

- **YARN :**

- Yarn is a long continuous length of interlocked fibres, suitable for use in the production of textiles, sewing, crocheting, knitting, weaving, embroidery and ropemaking.



- **Yarn** is of linear textile product.
- **Strand** formerly used for folded yarns, now preferred to use as components of braids.
- **Braiding** is the process of **interlacing three or more threads** in such a way that they cross each other and laid together in **diagonal formation**. The process is also known as **plaiting**.

- Crochet is a process of creating fabric from yarn, thread, or other material strands using a crochet hook.



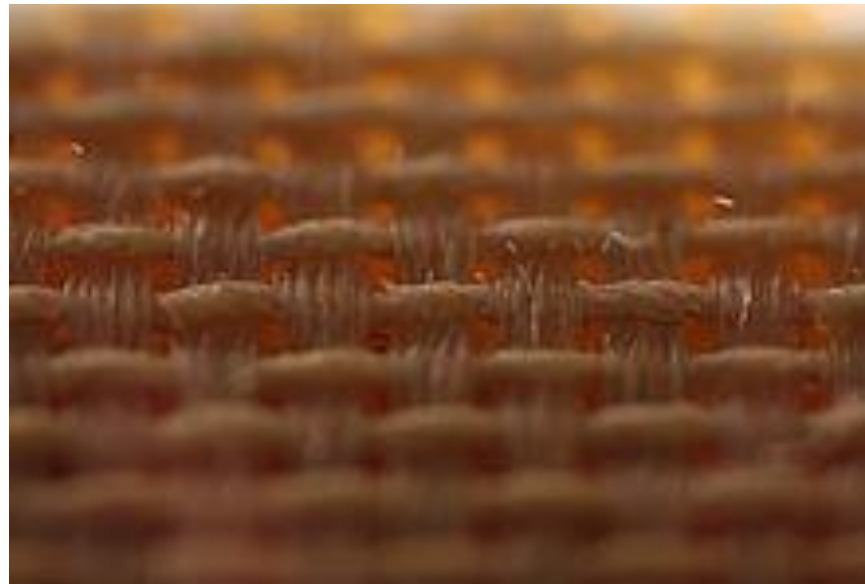
- **Embroidery** is the handicraft of decorating fabric or other materials with needle and thread or yarn.



- **Knitting** is a method by which thread or yarn is used to create a cloth. Knitting may be done by hand or by [machine](#). There exist numerous styles and methods of [hand knitting](#).



- **Weaving** is a method of fabric production in which two distinct sets of yarns or threads are interlaced at right angles to form a fabric or cloth.



- A **rope** is a linear collection of plies, yarns or strands which are twisted or braided together in order to combine them into a larger and stronger form.



- **NETTING YARN :**

- **Textile material which is suitable for manufacture of netting for fishing nets.**
- **This may directly be knitted into netting by hand or by machine. Monofilaments are used directly for making in to netting without further process hence it follows that monofilament yarn is a netting yarn also.**

- **CONSTRUCTION OF GEAR MATERIAL :**

- These are three types :

- (a) **Twisted netting yarn :**

- Usually by twisting single yarns into folded yarn & cabled yarn.

- Single yarn is the simplest continuous thread composed of fibres/filaments.

- **Folded yarn made by**

Twisting two or more

single yarns in one

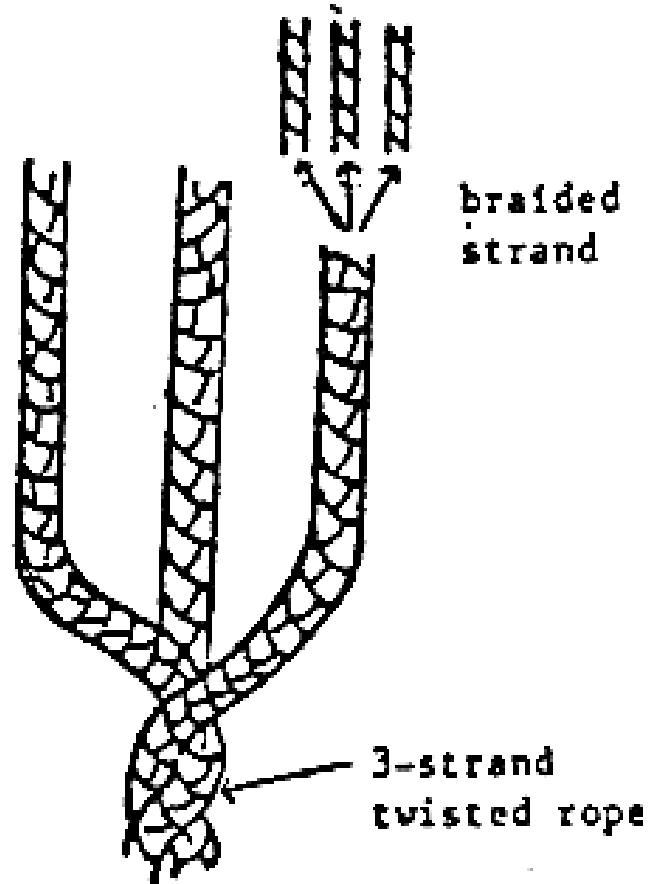
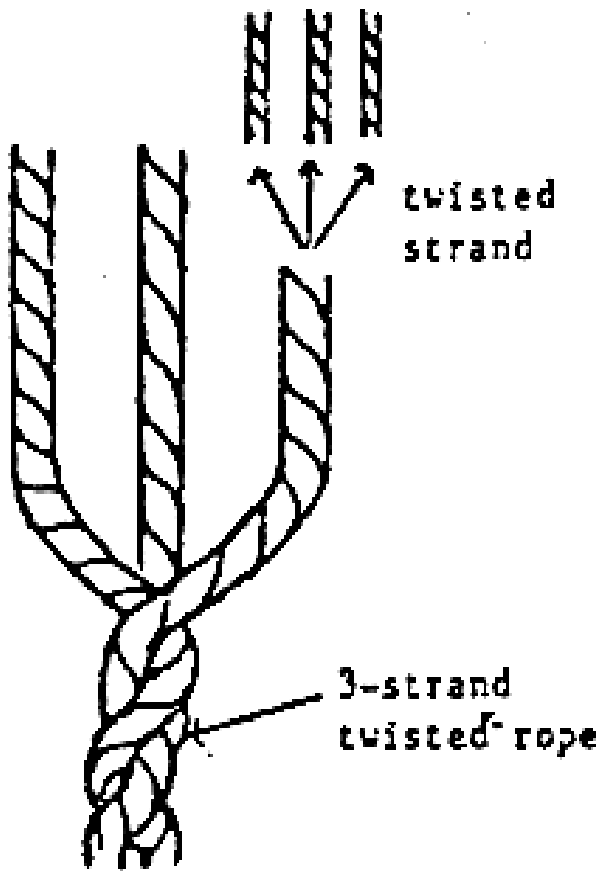
Twisting operation.



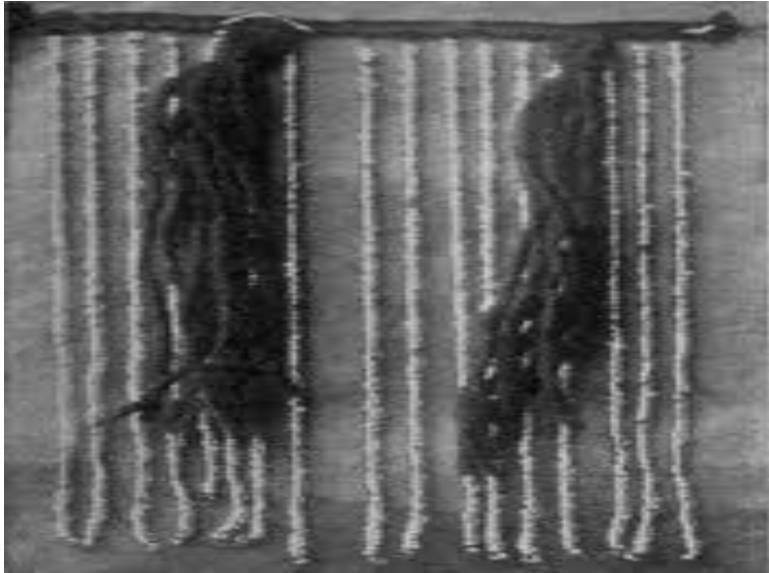
- **Two or more folded yarns are twisted to form a cabled netting yarn.**
- **Twist given is in opposite direction.**
- **Most commonly used in fishing.**
- **(b) Braided netting yarn :**
- **Braiding → process of interlacing a no. of strands so that they cross each other & are laid together in diagonal formation.**
- **Also called plaiting.**
- **Braided yarn is in the form of a tube.**
- **Consists of a core, single yarns & strands.**

- **Braiding machine contains spindles, half of which moves in left direction & rest half in right direction.**
- **Thus strand of one spindle pass alternately over & under one or more of the strands of other set of spindles.**
- **Core is the central part used to fill up the inside of braided tube.**
- **May be made out of single yarn, folded yarn or monofilament.**

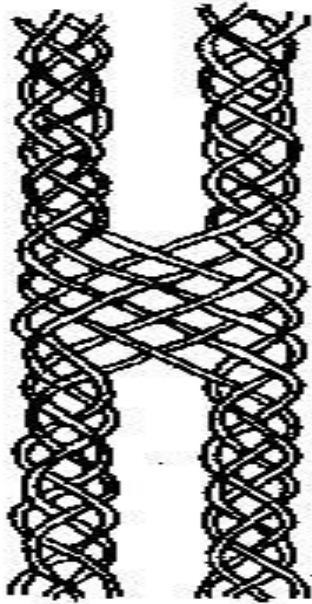




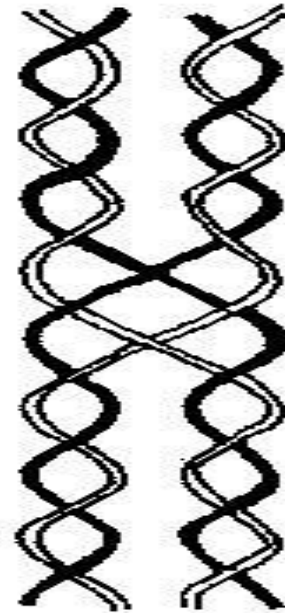
- **Core increases wt of yarn & so braid without core is preferred for fishing net.**
- **These are softer & have better knot stability.**
- **No. of strands determined by the no. of spindles in the machine.**
- **Commonly 6, 8, 12 & 16 strands are used.**
- **Single yarn twisted together to form strands.**
- **These strands are interlaced.**
- **(c) Const. of knotless netting yarn :**
- **Knotless netting : Single yarns are interlaced at the joints & netting is made only in one working process.**



CONSTRUCTION OF KNOTLESS NETTING YARNS - DIFFERENT TECHNIQUES



Braiding

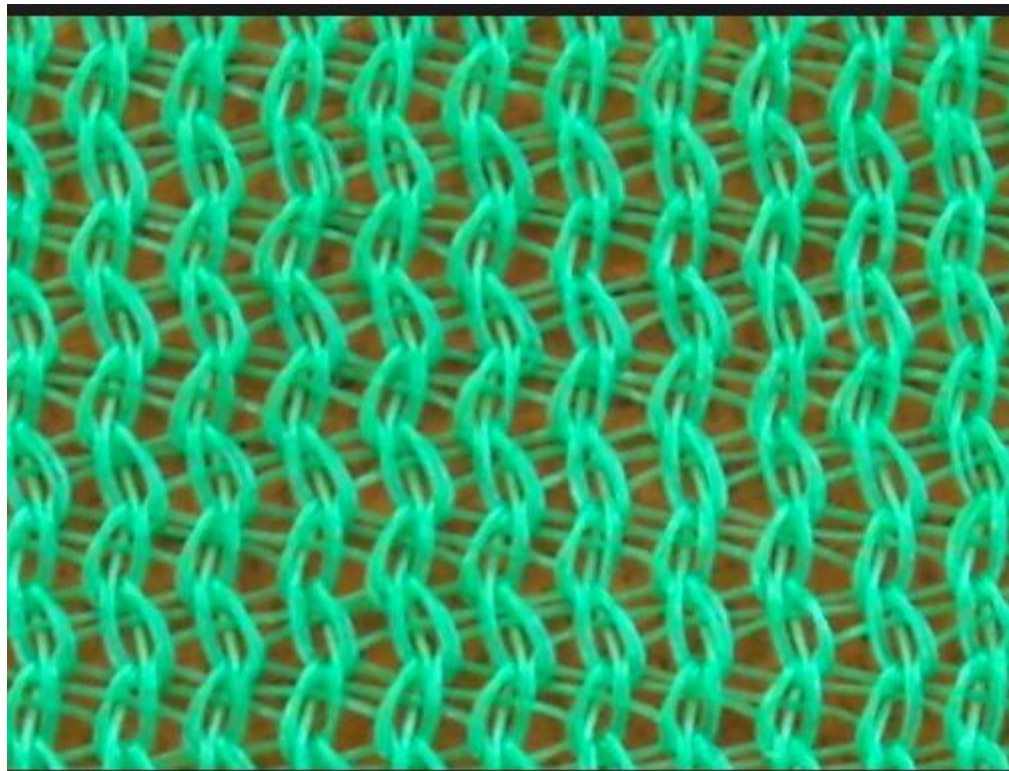


Japanese

- Three types of knotless netting :
- **(i) Japanese twisted knotless netting :**
- The bars of the meshes have two components of either single or folded yarns which are twisted together by netting machine.
- After desired length of bars is attained the two components are interlaced with two components of neighboring bar to form joints.



- **(ii) Raschel netting :**
- Bar formed by three threads.
- Two of these are crossing each other & the other runs a complicated winding path.



- Longer than other two.
- Two neighboring bars are interlaced & joints formed at regular intervals.
- This netting is preferred for small meshed netting.



- **Knotted netting :**
- Netting panels can be hand fabricated or machine made.
- Diff types of knots are used in construction of netting.

- Most popular is English knot, also known as weaver's knot or sheet bend.
- Reef knot is useful in preventing knot slippage.
- Knot breaking strength varies with knot types, treatment & thickness of knotted twines.
- Knot breaking strength decreases with the angle of the loop in knot & increases with no. of loops in knot.
- Double weaver's knot has highest breaking strength.



- Next being single weaver's knot & then reef knot.
- **(iii) Braided netting :**
- Latest origin.
- Bars are formed by braids of 3-4 strands.
- Braided with the strands of neighboring bars & joint is formed.





- **Advantages of knotless netting :**
 - ❖ **Light & compact**-For the same area knotless netting would be lighter and bulk are greatly reduced
 - ❖ **Easier to handle.**
 - ❖ **Less cost of production-** (25-30% cheaper)
 - ❖ **Considerable saving of materials due to absence of knots**
 - ❖ **Constant & accurate mesh size**
 - ❖ **Higher mesh breaking strength**
 - ❖ **Abrasion resistance is higher**
 - ❖ **Easy to clean & quick to dry as dirt does not accumulate on netting.**

Disadvantage of knotted netting-

- (1) Knot decrease in breaking strength
- (2) knots are protruded and abrasion is more.
- (3) Substantial % of twine is consumed for knots
- (4) The increase of weight
- (5) Hydrodynamic resistance is increased

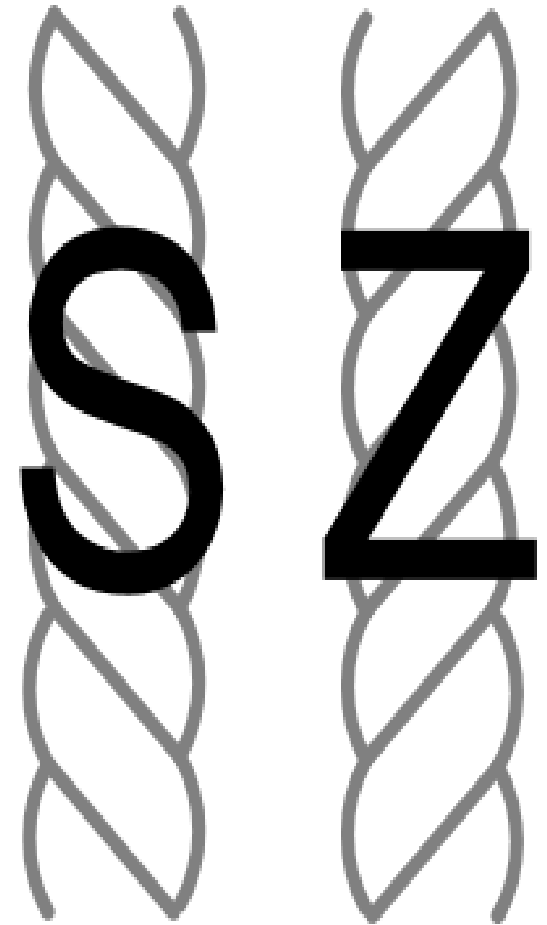
– NETTING TWINE :

- Simplest continuous thread composed of fibres.
- Manufactured by single twisting operation of two or more single netting yarn or monofilament.

• TWIST :

- Twist is the spiral disposition of the components of a single yarn, folded yarn or netting yarn.
- Amt of twist is the no. of turns per unit of length.
- Expressed as t/m (turns/meter).
- Depending on amt of twist twines are classified as :

- (i) Soft twist
- (ii) medium twist
- (iii) Hard twist
- (iv) Extra hard twist
- Amt of twist given is decided as per the requirements of fishing gears.
- For gill nets & seines – soft & medium twists are used.
- Trawls – hard twist
- Lines & ropes – extra hard twist.

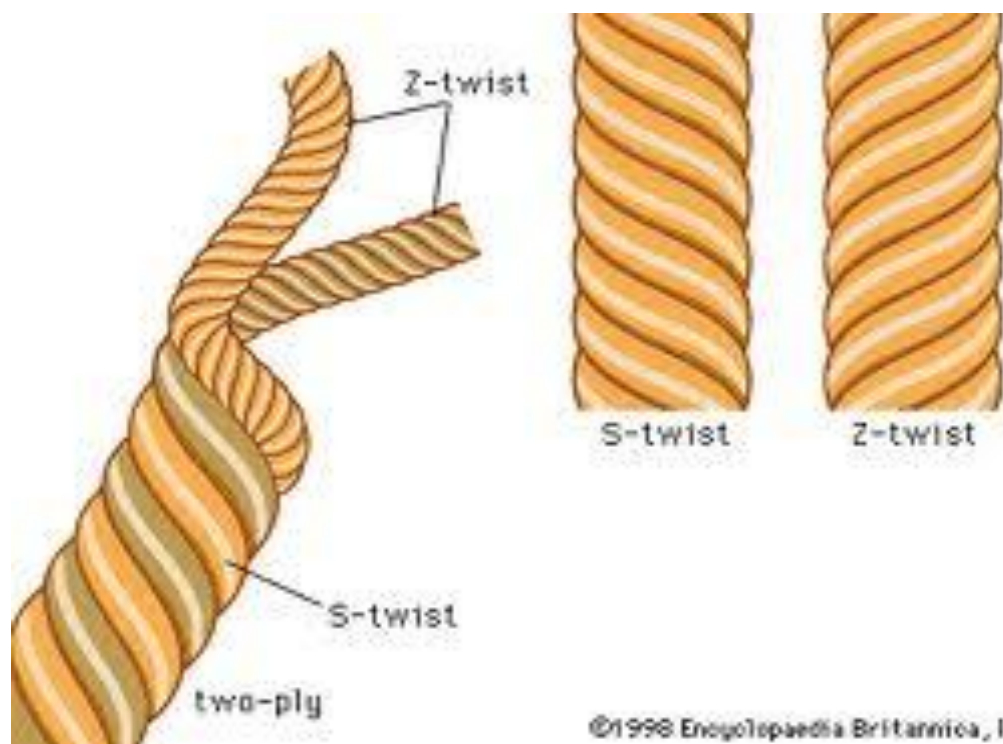


- In the twisting operation, direction of twist in succeeding operation is opposite to preceding operation.

Depending on direction of twist it is classified as :

‘S’ twist & ‘Z’ twist.

- When spirals formed by fibers or filaments incline in the same direction as the central portion of the letter S – it is S twist (left hand laid)
- When spirals incline in same direction as central portion of letter Z & product is held vertically – Z twist (right hand laid)
- Most twisted netting twines are three strand & widely used in fishing gears.



- **Designation of netting yarn :**
- System indicating size or thickness of the basic yarn is a Yarn Numbering System.
- Yarn no. or count is necessary to purchase & select netting yarns.
- Diff methods to designate yarn no. or count.
- These are either mass/unit length or length/unit mass of a single yarn.