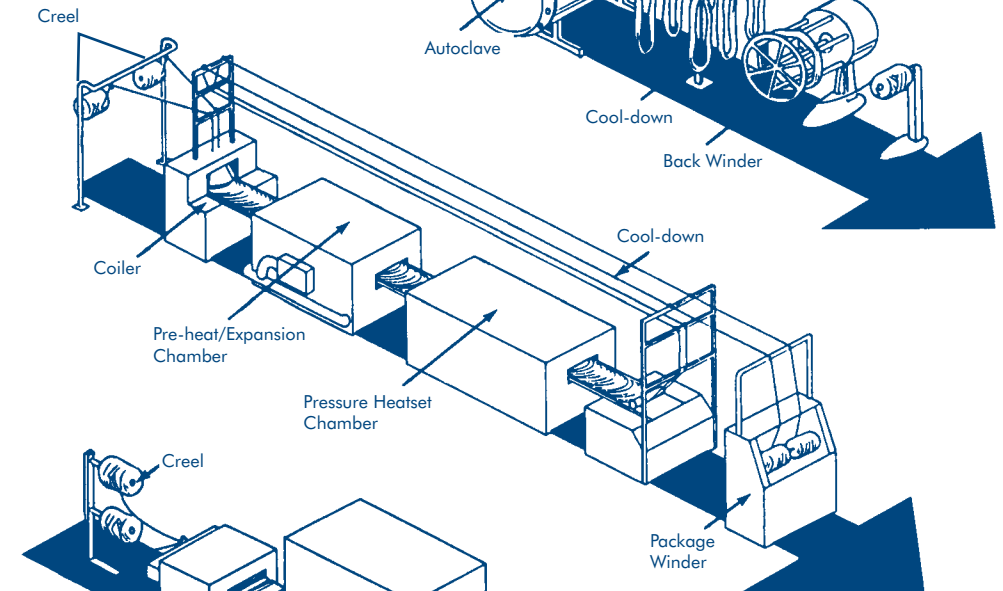
Jute: A fibrous plant, native to India and Asia, which can be shredded and spun into yarn, used for backing in woven carpets, or itself woven into sheets and used as secondary backing on tufted carpet. In many applications, jute is being replaced by fiberglass, polypropylene or other synthetic fibers.

Yarn Heatsetting

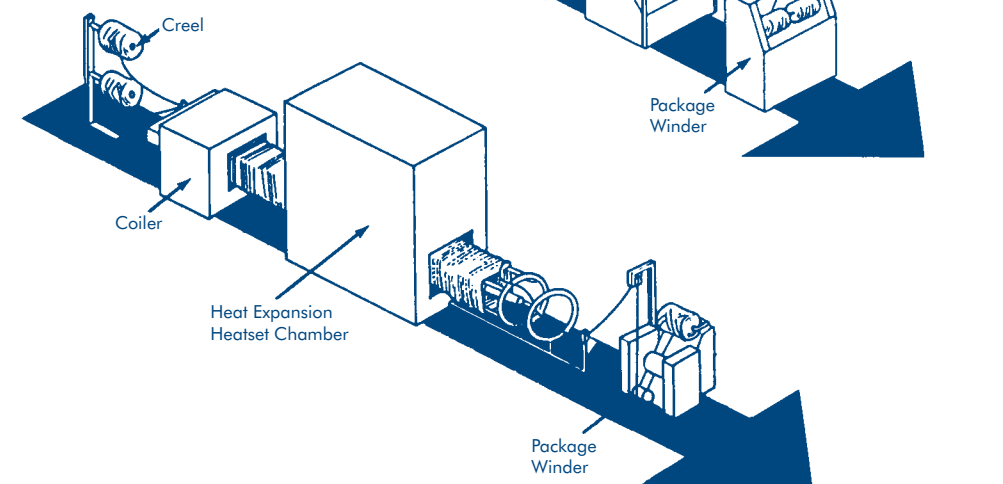
AUTOCLAVE
(batch method)



SUPERBA
(continuous process)



SUESSEN
(continuous process)



K

Knitting: A fabrication process comprised of interlacing yarns in a series of connected loops with needles. Some carpet is produced by knitting, but it is generally categorized as woven carpet. In carpet knitting, as in weaving, pile and backing are produced simultaneously. Multiple sets of needles interlace pile, backing and stitching yarns in one operation.

Knit-de-Knit: See “Dye methods – Space dyed.”

Kuster: A trade name of a manufacturer of continuous dyeing machines that apply dye to tufted carpet. See “Continuous dyeing.”

L

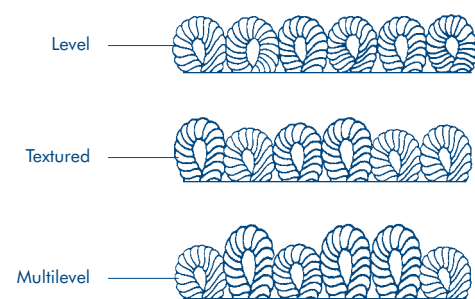
Latex: A water emulsion of synthetic rubber, natural rubber or other polymer. In carpet, latex is used for laminating secondary backings to tufted carpet, backcoating carpet and rugs, and for backcoating woven carpets and rugs. Almost all carpet latex consists of styrene-butadiene synthetic rubber (SBR) compounded with large quantities of powdered filler.

Level loop pile: A woven or tufted carpet style having all tufts in a loop form and of substantially the same height.

Light traffic: Less than 100 traffics per day. Could also include some directional traffic, but no tracked-in dirt. See “Foot traffic units.”

Lightfastness: The degree of resistance of dyed textile materials to the color-destroying influence of sunlight. Two methods of testing are in use: (1) Exposure to sunlight, either direct or under glass. (2) Accelerated laboratory testing in which several types of artificial light sources are used. See “Fadeometer.”

Loop pile: A tufted or woven carpet pile surface where the face yarns are comprised of uncut loops. Loop pile can be level, textured or multilevel.



Luster: Brightness or reflectivity of fibers, yarns, carpets or fabrics. Synthetic fibers are produced in various luster classifications including bright, semi-bright, semi-dull and mid-dull. The luster of finished carpet could also be influenced by yarn heatsetting methods, dyeing and finishing. In high-traffic commercial areas, duller carpet yarns are often preferred for soil-hiding ability.

M

Matting: See “Crushing.”

Melting point: The temperature at which a carpet fiber changes from a solid to a liquid.

Metameric color match: A color match between two materials in which the colors are identical under some lighting conditions but not under others. Metameric color matches are common when different pigments or dyestuffs are used to color the two materials.

Methenamine pill test: See “Flame resistance tests.”

Mill-extruded fiber: Synthetic fiber that is extruded by a carpet manufacturer using polymer purchased from a fiber producer or chemical manufacturer. Type 6 nylon and polypropylene (olefin fiber) are commonly mill extruded. See “Olefin fiber” and “Nylon Type 6.”

Moderate traffic: 100 to 1,000 traffics per day. Could also include some directional and nondirectional traffic, some pivoting and little tracked-in dirt. See “Foot traffic units.”

Modified delta cross section: An advanced fiber cross section engineered by INVISTA. The smooth delta shape hides soil and minimizes soil buildup more than trilobal cross sections. (The trilobal has deep crevices that trap soil particles.)



Modular carpet or tile: Also called “carpet tile.” Generally 18” x 18” squares cut from 6’ wide or broadloom carpet. Sizes may also be 36” x 36”, 36” x 18” or 24” x 24.”

Monofilament: A single filament of a man-made fiber usually of a denier higher than 14. Monofilaments are usually spun individually instead of through a spinnerette.

Multifilament: Multiple continuous filaments or strands of man-made fiber that are extruded together, usually from multiple holes of a single spinnerette. Multifilament yarns are texturized to increase bulk and cover, and are called “bulked continuous filament” (BCF) yarns.

Moresque: A multi-color carpet made of (moresque) yarns which are produced by ply-twisting two or more singles yarns of different colors or shades. The moresque aesthetic can be achieved by using long space dyed yarns in a patterned carpet where tonal colors have been used in the space dyed yarns.

Multilevel loop pile: A woven or tufted carpet style having tufts of varying pile heights, resulting in a sculptured appearance, pattern or subtle shading. Today most multilevel loop styles are made on tufting machines equipped with servo motor controls. The servos allow for precise patterning and more exact yarn control/usage.

N

Nonwoven: (1) Any carpet manufactured by a method other than weaving, but particularly those composed of fibers held together by chemical, mechanical, adhesive or fusion means. (2) Any primary backing material manufactured by a method other than weaving.

Nylon: A petrochemical-based fiber invented in 1938. There are two basic types of nylon used in the production of carpet: Type 6,6 nylon and Type 6 nylon. Nylon is produced in bulked continuous filament for use in loop carpets and cut pile carpets, and staple nylon that is spun into yarn for use in cut pile carpets. Nylon is the dominant fiber choice for commercial use due to its wear characteristics. See illustration on page 20.

Nylon flake (or chip): Polymer that has been cut into small pieces for storage or for immediate melting in the fiber extrusion process.

Nylon—Type 6: Made from one base ingredient: caprolactam. Compared to Type 6,6 nylon, Type 6 nylon accepts dye at a faster rate. The more open molecular structure of Type 6 nylon allows dye stuffs (and stains) in more readily. Common spills and stains such as coffee, soda, foodstuffs and medicine will stain Type 6 nylon more readily than Type 6,6, whether solution dyed or conventionally dyed.

Nylon—Type 6,6: Made with two base chemical ingredients: adipic acid and hexamethylene diamine. Type 6,6 nylon has a tighter molecular structure, making it more resilient and more resistant to stains than Type 6 nylon. In the U.S., where the highest commercial carpet standards are set, more than 60% of all nylon carpets specified are Type 6,6 nylon.

O

Olefin fiber: Also known as polypropylene. It is used for molded items, sheets, films and fibers. Made from a by-product of gasoline refining, olefin has one ingredient: propylene. Since propylene is widely available at a comparatively lower cost than nylon base ingredients, olefin is less expensive than nylon. Olefin does not accept aqueous-based dyes or stains. Color is added in the manufacturing process in the form of pigment. Printable modifications are available but not extensively used. Olefin is a lightweight fiber and can have good bulk and cover. However, the polymer base creates a soft fiber that has poor resiliency, a lower melting point and poor texture retention as compared

to nylon. The carpet fiber is available as bulked continuous filament yarn. Only when budget is the main consideration, lower life expectancy is anticipated and long-term appearance retention is not a priority, should olefin be considered.

Optimum twist: The term used to describe the amount of twist that gives the best texture retention and/or necessary carpet aesthetic.

Ozone fading: The fading of color from a dyed or pigmented fiber caused by atmospheric contaminants of ozone.

P

Package dyed: See “Dye methods.”

Pad dyed: See “Dye methods.”

Parallel spinning: Spinning method most commonly used in spinning nylon staple fiber into yarn. Staple fibers measuring 4” to 8” are paralleled by combing and drafting until the fibers are in regular even slivers, or strands of combed yarn. Multiple slivers are combined to make up one finely drafted sliver. This sliver can be further blended for extreme consistency. The final sliver is put on a spinning frame and further drawn (or pulled) as twist is applied, turning the fiber into a cohesive singles yarn ready to be plied and heatset. See “Sliver.”

Patterned loop: A woven or tufted carpet style having all tufts in a loop form in either a defined or random pattern and design.

Pattern match: Lining up patterned carpet in such a way that the design element is continued across seams, making the finished installation appear cohesive. Patterns must be matched in the same way as they appear on the carpet itself, either in a set match or drop match. See “Set match” and “Drop match.”

Pattern streaks: Visually apparent streaking in patterned carpet resulting from linear juxtaposition of pattern elements in one direction. It is usually most visible in the length direction. It is not a carpet defect,

but is inherent in certain designs. Contract specifiers should view rolls of carpet laid out on a floor to evaluate geometric or other busy patterns for this characteristic which may be objectionable in long corridors and other large areas, but not visible in small rooms.

Picks per inch: In woven carpet and fabric, the number of fill yarns per inch of length. Comparable to stitches per inch in tufting.

Piece dyed: A method in which tufted carpet is dyed, as opposed to yarn dye methods in which color is added to yarn before tufting. See “Dye methods.”

Pigment: Highly colored, insoluble substance used to impart color to other materials. White pigments (e.g., titanium dioxide) are dispersed in fiber polymers to produce delustered (semi-dull and dull) fibers. Colored pigments are added to polymer to create producer colored or solution dyed yarns.

Pigmented yarns: Same as solution dyed yarns.

Pile: The visible surface of carpet, consisting of yarn tufts in loop and/or cut configuration. Sometimes called the face or nap.

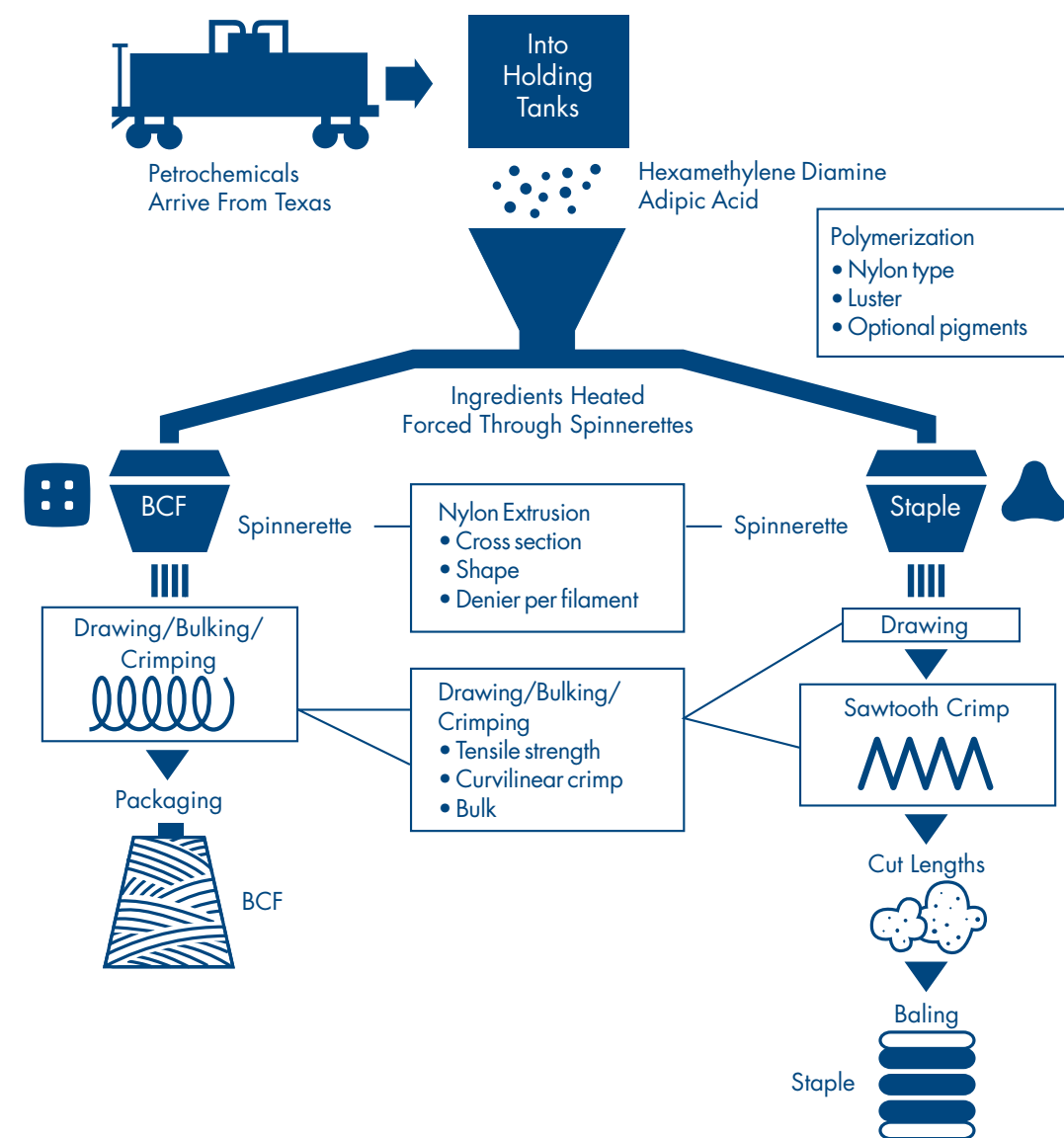
Pile crush: Loss of pile thickness by compression and bending of tufts caused by foot traffic and heavy pressure from stationary furniture. The tufts collapse into the space between them. It may be irreversible if the yarn has inadequate resilience and/or the pile has insufficient density for the traffic load.

Pile height: The length of the tufts measured from the primary backing top surface to their tips. Pile tufts should be gently extended but not stretched during accurate measurement. This specification is expressed in fractions of an inch or decimal fractions of an inch in the U.S.

Pile reversal: A persistent change in the direction of the pile lay in certain areas resulting in an apparent visual difference of shade. Also known as watermarking, pooling or shading.

Pile thickness: The resulting thickness when the thickness of the backing is subtracted from the total thickness of the finished carpet.

Antron® Type 6,6 Nylon



Pile weight: The weight in ounces of the fiber in a square yard of carpet.

Pile yarn: The yarn making up the tufts of the carpet.

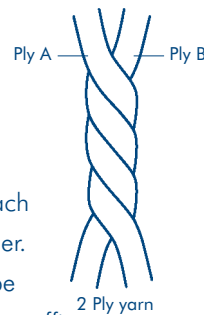
Pilling: The tendency of fibers to work loose from a surface and form balled or matted particles that remain attached to the surface of the carpet.

Pill test: See “Flame resistance tests.”

Pin drafter: A mechanism used in parallel spinning to orient the fibers by using combing pins and rollers.

Pitch: See “Gauge/pitch.”

Ply: A measure of the number of individual yarns twisted together to produce the finished carpet yarn. For example, a two-ply yarn means that each tuft consists of two yarns twisted together. For cut-pile carpets, plied yarns must be heatset to prevent untwisting under foot traffic.



Polyester fiber: A synthetic fiber, usually produced with staple fiber and spun yarns, that is used in some carpet fiber.

Polymer: Polymers are large chemical molecules from which synthetic fibers are made. Polymers are complex, chain-like molecules made by uniting simpler molecules called monomers. Synthetic polymers used for commercial carpet fiber include Type 6,6 nylon and Type 6 nylon (polyamides) and polypropylene.

Polymerization (first stage of nylon production): A chemical reaction where small molecules combine to form much larger molecules.

Polypropylene: See “Olefin fiber.”

Post-dyed: Carpet that has been dyed in its tufted form. Post-dyed means the carpet, rather than the yarn, has been dyed.

Pre-dyed: Carpet that has been constructed with colored yarns either by solution dyeing or yarn dyeing.

Primary backing: See “Backing systems.”

Printed carpet: Carpet having printed colored patterns. Printing methods include flatbed screen printing, rotary screen printing and modern computer programmed jet injection printing.

Private label: A carpet manufacturer brand name given to a fiber that is mill extruded or produced by a fiber manufacturer. At any given time the carpet manufacturer may choose to change the source of fiber which results in varying performance characteristics of the carpet. See “Mill-extruded fiber.”

Producer-colored pigment: Color introduced into nylon fiber at the nylon manufacturing stage. See “Dye Methods—Solution-dyed.”

PVC: See “Backing systems.”

R

Radiant panel test: See “Flame resistance tests.”

Random sheared: A carpet texture created by lightly shearing (shaving off) either level loop or high-low loop so only some of the tufts are sheared. Shearing gives a cut and loop texture.

Red 40 Stain Scale: A standard comparison to rate degrees of Red Dye 40 staining from 10 (no staining) to 1 (severe staining).

Repeat: The distance from a point in a design in a patterned carpet to a point where the identical pattern appears again, measured lengthwise and widthwise in the carpet. In matching the pattern, there will inevitably be some waste of carpet in order to obtain the best possible side match—whether it is a drop or set match pattern.

Resilience: The ability of carpet to spring back to its original texture and thickness after being walked on or compressed by the weight of furniture. Also known as “resiliency.”

Rows or wires: In woven carpet, this is the number of pile yarn tufts per running inch lengthwise. Called rows in Axminster and wires in Wilton and Velvet carpet. Analogous to “stitches per inch” in tufted carpet.

S

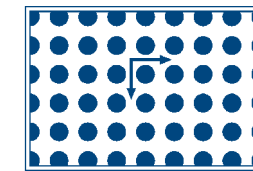
Sawtooth crimp: Also called zigzag crimp, this is a two-dimensional crimp that gives yarn cohesion, texture and bulk.

Saxony: A cut-pile carpet texture consisting of plied, heat-set yarns in a relatively dense, erect configuration, with well defined individual tuft tips.

Secondary backing: See “Backing systems.”

Selvage: The edge of the carpet. Most commercial carpets are shipped with the selvage on. Residential carpet is usually trimmed to the face yarn.

Set match: Refers to a pattern in a carpet which continues straight across the installed carpet at right angles to the seams.



Shading: Apparent color shade difference between areas of the same carpet caused by normal wear and/or random difference in pile lay direction. It is a characteristic of cut pile carpet. It is not a manufacturing defect.

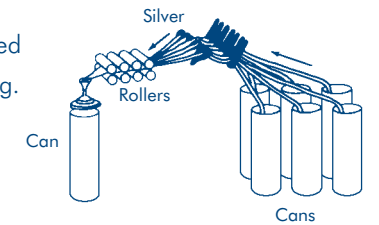
Shearing: Finishing process in cut pile carpet manufacturing to create a smooth carpet face. The shearing process can also be used to create texture, as in random shearing. See “Random sheared” or “Tip shearing.”

Singles yarn: One yarn end of either continuous filament yarn or spun yarn. Singles yarn is most often plied, twisted, or air-entangled with additional singles yarns to create a “two-ply,” “three-ply” or “four-ply” yarn bundle.

Skein dyed yarn: Singles yarn that has been skein dyed. Yarn is wound in skeins and dyed in dye vats. This method yields small to mid-sized dye lots, but has custom color advantages. See “Dye methods.”

Sliver: An intermediate stage in the production of spun yarns from staple fiber. It is a large, soft, untwisted strand

or rope of fibers produced by carding or pin drafting. See “Parallel spinning.”



Smoke chamber test: Method that assesses sm generating characteristics of a carpet sample due to pyrolysis and combustion by measuring the attenuation of a light beam by smoke accumulating in a closed chamber under controlled conditions.

Soil hiding: The ability of a fiber to mask the presence of soil.

Soil resistance: The ability of a carpet fiber to resist dry soil and maintain its original appearance after intermittent or restorative cleanings. The amount of soil resistance can be determined by fluorine analysis. See “Fluorine analysis.”

Solution dyed: See “Dye methods.”

Space dyed: See “Dye methods.”

Spinnerette: The device (similar to a showerhead) that forms strands of filament as molten polymer is pumped through. It is at this stage that the fiber cross section, fiber size and the number of filaments in a yarn bundle (for continuous filament) are determined.

Spinning: The conversion of staple fiber into spun yarn. See “Parallel spinning.”

Spun yarn: Yarn that is made up of short lengths of fiber, either synthetic staple or natural fiber. See “Parallel spinning.”

Stain resistance: The ability of a carpet fiber to resist the absorption of stain and maintain its original appearance. For carpets to resist stains, some manufacturers use a topical stain-resist treatment that may be removed after hot water extraction.

Staple fiber: Also called staple. Short lengths of fiber which have been chopped from continuous filament in lengths of 4” to 7 1/2”. Staple fiber must be further pro-

cessed (spun) into yarn before it can be tufted/woven into carpet. Nylon and polyester are examples of synthetic fibers available in staple form.

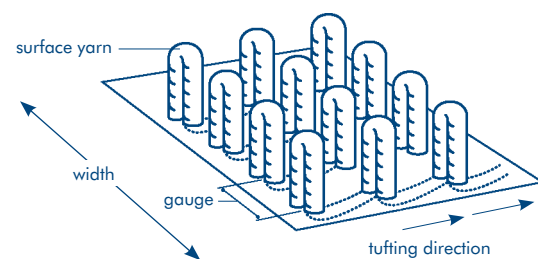


Static control: See “Antistatic properties.”

Static control test: A measurement of the amount of static discharge that occurs under specified conditions.

Static shock: Buildup of electrostatic energy on a carpet and the subsequent discharge to a conductive ground such as a file cabinet. Various static control conductive systems are used in commercial carpet to dissipate static charge before it builds to the human sensitivity threshold, which is 3.5kV.

Stitches per inch (SPI): Number of yarn tufts per running inch along the length of the carpet (as opposed to the gauge, which is the number of stitches across the width of the carpet).



Stock dyed: See “Dye methods.”

Suessen: A trade name of a German manufacturing company and its continuous heatsetting process. In Suessen setting, dry heat is applied to twisted yarn. The heat builds bulk and locks twist into the thermoplastic fiber’s “memory.” See “Heatsetting.”

Superba: A trade name of a French manufacturing company and its continuous heatsetting process. In Superba setting, steam and pressure are applied to twisted yarn. Heat and pressure are applied to build the bulk and lock twist into the thermoplastic fiber’s “memory.” See “Heatsetting.”

Surface area: The perimeter of an individual fiber filament or multiple filaments.

Surface energy: Technical measure of the tendency of a surface—in this case, the carpet yarn—to repel molecules of another substance. Low surface energy refers to a repelling action.

Synthetic fiber: Produced by man-made means, not available in nature in the same form.

T

Tensile strength: The strength along the length of a fiber.

Texture: Visual and tactile surface characteristics of carpet pile, including such aesthetic and structural elements as high-low and cut and loop patterning, yarn twist, pile erectness or layover, harshness or softness to the touch, luster, and yarn dimensions.

Textured loop: A woven or tufted carpet style having all tufts in a loop form, usually with two or three pile heights. There is generally less difference between the lowest and highest pile heights than would be found in a multilevel loop carpet.

Texture retention: A carpet’s ability to withstand crushing and matting. Although accelerated test methods do not directly compare with actual floor performance, they do give an indication of a carpet’s ability to withstand crushing and matting. See “Hexapod drum test” and “Vettermann drum test.”

Texturizing: In synthetic fiber production, crimp or texture can be put into the fiber by different methods. The most common for carpet yarns are:

- (1) Air jet methods for BCF. In this texturizing process, yarn is fed through the turbulent region of an air jet. In the jet, the yarn structure is modified by heat and air.
- (2) Stuffer box method for staple. Yarn is fed into a chamber and compressed. The individual filaments are forced to fold or bend at sharp angles. See “Bulking.”

Tip definition: Visible individual twisted cut yarn ends in a carpet surface. If, under heavy wear and pivoting, the tufts have been splayed open, the carpet is said to have lost its tip definition.

Tip sheared carpet: A textured loop pile carpet that has been sheared to create a cut and loop appearance.

Tip shearing: Shaving off tufted high loops in the finishing process to create a cut and loop texture or pattern.

Titanium dioxide (TiO₂): A compound that is used primarily as a delusterant in fiber.

Total weight: Weight (ounces) per square yard of the total carpet pile yarn, primary and secondary backings and coatings.

Tow: Continuous synthetic fiber filaments (without twist) collected in a loose rope-like form and held together by crimp. Tow is the form before fiber is cut into staple.

Tuft: A cluster of yarns drawn through a fabric and projecting from the surface in the form of cut yarns or loops. See also “Cut pile,” “Cut and loop pile,” “Level loop pile,” “Loop pile” and “Multilevel loop pile.”

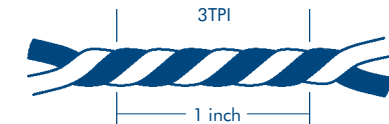
Tuft bind: The force (usually measured in pounds) required to pull a tuft from the carpet backing. Also known as tuft lock. For loop pile, ASTM Method D1335 (tuft bind test) should result in a minimum 10-lb. average. For cut pile, ASTM Method D1335 (tuft bind test) should result in a minimum 5-lb. average.

Tufted carpet: Carpet produced by a tufting machine instead of a loom.

Tufting: A method of carpet manufacture in which surface yarns are sewn or “punched” through a primary backing material. The needles of the tufting machine form loops that are hooked by loopers on the underside of the backing material and which remain loops in level or textured loop carpet. Alternatively, the loops are tufted and cut with knives to create cut pile carpet. The tufted fabric is then coated with an

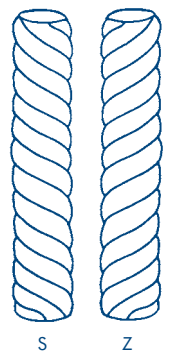
adhesive to adhere a secondary back to provide durability and stability. In the past 5-7 years there have been significant advances in tufting technology, allowing for more intricate patterns and textures.

Turns per inch (TPI): The number of times two or more yarns have been plied in an inch length. Also known as input ply twist. Most carpet yarns have 3.5 to 6.0 TPI.



Turns per tuft (TPT): The number of twists in the pile yarn above the primary backing. A more accurate way of measuring relative twist level in cut pile carpets. Generally, the greater the turns per tuft, the better the performance.

Twist: A yarn term describing the number of turns per inch and direction of twist of either the singles or plies around their axes. Twist direction is either right- or left-handed, also called “Z” or “S” twist. Most carpet yarns have 3.5 to 6.0 TPI. The performance of a cut pile carpet is dependent on the twist in the pile yarn. Spun yarns need more twist than filament yarns for good performance. For moderate or heavy commercial use cut pile, it is suggested that continuous filament have a minimum of 4.50 TPI while spun yarns have a minimum ply twist of 4.75 TPI.



Two-ply: Most common yarn ply. Two single yarns are twisted together, then heatset to maintain their twisted configuration. Can be used in either cut or loop pile carpet.

U

Unitary: See “Backing systems.”

Urethane: See “Backing systems.”

V

Velvet carpet: Woven carpet made on a loom similar to a Wilton loom but lacking the jacquard mechanism. Velvet carpets are generally level loop, level cut/loop or plush, in solid or tweed colors.

Vettermann drum test: An instrument to test pile floor coverings to produce changes in appearance and color due to changes in surface structure by mechanical action. This accelerated test, primarily used in the U.S., provides a specific rating of the ability of the carpet to withstand crushing and matting.

Vinyl: Colloquial term for the synthetic polymer, polyvinyl chloride. Also called PVC. PVC is used as a carpet back-coating for carpet tiles and 6' goods. Vinyl foams have been used as attached cushions. Many walk-off mats have solid sheet vinyl backing.

W

Warp: A weaving term for yarns in woven fabrics and carpets that run in the machine direction (or lengthwise). Warp yarns are usually delivered to a weaving loom from a beam mounted behind the loom. Woven carpets usually have three sets of warp yarns, which may be wound on three loom beams. These include stuffer warp for lengthwise strength and stiffness; pile warp, which forms the carpet surface tufts; and chain warp, which interlaces with fill yarn to lock the structure together.

Watermarking: Irregular random shading or pile reversal in cut pile carpet. Although much research has been done in an effort to determine the cause for watermarking, there has never been a single or consistent reason determined.

Weaving: The original method for manufacturing carpet. In the weaving process, backing yarns are woven into a durable fabric while, simultaneously, face yarns are looped over wires and interlocked in the woven back. See "Axminster" and "Wilton."

Weft: Yarns which run widthwise in woven carpet interlacing with various warp yarns.

White dyeable fiber: Man-made fiber that is extruded as a white fiber. The fiber can be dyed any color using a variety of dye methods either before or after the tufting/weaving process. See also "Dye methods."

Wilton: A type of woven carpet and the loom used to manufacture it. Wilton looms have jacquard pattern mechanisms which use punched cards/computer programs to select yarn color. The carpets are often patterned or have multilevel surfaces. See "Frames."



Wires: Parts of carpet weaving looms composed of thin metal rods or blades on which the pile tufts are formed. Round wires and cut wires are identical in shape. The cut wire has a small knife blade at the end and, as it is withdrawn, it cuts the yarn looped over it to form cut pile.

Wool: The original carpet fiber. Wool is noted for its excellent dyeability, luxurious feel and relatively high cost.

Woolen spinning: Spinning method which produces bulky, hairy yarn, usually used for wool yarns. A series of cards, or large cylinders with comb-like teeth, straighten the fibers into a paralleled fiber webbing. This webbing is blended with other webbing, then spun into yarn.

Worsted spinning: Also known as modified worsted spinning or parallel spinning. See "Parallel spinning."

Woven backing: A tufted carpet term for primary or secondary backing manufactured by the weaving process. Secondary backings are usually woven jute or woven polypropylene.

Woven carpet: Carpet produced on a loom. Warp pile yarns intertwine with wires and backing yarns called warp yarns. These yarns are locked in with the weft yarns. Warp stuffer yarns are included to provide extra stability. Weaving is a slower, more expensive, labor-intensive fabrication method than tufting. Woven carpet is distinguished by intricate patterns and tailored, controlled textures.

X

Xenon arc lamp: The bulb used in the lightfastness fadeometer test. It contains a special gas, xenon, which produces an intense light that accelerates the color fading reaction. The fadeometer measures lightfastness in relative test hours. See "Fadeometer."

XTI® nylon: With unlimited color flexibility, XTI® nylon provides very good performance and resilience. XTI® nylon is ideal when budget constraints are a reality but performance and color flexibility are essential.

Y

Yarn: A continuous strand of fibers used in tufting, weaving and bonding to form carpet and other fabrics. Carpet yarn is often plied and may be either spun staple or continuous filament.

Yarn construction: An indication of the number of singles yarns combined to form a plied or heathered yarn.

Yarn count: A number used to describe the size of the yarn. Denier is used for BCF yarns, and cotton count for spun yarns.

Yarn dyeing: Applying color to yarns that are later used in making carpet. It can be in continuous yarn dyeing methods such as space dyeing or batch methods such as skein dyeing.

Yarn ply: See "Ply."

Yarn size: The weight measure of the total bundle of filaments making up a yarn that indicates if the yarn is fine or coarse. Continuous filament yarns are sized by the denier or decitex system. Spun yarns are sized by the cotton count system. See "Denier" or "Cotton count."

Yarn weight: Total amount of yarn used in the manufacturing of carpet. It is measured in ounces per square yard.

Z

Zippering: A loop pile carpet in which tufts are pulled from the backing resulting in long, lengthwise pulls out of the carpet. Zippering occurs when the tuft base is not securely encapsulated by the backing compound.