

Yarns for Fashion Applications



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The most developed nanotechnology application for textiles is in the area of finishes. It has opened immense possibilities in this area resulting in innovative new finishes as well as application techniques.

Nanofinishes are generally applied in nanoemulsion form, which enables a more thorough, even, and precise application on textiles surfaces. They are generally emulsified into either nanomicells, made into nanosols or wrapped in nanocapsules that can adhere to textile substrates easily and more evenly.

Majority of the yarns produced commercially today are plain yarns whose quality standards are judged on the basis of good uniformity %, higher strength, less imperfections, evenness of colour, texture etc. At some point, the fabric designers realized that a nice attractive effect can be produced in fabrics by playing with imperfections, colours, uniformity & other properties of the yarns.

Then after, fancy yarns or novelty yarns are defined as “The yarns in which defects are deliberately used as decorative & attractive effects by introducing them in discontinuous or interruptive fashion.” Nowadays fancy yarns are produced by specialist spinners using machine modifications, or using fancy slivers, using fancy doublers, or using texturising machines by playing with properties of fibres.

Success of fancy yarn in the market is dependent on acceptability of product into market by consumers or buyers. Since, computer controlled machines today avails us stimulation of appearance of fancy yarns into fabrics, the success or failure of fancy yarns to be produced can be predicted before launching the fancy yarn idea into the market on large scale. This avoids, losses suffered by manufacturers of fancy yarns by trials & errors. Therefore today, the spinners must concentrate on the here and how & on the range of production methods that are available today. Definitely it is providing an opening for spinners to earn extra profits.

Here is an effort made by authors to highlight the some of the fancy yarns, their technique of manufacturing & their specialized applications.

Some of the fancy yarns available are Slub yarn, Multi Count - Multi Twist (MCMT) yarn, Marl yarn, Spiral yarn, G imp yarn, Diamond yarn, Eccentric yarn, Boucle yarn, Chenilie yarn etc.

Various principles of fancy yarns manufacturing:

1. By manipulating fibre specifications.
2. By manipulating yarn specifications.
3. By adding fibre aggregates & yarn pieces.
4. Positional manipulation of coloured strands.
5. Use of space dyed or printed slivers.
6. Integration of dissimilar components.

Details of above principles are as below

1. By manipulating fibre specifications

Fibre specifications such as type, length, denier, cross sectional shape crimp, initial modulus, colour, luster, affinity for dyes, shrinkage etc. of two or more fibres can be manipulated to produce fancy effects.

2. By manipulating yarn specifications

Plying & cabling together yarns of varying, linear densities & twist densities, a fancy effect is achieved.

3. By adding fibre aggregates & yarn pieces

Neps, lumps, hard waste ends etc are added to the stock at various spinning stages such as blow room, card or draw frame. The method of addition of these aggregates has to be properly chosen so as to exploit the effect of additives fully.

4. Positional manipulation of coloured strands

It is often colour & design of the textile material which appeals to the customer. Slivers, rovings or yarns of two or more colours can be arranged in feed zone to produce various types of fancy yarns at various machines.

5. Use of space dyed or printed slivers

Tops of slivers are dyed or printed in different colour patterns, called as melange printing. Also space dyeing technique also brings about nice fancy colour effects.

6. Integration of dissimilar components

Air covering machines, fancy doubler & twister. Air-jet Texturising machines produce fancy effect in the yarns with dissimilar components by over feed principle, false twist principle etc.

Machine or machine modifications for fancy yarn production

1. Machine modification to from slub yarn or MCMT yarn on Ring frame or O.E machines:

Effect yarn device fitted at Ring frames for slub yarn manufacturing changes main draft in the system by keeping break draft constant, which gives slub effect. To have multi twist (MT) fancy yarns, the attachment changes front roller delivery at constant spindle speed which gives multi twist yarns. The combination of mechanical changes explained above for slub & multi twist yarn gives the Multi Count Multi Twist.

Similar attachments are available for Open End machines also.

2. Core Spun Yarns:

Core spun elastomeric yarn (Lycra) can be manufactured on Ring frame or O.E. machine by fitting core spun Lycra attachment.

Core spun filament yarn is manufactured on fancy hollow spindle doubler using overfeed principle.

3. Marl yarn, spiral yarn, crimp yarn, diamond yarn etc.

The above said yarns can be manufactured on fancy doublers which has more than two lines of rollers. The bottom rollers are usually fluted, metallic. Top rollers are plain rubber

rollers varying in sizes. By varying the speeds of individual bottom rollers by driving mechanisms, by varying overfeed %, i.e. supplying extra length for fancy effect formation; the above said yarns can be produced on fancy doublers.

4. Air covered yarn:

- i. Air covering machine also uses overfeed principle in combination with high velocity air jet. Mostly it is used to produce loop yarn by intermingling Lycra filament with other filaments like PET, Nylons, etc.
- ii. Blending of two or more different component filaments like Nylon-Silk, Nylon-PET- Polypropylene can be done by air jet texturing which can produce fancy effect either after dyeing the textured yarn or else directly we can use different coloured filaments at feed package.

5. Chenille Yarn:

The effect yarns are wrapped around a gauge or former that is triangularly shaped at the top narrowing towards the base to allow the effect yarn coils to slide downwards on to cutting knife. The width at the bottom of gauge determines the effect length by maintaining the depth of the pile or beard in final yarn.

Structural details of some of the fancy yarns

1. Marl Yarn: Two yarns of the same count & twist but different colours are folded together to form a balanced yarn, can be produced on doublers.



2. Spiral or corkscrew yarn: It is a plied yarn that, displays a characteristics smooth spiraling of one component around the other. Can be produced on doublers or SIRO spinning systems at Ring frames.



3. Gimp yarn: A compound yarn consisting of a twisted core with an effect yarn wrapped around it so as to produce wavy projections on surface. It is produced in two stages firstly by plying two yarns widely differing count (thick around thin) & then reverse binding, which removes all the twist in first process.



4. Diamond yarn: It is produced by folding thick single yarn or roving with fine yarn or filament of contrasting colours using S-twist & cabling it with a similar fine yarn using 'Z' twist



5. Eccentric yarn: Produced by doubling or plying several irregular yarns like slub yarn, knop yarns etc. to create the fancy effect.



6. Boucle yarn: This is a compound yarn comprising a twisted core with an effect yarn (or roving) combined with it so as to produce wavy projections on its surface.



7. Chenille Yarn: It consists of a cut pile which may be made of a variety of fibres helically disposed around two axis threads that secures it.



8. Slub Yarn: Deliberate slubs are introduced in the yarn in random fashion by the means of computer programme.



9. Multi twist and/or multi-count yarn: The twist level and / or count level in the same package yarn is varied in random fashion by computer programme. Due to above said variation in twist & count of the yarn, this effect will highlighted after dyeing or coloring yarn or fabric

Some of the other fancy yarn structures are as below:

Seed Yarn:



Loop Yarn:



Use of Fancy Yarns

1. Apparel Fabrics: Either as a casual wears or as formal wear, casual knit wears. Mostly chenille, boucles or heavy slub yarns are used. Plain structures are enhanced by marl or cable yarns with effect of lively colours.

In ladies wear, mostly metallic yarns or flat tape yarns are used. Formal male wears, used fancy doubled yarns.

2. Furnishing fabrics: Upholstery and home furnishing offered a relatively new field in the market. Chenille, slub, boucle yarns are used for the curtains, table cloths, sofa set covers etc.

3. Tight body fit wears: Core spun lycra, air covered lycra yarns are used in tight fitting wears, like jersey, swimsuit, head band, wrist band. Also those are used in narrow fabric manufacturing, into undergarments, as a crepe bandage in medical field, socks & stockings etc.

4. Decorative items: Many of the fancy yarns are used in decorative items, like laces, frill, saree boarders, embroidery threads etc.

Summery

By knowing the importance of fancy yarns by the spinners, many mills they have converted their spindlage from regular plain yarn to fancy yarns. Also in India, Region like Surat in Gujarat has become hub for fancy yarn manufactures. Due to popularity of Denims & fancy dress materials huge market is available for slub, multi twist, multi count yarns & other fancy yarns. Though the initial cost of investment for machine modifications or attachment is high, these fancy yarns has very rapid pay back period for the same due value addition in the product.

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