Micro Teaching

Object based learning - : Yarn count and twists

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Agenda

Object Introduction

Yarn Count

Numero Metric System

What does this all mean?

Twists and Plys

Introduction

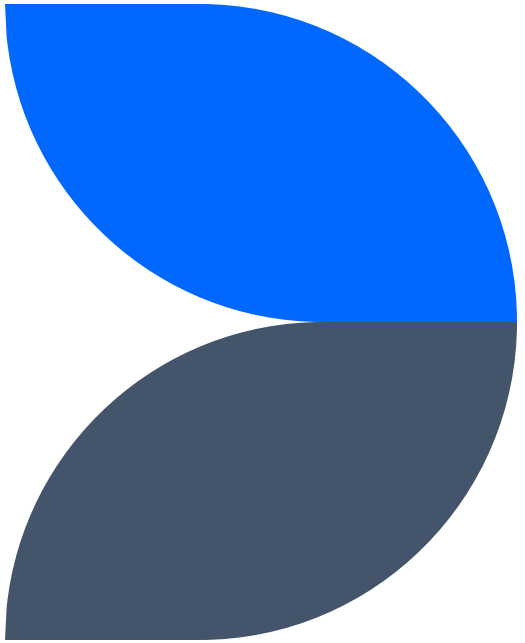
Yarn is an every day item, its lives in a mundane environment that goes unnoticed until a particular sense comes into play. Even everyday pedestrians do not comprehend what they are touching or sensing. The immense design that goes into developing yarn compositions and twists is an under-represented career in fashion and textiles. It is where innovation lives and breathes in fashion. Issey Miyake is a leading example of this type of exploration and innovation in yarn compositions.

Yarn Counts

The definition is to express the different thicknesses of yarns, it is convenient to use a number in the Textile Industry which is known as the “Count” of yarn or thread. It may be single or folded yarns.

Yarn counts come in two main categories:
Indirect system = English, Metric, Worsted
Direct = Tex, Denier, Lbs/Spindle

The focus of today will be on Metric (Indirect system) as its one of the most used count systems that is globally recognised. But lets check out each system briefly.



Indirect Count system
A Fixed weight system -

- In this system, the count of yarn expresses the number of length units in one weight unit.
- **The higher the count, finer is the yarn.**
- It is based on the fixed weight system.
- This is the traditional system of yarn linear density measurement.
- The system is generally used for Metric, cotton, worsted, woolen (American Cut, American Run, Hawick, Dewsbury, Yorkshire skein), Spun rayon(staple fiber), French cotton, Bump cotton, Asbestos(British & American). Fibre Glass, etc.....

Name of system	Definition
English Cotton Count	No. of 840yards hank per pound(lbs.)
French Cotton Count	No. of 1000 meters hanks per 500gm.
Metric Count	No. of 1000 meters hanks per 1kg(1000gm.)
Spun Silk Count	No. of 840 yards hank per pound(lbs.)
Silk Count (Ounce)	No. of 1000 yards hank per ounce(oz.)
Spun Rayon Staple Fibre Count	No. of 840 yards hank per pound(lbs.)
Worsted & Mohair Count	No. of 560 yards hank per pound(lbs.)
Woolen Count-American Cut	No. of 300 yards hank or cut per pound(lbs.)
Woolen Count-American Run	No. of 100 yards hank per Ounce(oz.)
Woolen Count-Yorkshire Skeins	No. of 256 yards hank(skeins) per pound(lbs.), or No. of yards per Dram

Direct Count system A Fixed Length system -

- In this system, the count of yarn expresses the number of weight units in one length unit.
- **The higher the count coarser is the yarn.**
- It is a fixed-length system.
- The system is used for Denier count, hemp & jute counts, Grex count. Tex count, Etc...

Name of System	Definition
Tex Count	Weight in gms. Per 1000 meter.
Grex Count	Weight in gms. Per 10000mtr.
Denier Count	Weight in gms. Per 9000 mtr.
Jute Count	Weight in lbs. of 14400 yds. Spindle
Hemp Count	Weight in lbs. of 14400 yds. Spindle
Flax Count	Weight in lbs. of 14400 yds. Spindle
Linen Count	Weight in lbs. of 14400 yds. Spindle
Silk Count (Dram System)	Weight in Drams of 1000 yards hank.

Numero Metric Count (NM)

This is a term used for many yarns as an alternative to a w-c (worsted count) the count basically is stating the Kilometers and miles. And this count is based on the number of 1000m (metre) units in a kg (kilogram) of yarn.

* NM counts have 2 numbers - 2/30
* The smaller number is generally the strands/ends
* The larger number is the Count.
* A Single ended yarn (1 strand) may not be listed with a second number.
* Exceptions of this would be rovings, slubs or loop yarns.
* Most yarns would have a number of single ends twisted together. /2 /3 /4
* The higher the count number the finer the yarn.
* Cotton counts are normally expressed with the Count first 30/2cc or NM
* Woolen or Worsted are expressed with the Count second 2/30wc or NM

We use Metric counts as its far easier to explain as the numbers are nice and round 1000. This is why we are using the METRIC SYSTEM.

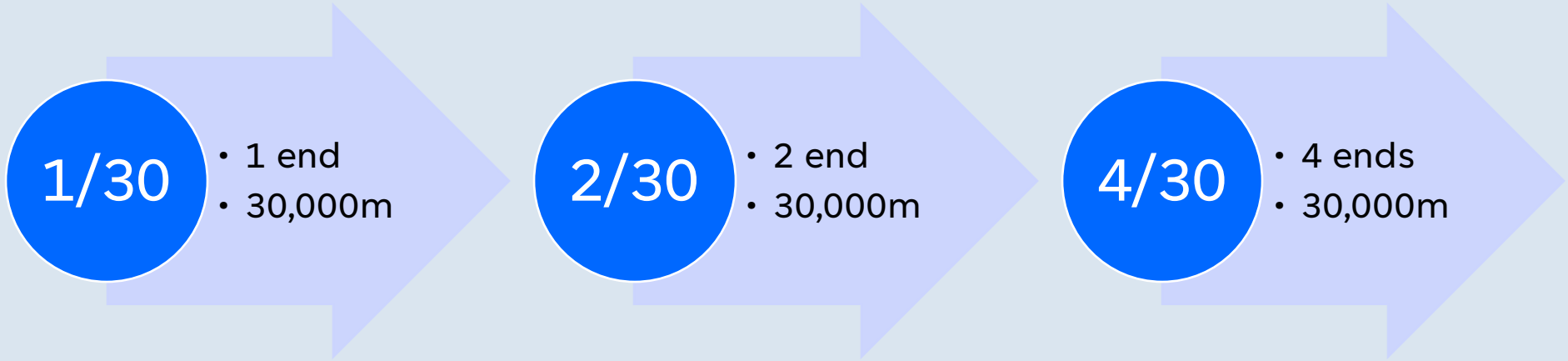
Metric count System (Nm)

The metric count of yarn is the no. of hanks, each of 1 km. which 1 kg.

$$\text{Metric Count (Nm)} = \frac{\text{Length of yarn in Mtr}}{\text{Weight of yarn in kg. X 1000}}$$

WHAT DOES IT ALL MEAN?

2/30 means there is 30 lots of 1000m per kilogram i.e 30,000 meters per kilo.

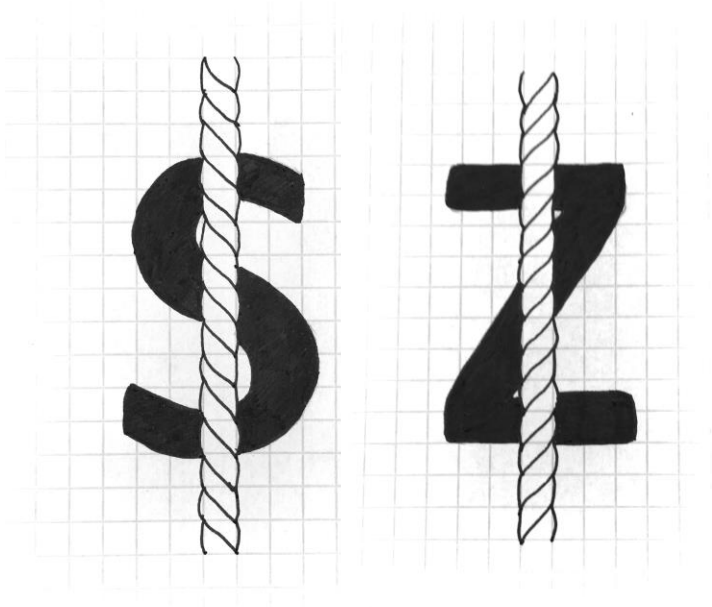


CHALLENGE ONE:

If 1 end equals to 30,000 meters per kilo, and I split that into 2 ends, the weight of the count stays the same but how many meters do I have?

Twists and Plys

Twisting yarn is the process of wrapping together (in a spiral motion) fibres to make a singles yarn and then singles to make a plied yarn. Twisting fibers together, such as when spinning, gives the fibres the strength to be woven into cloth or knitted into garments. Twisting these singles together to make a plied yarn adds even more strength.



An Z-Twist would twist clockwise and the opposite for a S-twist.

When yarn has been plied together the single strands are often ‘Z’ twist yarns which are then plied in an ‘S’ direction. If multiple ply ‘S’ twist yarns are then to be plied together, such as in a cord, they would be twisted in a ‘Z’ direction. Alternating twists in this way gives the yarn stability and strength.

* Twists per meter (TPM) or Twists per inch (TPI)
* Shorter staples (Fiber length) need High twists
* Twists can affect final cloth/garment characteristcs
* Knitting twists and Weaving twists can be different.
* Hand crafts vs Industrial have different twists.

How twist and ply is applied

The twist of a singles/yarn defines the characteristics of the yarn:

Low twist yarns	High twist yarns
Softer (produce softer, lighter fabrics)	Smoother, harder and stronger (produce finer, crisper fabrics)
Absorbent	Can be water repellent
Less hard wearing	More resistant to abrasion and pilling
Fabric more relaxed and less likely to curl	Very high twist yarns are lively and the fabric more likely to curl

Summary

- Yarn counts can determine how fine or thick your final object will be.
- Different yarn counts are used globally, but NM is common practice.
- The higher the number the finer the yarn.
- 2 ends of 30snm would be twisted together.
- Plied yarn can affect and determine final cloth/garment characteristics.

Thank you

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