



Threads Crossing the Warp

MODULE 13

The Vocabulary of Weaving

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THE VOCABULARY OF WEAVING

A

Abrasion Resistance: The ability of a fiber or fabric to withstand surface wear and rubbing.

Alternating Twist: A texturing procedure in which S and Z twist are alternately inserted in the yarn by means of a special heating apparatus.

Autoclave: An apparatus for the carrying out of certain finishing operations, such as pleating and heat setting, under pressure in a superheated steam atmosphere.

B

Back beam:

Balanced Cloth: A term describing a woven fabric with the same size yarn and the same number of threads per inch in both the warp and the fill direction.

Basket Weave: A variation of the plain weave in which two or more warp and filling yarns are woven side to side to resemble a plaited basket.

Beam: A cylinder of wood or metal, usually with a circular flange on each end, on which warp yarns are wound for slashing, weaving, and warp knitting.

Beaming: The operation of winding warp yarns onto a beam usually in preparation for slashing, weaving, or warp knitting. This process is also called warping.

Beater:

Beating–Up: The last operation of the loom in weaving, in which the last pick inserted in the fabric is “beat” into position against the preceding pick, usually by a “comb-like” device called a reed.

B

Bleeding: Loss of color by a fabric or yarn when immersed in water, a solvent, or similar liquid medium, as a result of improper dyeing or the use of dyes of poor quality.

Blend: 1. A yarn obtained when two or more staple fibers are combined in a textile process for producing spun yarns. 2. A fabric that contains a blended yarn in both the warp and filling direction.

Blending: The combining of staple fibers of different physical characteristics to assure a uniform distribution of these fibers throughout the yarn.

Blocker rug:

Bobbin:

Bobbin winder

B

Braid: 1. A narrow textile band, often used as trimming or binding, formed by plaiting several strands of yarn. The fabric is formed by interlacing the yarns diagonally to the production axis of the material. 2. In aerospace textiles, a system of three or more yarns which are interlaced in such a way that no two yarns are twisted around each other. Biaxial Braid - Braided structure with two yarn systems running in one direction and the other in the opposite direction. Triaxial Braid - a braided structure with axial yarns running in the longitudinal direction.

Braiding: The interwinding of three or more strands to make a cord or narrow fabric.

Break Factor: A measure of yarn strength calculated as: 1) the product of breaking strength times the indirect yarn number. 2) The product of breaking strength times the reciprocal of the direct yarn number.

C

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

Carding:

Cloth: A generic term embracing all textile fabrics and felts. Cloth may be formed out of any textile fiber, wire, or material.

Cloth roller:

Coated Fabric: A fabric to which a substance such as lacquer, plastic, resin, rubber, or varnish has been applied in firmly adhering layers to provide certain properties, such as water impermeability.

Colorfastness: Resistance to fading, i.e. the ability of a dye to retain its color when the dyed or printed textile material is exposed to conditions or agents such as light, perspiration, atmospheric gases, or washing that can remove color.

Composite: 1. An article or substance of two or more constituents, generally, with reinforcing elements dispersed in a matrix or continuous phase. 2. Hard or soft constructions in which the fibers themselves are consolidated to form structures rather than being formed into yarns.

Cross warp:

D

Density: Mass per unit volume usually expressed as grams per cubic centimeter (g/cc). Also known as specific gravity.

Denier: The weight, in grams, of 9000 meters of yarn. The lower the denier number the finer the size of yarn, and the higher the number the larger the size of yarn. In countries other than the USA, Denier is replaced by the Tex system.

Dent: On a loom, the space between the wires of a reed.

Distaff:

Dobby: A mechanical attachment on a loom that controls the harness to permit the weaving of geometric figures.

Doff: A set of full packages, bobbins, spools, etc. produced by one machine.

Drape: A term to describe the way a fabric falls while it hangs; the suppleness and ability of a fabric to form graceful configurations.

Dyeing: A process of coloring fibers, yarns, or fabrics with either a natural or synthetic dye.

E

Elongation: The deformation in the direction of load caused by a tensile force. Elongation is measured in units of length (inches, millimeters) or calculated as a percentage of the original specimen length. Elongation may be measured at a specific load or at the breaking point.

End: An individual warp yarn. A warp is composed of a number of ends.

Entering: The process of threading each warp yarn on a loom beam through a separate drop wire, heddle, and reed space in preparation for weaving.

F

Fabric: A planar textile structure produced by interlacing yarns, fibers, or filaments.

Fibers: A unit of matter, natural or manufactured, that forms the basic element of fabrics and other textile structures.

Finishing: All the processes through which fabric is passed after bleaching, dyeing, or printing in preparation for the market or use.

Float: A weaving defect consisting of an end lying, or floating on the fabric surface instead of being properly woven in.

Flying shuttle:

Front beam:

G

Greige Fabric (pronounced gray): An unfinished fabric just off the loom or knitting machine.

H

Hand: The tactile qualities of a fabric, e.g. softness, firmness, elasticity, fineness, resilience, and other qualities perceived by touch.

Hand Carders:

Hank:

Harness:

Heddle: A cord, round steel wire, or thin flat steel strip with a loop or eye near the center through which one or more warp threads pass on the loom, so that the yarn movement may be controlled in weaving. The heddles are held at both ends by the harness frame. They control the weave pattern and shed as the harnesses are raised and lowered during weaving.

Hem Stich:

Homespun: Course plain-weave fabric of uneven yarns that have a handspun appearance.

Hopsacking: A course, open, basket-weave fabric that gets its name from the plain-weave fabric of jute or hemp used for sacking in which hops are gathered.

I

Industrial Fabric: A broad term for fabrics used for non-apparel and non-decorative uses. They fall into the following classes:

- Fabrics employed in industrial processes (e.g. filtration, polishing, and absorption).
- Fabrics combined with other materials to form a different material (e.g. rubberized fabric for hose, belting, tires, timing gears, bearings, and electrical parts).
- Fabrics impregnated with an adhesive and dielectric compounds.
- Fabrics incorporated directly in a finished product (e.g. sales, tarps, tents, awnings, and specialty belts for agricultural machinery, airplanes, and conveyers)

Fabrics developed for industrial use cover a wide variety of widths, weights, and construction. In many cases, they have been painstakingly developed to meet a specific application.

Inspection: The process of examining textiles for defects at any stage of manufacturing and finishing.

K

Knit Fabric: A structure produced by interlooping one or more ends of yarn or comparable material.

Knitting: A method of constructing fabric by interlocking series of loops of one or more yarns. Knitting Types:

- Warp Knitting – A type of knitting in which the yarns generally run lengthwise in the fabric. The yarns are prepared as warps on beams with one or more yarns for each needle. Examples include; Rachel (a plain or lacy knit) and Tricot (run resistant) Knitting.
- Weft Knitting – A common type of knitting, in which one continuous thread runs crosswise in the fabric making all of the loops in one course. An example is Circular Knitting, where the fabric produced on the knitting machine is in the form of a tube, the threads running continuously around the fabric.

L

Lace: Ornamental openwork fabric, made from a variety of designs by intricate manipulation of the fiber by machine or hand.

Loom: Machines for weaving fabric by interlacing a series of vertical parallel yarns (the warp) with a series of horizontal parallel yarns (the filling). The warp yarns from a beam pass through the heddles and reed, and the filling is passed through the “shed” of warp threads by means of a shuttle, or other device and is settled into place by the reed and lay. The primary distinction between different types of looms is the manner of filling insertion.

Lot: A unit of production, or group of other units, or packages that is taken for sampling, statistical examination, having one or more common properties and being separable from other similar lots.

Lubricant: An oil or emulsion finish applied to fibers to prevent damage during textile processing, or to knitting yarns to make them more pliable.

M

Mill Run: A yarn, fabric, or other textile product that has not been inspected, or does not come up to standard quality.

Moiré: A wavy, or watered effect on a textile fabric. It is produced by passing the fabric between engraved cylinders that press the design into the material, causing the crushed and uncrushed parts to reflect light differently.

N

Natural Fiber: A class name for various genera of fibers of animal (wool and silk), mineral (asbestos) or vegetable (cotton, flax, and jute).

Needle Loom: A high-speed narrow fabric-weaving machine (loom) that uses a needle to insert filling across a warp. A Needle loom uses a catch cord system to make a selvage on one edge of the weave and to return the pick after anchoring it within the selvage.

Nylon Fiber: A manufactured fiber in which the fiber-forming substance is a long chain synthetic polyamide having recurring amide groups (-NH-CO-) as an integral part of the polymer chain.

0

Orifice: Generally, an opening. Used specifically to refer to the small holes in spinnerets through which the polymer flows in the manufacture of fibers.

P

Pattern: 1. An arrangement of form or weaving designs; a decoration such as the design of woven or printed fabrics. 2. A model, or guide, or plan used in making things, such as a garment pattern.

Pick: A single filling yarn carried by one trip of the weft-insertion device across the loom. The picks interface with the warp ends to form a woven fabric.

Pick Count : The number of filling picks per inch, or per centimeter of fabric. Pick and End Counts are two fabric specifications needed to design a fabric.

Pick Counter: 1. A mechanical device that counts the picks as they are inserted during weaving. 2. A mechanical device equipped with a magnifying glass used for counting picks (and/or ends) in finished fabrics.

Pile Loop:

Pirn: 1. A wood, paper, or plastic support, cylindrical, or slightly tapered, with or without a conical base, on which yarn is wound. 2. The double-tapered take-up yarn package from draw twisting of nylon, polyester, and other melt spun yarns.

Plain Weave: One of the three fundamental weaves: plain, satin and twill. Each filling yarn passes successfully over and under each warp yarn, alternating each row.

Ply: 1. The number of single yarns twisted together to form a plied yarn, or the number of plied yarns twisted together to form a cord. 2. One of a number of layers of fabric.

Primary Colors: Magenta, yellow, and cyan (red, yellow, blue). These are the subtractive primaries used when mixing dyes and paints to make other colors.

Q

Quill: A light, tapered tube of wood, metal, paper, or plastic on which the filling yarn is wound for use in the shuttle during weaving.

Quilling: The process of winding filling yarns onto filling bobbins, or quills, in preparation for use in the shuttle for weaving.

R

Rag rug:

Rapier Looms: Looms in which either a double or single rapier (thin metallic shaft with a yarn-gripping device) carries filament through the shed. In a single rapier machine, the yarn is carried across the fabric by the rapier. In a double rapier machine, the yarn is passed from one rapier to the other in the middle of the fabric.

Raw Fiber: A textile fiber in its natural state, such as silk or cotton as it comes from the bale.

Rayon Fiber: A manufactured fiber composed of regenerated cellulose as well as manufactured fibers composed of regenerated cellulose in which the substituents have replaced not more than 15% of the hydrogen molecules of the hydroxyl group. Rayon yarns may be white or solution dyed. The process itself and the structure of the yarn regulate their strength.

Reed: A comb like device on a loom that separates the warp yarns and also beats each succeeding filling yarn against those already woven. The space between two adjacent wires of the reed is called a dent. The fineness of the reed is calculated by the number of dents to the inch. The more dents to the inch, the finer the reed.

Rock:

S

Satin Weave: One of the basic weaves, plain, satin, and twill. The face of the fabric consists almost completely of warp, or filling floats produced in the repeat of the weave. Satin weave fabric has a characteristic smooth, luxurious surface and has a considerably greater number of yarns in the set of threads (either the warp or filling) that forms the face than in the other set.

Selvage: The narrow edge of woven fabric that runs parallel to the warp. It is made with stronger yarns in a tighter construction than the body of the fabric to prevent unraveling. A fast selvage encloses all, or part of the picks, and a selvage is not fast when the filling threads are cut at the fabric edge after each pick.

Shaft:

Shag:

Shed:

S

Shuttle : A boat-shaped device usually made of wood with a metal tip that carries filling yarns through the shed in the weaving process.

Shuttless Loom: A loom in which a device other than a shuttle is used for weft insertion.

Sinker: In weaving design, a blank square indicating a filling yarn over a warp yarn at the point of insertion.

Sizing: 1. A generic term for compounds that are applied to warp yarn to bind the fiber together and to stiffen the yarn to provide better abrasion resistance. 2. The process of applying sizing compounds.

Spindle:

Spindle whorl:

Spinning wheel:

Stick shuttle:

T

Taffeta: A plain-weave fabric with a fine, smooth, crisp hand with a lustrous appearance. Taffeta fabric usually has a fine cross rib made by using a heavier filling yarn than warp yarn.

Take-up (Twist): The change in length of a filament, yarn, or cord caused by twisting, expressed as a percentage of the original (untwisted) length.

Tear Strength: The force required beginning, or continuing a tear in a fabric under specified conditions.

Textile: Originally, woven fabric; now applied generally to any one of the following; staple fibers and filaments able to be converted into woven, knit, or braided fabrics, or yarns made from natural or manufactured fibers.

Textile Materials: A general term for fibers, yarn intermediates, yarn, fabrics, and products made from fibers.

Textile Processing: Any mechanical operation used to translate a textile fiber or yarn to a fabric or other textile material. This includes such operations as opening, carding, spinning, plying, twisting, texturing, coning, quilling, beaming, slashing, weaving, braiding, and knitting.

Texture: A term describing the surface effect of a fabric such as dull, lustrous, wooly, stiff, soft, fine, course, etc.

Textured Yarns: Yarns that develop stretch and bulk on subsequent processing.

T

Thread: 1. A slender, strong strand, or cord, especially one designed for sewing, or other needlework. 2. A general term for yarns used in weaving and knitting, i.e. Thread Count and Warp Count.

Thread Count: The number of ends (wales) and picks (courses) per inch in a woven or knitted fabric.

Treadle:

Twill Weave : A fundamental weave characterized by diagonal lines produced by a series of floats staggered in the warp direction.

Twist : The number of turns about its axis per unit of length of a yarn, or textile strand. Twist is expressed as turns per inch (tpi), turns per meter (tpm) or turns per centimeter (tpc).

U

Uneven dyeing: A fabric dyeing that shows variations in shade resulting from incorrect processing, or dyeing methods, or from the use of faulty materials.

V

W

Warp: The set of yarn in all woven fabrics, that runs lengthwise and parallel to the selvage and is interwoven with the filling.

Warp Beam: A large spool or flanged cylinder around which the warp yarn, or ends, are wound in a uniform and parallel arrangement.

Warp Frame:

Waterproof: A term applied to materials that are impermeable to water; waterproof fabrics have all of their pores closed and are also impermeable to air making them uncomfortable to wear.

Weave: A system, or pattern of intersecting warp and filling yarns. There are three basic two-dimensional weaves: plain, satin and twill.

Weaving: The method, or process of interlacing two yarns of similar materials so that they cross each other at right angles to produce woven fabric.

W

Webbing: Strong, narrow fabric, closely woven in a variety of weaves and principally used for belts and straps that can withstand strain.

Weft:

Width: A horizontal measurement of a material. In woven fabric, it is the distance from selvage to selvage, and in knitted fabric, from edge to edge.

Winding: Winding is the process of transferring yarn or thread from one type of package to another.

Winding warp:

Woven Fabric: Generally used to refer to a fabric composed of two sets of yarns, warp and filling, that is formed by weaving, which is the interlacing of these sets of yarns.

X

Y

Yarn: A generic term for a continuous strand of textile fibers, filaments, or material in a form suitable for knitting, weaving, braiding, or otherwise intertwining to form a textile fabric.

z

REFERENCES