Yarn

Yarn is a long continuous length of interlocked fibers, suitable for use in the production of textiles, sewing, crocheting, knitting, weaving, embroidery and ropemaking. Thread is a type of yarn intended for sewing by hand or machine. Modern manufactured sewing threads may be finished with wax or other lubricants to withstand the stresses involved in sewing.[1] Embroidery threads are yarns specifically designed for hand or machine embroidery.

Yarn

Structure

Spun yarn is made by twisting or otherwise bonding staple fibers together to make a cohesive thread.[2] Twisting fibers into yarn in the process called spinning can be dated back to the Upper Paleolithic[3], and yarn spinning was one of the very first processes to be industrialized. Spun yarns may contain a single type of fiber, or be a blend of various types. Combining synthetic fibers (which have high strength, artificial lustre, and fire retardant qualities) with natural fibers (which have good water absorbance and skin comforting qualities) is very common. The most widely used blends are cotton-polyester and wool-acrylic fiber blends. Blends of different natural fibers are common too, especially with more expensive fibers such as angora and cashmere.

A Spinning Jenny, spinning machine which initiated the Industrial Revolution

Yarns are made up of a number of plies, each ply being a single spun yarn. These single plies of yarn are twisted in the opposite direction (plied) together to make a thicker yarn. Depending on the direction of this final twist, the yarn will be known as s-twist or z-twist. For a single ply, the direction of the final twist is the same as its original twist.

Filament yarn consists of filament fibers twisted together. Thicker monofilaments are typically used for industrial purposes rather than fabric production or decoration. Silk is a natural filament, and synthetic filament yarns are used to produce silk-like effects.

Spools of thread

Texturized yarns are made by a process of air texturizing (sometimes referred to as taslanizing), which combines multiple filament yarns into a yarn with some of the characteristics of spun yarns.

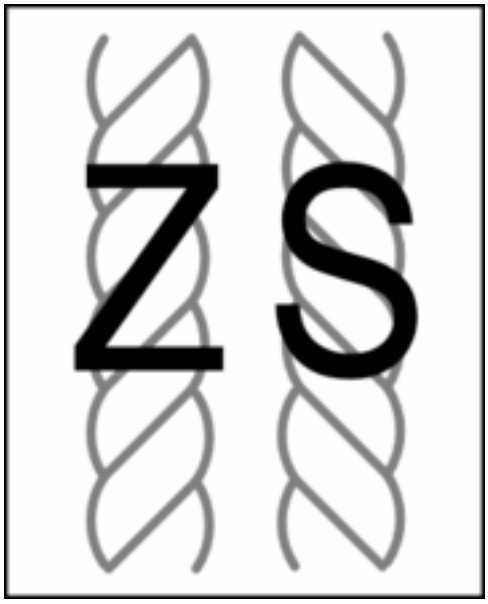
Measurement

Craft yarns

Yarn quantities are usually measured by weight in ounces or grams. In the United States, Canada and Europe, balls of yarn for handcrafts are sold by weight. Common sizes include 25g, 50g, and 100g skeins. Some companies also primarily measure in ounces with common sizes being three-ounce, four-ounce, six-ounce, and eight-ounce skeins. These measurements are taken at a standard temperature and humidity, because yarn can absorb moisture from the air. The actual length of the yarn contained in a ball or skein can vary due

to the inherent heaviness of the fiber and the thickness of the strand; for instance, a 50 g skein of lace weight mohair may contain several hundred meters, while a 50 g skein of bulky wool may contain only 60 meters.

There are several thicknesses of yarn, also referred to as weight. This is not to be confused with the measurement of weight listed above. The Craft Yarn Council of America is making an effort to promote a standardized industry system for measuring this, numbering the weights from 1 (finest) to 6 (heaviest)[4]. Some of the names for the various weights of yarn from finest to thickest are called lace, fingering, sock, sport, double-knit (or DK), worsted, aran, bulky, and super-bulky. This naming convention is more descriptive than precise; fiber artists disagree about where on the continuum each lies, and the precise relationships between the sizes.



Z- and S-twist yarn

A more precise measurement of yarn weight, often used by weavers, is wraps per inch (wpi). The yarn is wrapped snugly around a ruler and the number of wraps that fit in an inch are counted.

Labels on yarn for handcrafts often include information on gauge, known in the UK as tension, which is a measurement of how many stitches and rows are produced per inch or per centimeter on a specified size of knitting needle or crochet hook. The proposed standardization uses a four-by-four inch/ten-by-ten centimeter knitted or crocheted square, with the resultant number of stitches across and rows high made by the suggested tools on the label to determine the gauge.

In Europe textile engineers often use the unit tex, which is the weight in grams of a kilometer of yarn, or decitex, which is a finer measurement corresponding to the weight in grams of 10 kilometers of yarn. Many other units have been used over time by different industries.


Cat with a ball of blue yarn.

Thread

Most types of embroidery thread come in a single size or weight; an exception is pearl or perle cotton, which comes in three weights, No. 3 (heaviest), No. 5, and No. 8 (finest).[5]

Color

Yarn may be used undyed, or may be colored with natural or artificial dyes. Most yarns have a single uniform hue, but there is also a wide selection of variegated yarns:

- heathered or tweed: yarn with flecks of different colored fiber
- ombre: variegated yarn with light and dark shades of a single hue
- multi-colored: variegated yarn with two or more distinct hues (a "parrot colorway" might have green, yellow and red)
- self-striping: yarn dyed with lengths of color that will automatically create stripes in a knitted or crocheted object
- marled: yarn made from strands of different-colored yarn twisted together, sometimes in closely-related hues.

Novelty yarns

Novelty yarns are yarns with an interesting texture or other notably unusual features that distinguish them from ordinary yarn like cotton and wool. Typically these involve at least one or two strands of regular yarn twisted together with something else to make an interesting texture, and are frequently made from synthetics such as nylon, but can also be composed of natural fibers.

A hat, scarf, and pair of fingerless gloves made from novelty yarn.

Very often, novelty yarns will involve frequent color change. Most often these will be obtained through the print process, in which a fiber will have different colors through a dyeing process. Sometimes the color will come through the sequence in which different colors are spun together. In some yarns the same process is used, but at the same time the color repeats are long enough to enable a self-striping feature. If the proper number of stitches is cast, then stripes will appear as the yarn is knitted into a garment. Sock yarn companies have evidently taken a great interest in self striping yarn. Such yarns have a wide array of different effects that can be obtained by knitting the yarn in the round over the number of stitches normally cast for a sock.

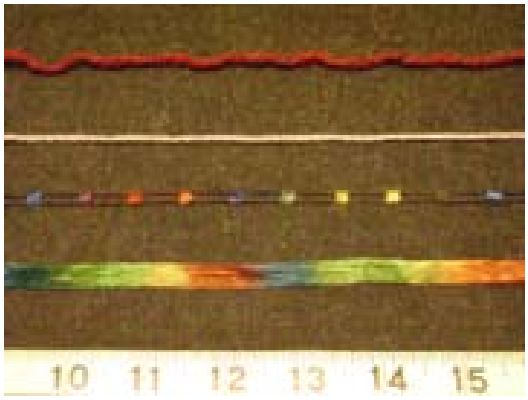
Spool of all purpose sewing thread, closeup shows texture of 2-ply Z-twist mercerized cotton with polyester core.

Electrically conducting yarn

An electrically conducting yarn is yarn that conducts electricity. Conducting yarns are used to manufacture carpets and other items that dissipate static electricity, [1] such as work clothes in highly flammable environments, e.g., in the petrochemistry industry.

There are several methods known to manufacture electrically conductive textiles. The simplest way is to incorporate metal wires or wire meshes into fabrics. another approach is to use metalized yarns. In staple yarns, it is possible to spin short strands of regular yarns with metal yarn. Yarn may be made of a central metal strand with regular yarn woven around it. [1]

An altogether different approach involves yarns based on conductive polymers, such as polyaniline.[2]



From bottom up: Ribbon yarn, ladder yarn, braided yarn, and regular yarn