



B-TEX Laboratory Engineering



National Achievement

Rajiv Gandhi Award

Golden Jubilee Award

R & D in Textile

Textile Testing Instruments

Textile Training Institution

Yarn, Fabric, Garment &

Textile Testing Reports

Traceable to NPL Calibration

Certificates

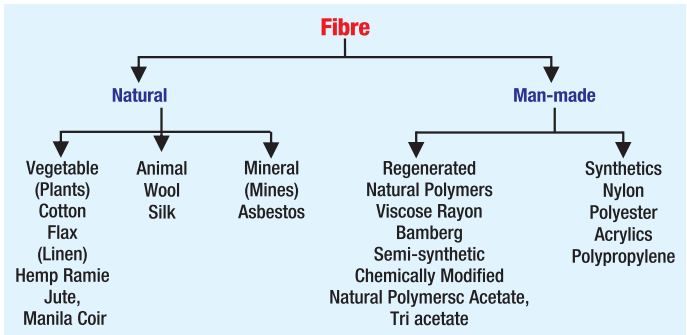
We Strive To Do Better Every Day



WHAT IS TEXTILE?

For a common man, textiles means a fabric which he buys to wear but he does not know that made-ups, various garments and different type of yarns are also considered under the word "Textiles". Means any material made from the yarn either by weaving or knitting process. Basically the process of converting fibre into fabric consists of four stages. (1) Production of fibre (raw material for yarn). (2) Conversion of fibre into yarn (raw material for gray fabric). (3) Conversion of yarn into gray fabric (raw material for finished cloth). (4) Conversion of gray fabric into finished fabric. (raw material for garment).

FIBRES : Many kinds of textile fibres have been used to make different types of fabrics. The present textile fibres can be classified according to their origin.



Textile fibres are classified into staple & filament on the bases of length.



■ **SPUN YARN** : Yarn is manufactured by spinning process during which the fibres are converted into continuous length of thread. During spinning process, the twists are also inserted to hold the fibre together. To manufacture blended yarn, continuous filaments are cut into fixed length and mixed with natural or any staple fibre as the requirement and requisite blend ratio. • Continuous filament yarns having one or more filaments are known as mono or multi filaments respectively.

■ **YARN MANUFACTURING PROCESS FOR FILAMENT YARN**

The filament yarn mean synthetic continuous filament yarn suitable for clothing purpose, like polyester, nylon, acrylics, etc. generally man made fibre in its liquid or molten state is forced through the holes of a spinneret and emerges as a long, smooth, rod-like filament.

INDIRECT YARN NUMBERING SYSTEM : In an indirect system the yarn number of count is the number of 'unit of length' per 'unit of weight'.

DIRECT SYSTEM : In a direct yarn counting system the yarn number or count is the weight of a unit length of yarn.

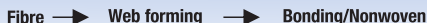
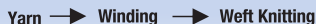
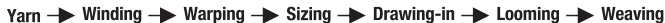
■ **DIRECT TO DIRECT OR INDIRECT AND INDIRECT TO DIRECT OR INDIRECT :**

System	To Convert to					
	English Ct.	French Ct.	Metric Ct.	Worsted	Tex	Denier
English Count (Ne)	1	Ne x 0.84	Ne x 1.69	Ne x 1.5	590.5/Ne	5315/Ne
French Count (Nf)	Nf x 1.18	1	Nf x 2	Nf x 1.77	500/Nf	4500/Nf
Metric Count (Nm)	Nm x 0.59	Nm x 0.5	1	Nm x 0.88	1000/Nm	9000/Nm
Worsted (W)	W x 0.6667	W x 0.5645	W x 1.129	1	885.8/W	7972/W
Tex (T)	590.5/T	500/T	1000/T	885.8/T	1	T x 9
Denier (D)	5315/D	4500/D	9000/D	7972/D	D/9	1

■ **FABRIC : Classification of weaving process**



OR

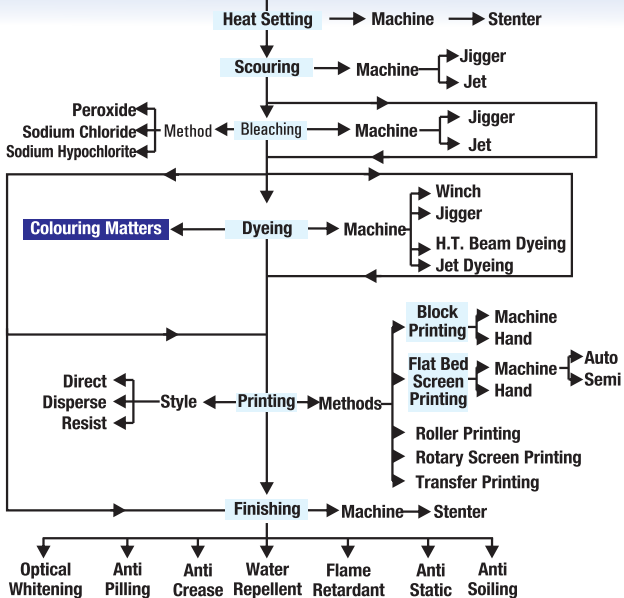


■ **CLASSIFICATION OF WEAVING TECHNIQUE WITH MACHINE AND RESULTING :**

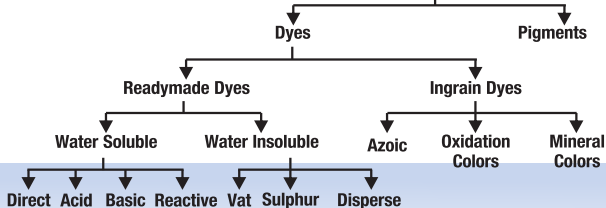
Technique	Machine used	Resulting
Weaving	Ordinary/automatic shuttle loom, shuttle less loom.	Interlacement of warp and weft
Warp knitting Weft knitting	Circular knitting machine, Tricot knitting machine	The single yarn is looped to make a chain of stitches.
Non-woven Dry processes	Stitch bonding machine Cotton-carding machine Wool-carding machine Pneumatic system (Random Webber)	Textile fibre held together by an applied bonding agent or by the fusing of self-contained thermoplastic fibre. Used as disposable cloths or durable fabrics according to the process.
Non-woven Wet process	Spun bonding machine Roto former machine	
Paper making	Foudrinier machine Paper machine.	By dry process (using dry laid webs) and wet process (modified paper).

- **DESCRIPTION OF STEAM :** Steam is the process to remove torque of twist temporarily from the yarn for the proper weaving. In process house after recreation of torque we can create georgette /chiffon feel in fabric. If we give high temperature steam to yarn, then it will remove yarn twist torque permanently.
- Steam is used for polyester, nylon, viscose and bamberg yarns. Some times doubling, covering and other fancy yarns also need steaming procedure.

FINISHED CLOTH'S FLOW CHART OF PROCESS HOUSE



COLOURING MATTERS



PROCESSING

Wet processing means fabric goes under several chemical processes with the help of high equipped m/c. First of all we would discuss about cotton, synthetics and cationic fabrics. Processes given below :

Singeing Process : In this process mended fabric passes on Gas flame which supplied by perforated steel pipe in open width form at 60 to 80 Meter per minute. Perforated steel pipe fit in singeing m/c. Itself. **Desizing process** : Removing of sizing material from fabric is known as desizing process. **Cotton desizing** : Cotton desize process can take place in desizing machine where fabric treated by desize chemical like amibzyme, c-salt at 80°C to 90°C, 60 meters per minute speed of the fabrics. Then wash fabric by hot and cold water according to market fabric goes for other treatment also. **Scouring** : Washed cotton fabrics treated in this small J box with 2-3 gm/ltr. HCL, need room temp. Hold time 2-3 hr's only. Then wash fabric by hot and cold H₂O. **Chemicking** : In this process chemist can be used for better fabric performance -2-3 gm/ltr. Caustic, Room Temperature, 6 Hr's hold time, then wash fabric with hot & cold water. **Peroxide bleach**: In this process also we need small J box, H₂O-ltr/4-5gm, Silicate-1 gm/ltr, Soda-0.05 gm/ltr, Temp.-50° to 60°C, Hold time- Eight Hour's, Wash Fabric by hot and cold water.

Synthetics Scouring Process : Roto, Tex-Tex, Woolly, Polyester need only mild caustic treatment in Jet Dyeing machine. 0.05 gm per ltr. NAOH, 0.05 gm/ltr. Soda, 0.001 gm/ltr. NID, Temperature 80°-110° Then Neutralize with HCL, Oxalic Acid, Some qualities Liza, Lazor, Orient, need weight Reduction Process. **Weight Reduction Process** : As per quality used caustic for W.R. purpose in Jet Dyeing machine. In synthetics scouring process takes place only in Jet Dyeing Machine. **Nylon Quality** : Simply wash by hot water and then you can dye the fabrics. **Cotton Dyeing Process** : J box, jigger dyeing machine, Hot flue dyeing machine, Float drier machine, shaper's machine are generally used in process of dyeing cotton fabrics. **Synthetic Dyeing** : Beam dyeing machine and jet dyeing machine are required for dyeing synthetics fabrics. Load fabric in the machine. Add dispersing agent and leveling agent. At Temperatures 60°-80°. Pressure 3 to 4kg. Then add dyes in dye bath, Temp. Raise 10-20 per min. For **light shade** : 110°C - 30 min., **Medium shade** : 120°C - 45 min. **Dark shade** : 130°C - 60 to 90 min. Acidic media is necessary for dyeing synthetic fabrics.

■ We are facing general problems/variations created in yarn

No.	Variations	Causes
1	Denier	Drawing variation (tension, speed).
2	Temperature	Break the use of A/C plant. Improper maintenance.
3	Crimp	Speed used more than M/C capacity.
4	Drawing	Break the use of A/C plant, which make temp & humidity Variation.
5	Intermingling	Improper maintenance, Improper work of nozzle.
6	Oil	Oil property variation or improper contact of passing yarn.

We are facing general problems/variations created in fabrics

No.	Variations	Causes
1	Denier	Yarn property variation / different merge.
2	Twist	Improper balanced Spindle / RPM / Belt sleep
3	Filament	Different yarn mix.
4	Reed / Pick	Reed is not proper or not fitted proper on M/C Eccentricity variation / Bush-Damage. Let-off & take-up variation.
5	Temperature	Yarn property variation. Steam variation during steaming. Processed over heating or big lot in single job.

- To get better results in texturing unit use humidity system with temperature controlling system.
- In the case of power failure always use to reload machine by discontinue existing paper tubes/cones.
- Meaning of L.B.S. yarn : Law shrinkage property of yarn in boiling water.

ENERGY AUDIT

TO SAVE ELECTRIC ENERGY :

- Stabilized electricity (stabilizer/inverter/capacitor).
- Use motor capacity as per your m/c requirement.
- Cut off the extra load and save over quotation of electricity bill and save minimum bill expenses of electricity.
- If there is no inverter connected check the load of motor once in a month.
- Take the maintenance of motor once in a year.
- Apply good quality oil to reduce breakdown, to reduce load of machine, etc.
- Use of properly balanced pulley and standard bearings.
- Use low weighted and high strength pulley.
- Apply proper tension to belts.
- Use exhaust fans attached with timer/temperature controller.
- Use several wind operated exhaust fans in your factory.
- Use transparent roofs as per requirement.
- Use limited lights to save power. Also use reflectors and clean them regularly.
- Use more ventilation if possible in particular area.
- Do not use heavy capacity m/c (extra width) to produce normal width fabric.

TO SAVE THERMAL ENERGY :

- Fix solar water heating plant to save thermal energy. Reuse hot water.
- Do not use heavy capacity boiler instead of your requirement.
- Check steam line regularly and cover pipes with perfect insulation to avoid temperature loss.
- Make proper valve maintenance for steam line.
- Avoid leakages and unnecessary bands in line, don't use angular bands.
- Check water hardness regularly.
- Automation of steam lines to machinery will help to avoid accidents.
- Test regularly - coal, lignite for calorific value to avoid loss.
- Use turbine high pressure to low pressure line and generate electricity.

NECESSITY OF IN HOUSE LAB :

- You can check yarn or grey coming in your unit so you can stop problem before creating the same.
- You can check during your process so you can check mistake in calculation or variation during process, warping or twisting.
- By deciding quality of ready yarn or fabric you can get maximum income.
- You can develop new yarn or fabric.

Quality Particulars of Some Popular Fabric Varieties

Quality	Warp	Weft	Total Ends	Reed Space	Reed x Pick	Weight		
						Warp	Weft	Cloth
Moss / Licy Georgette	70/68/2200 'S' & 'Z' Semi dull flat Poly.		7560	51.5"	72 x 4 x 76	6.900	3.300	10.200
Chirmin	50/36 Bright flat Poly. Sized,	50/36/1770 'S' Semi dull crimp poly & 1880 - 'Z' (2x2)	5400	55"	96 x 2 x 76	3.500	2.500	6.000
Poonam Brasso	50/36/1770 'S' & 1880 'Z' Semi dull crimp poly	(2x2) & 120 Denier Viscose Sized Same as Warp	4320 & 3960	51"	80 x 4 x 76	2.800 5.700	8.500 2.300	10.800
C. x C. Poonam	50/24/1600 'S' & 1400 'Z' Cationic Crimp Poly.	Same as Warp	4320	51"	80 x 2 x 72	3.200	2.400	5.600
84 x 84	84/48/1250 'S' & 1000 'Z' Semi dull crimp Poly.,	Same as Warp	3880	52"	72 x 2 x 76	4.200	3.300	7.500
70 x 68	70/68/2000 'S' & 'Z' Semi dull flat Poly.,	Same as Warp	3640	54"	64 x 2 x 64,	3.400	2.800	6.200
Leon Georgette	80/72/1200 'S' 80/72/1800 'Z' Roto Poly.,	Same as Warp	4560	54"	80 x 2 x 72	4.800	3.700	8.500
75 x 108	75/108/2000 'S' & 'Z' Semi dull flat Poly.,	Same as Warp	4400	53"	80 x 2 x 72	4.400	3.400	7.800

Quality Particulars of Some Popular Fabric Varieties

Quality	Warp	Weft	Total Ends	Reed Space	Reed x Pick	Weight		
						Warp	Weft	Cloth
Bolting Cloth	30/1 Semi Dull Mono Poly	Same as Warp	7360	51.25"	280 x 1 x 140	2.700	2.400	5.100
Metal Chiffon	30/12/1000 Bright flat Poly.	50/54/2800 Cationic Poly.,	6080	58"	100 x 2 x 88	2.300	3.200	5.500
Nara Chiffon	30/12/1000 Bright flat Poly.	30/12/3400 Bright flat Poly.	6736	61.75"	104 x 2 x 92	2.600	2.000	4.600
Pure Silk Chiffon	20/22 Pure Silk Twist 1800 'S'	'Z' 20/22 Pure Silk Twist 3600 (One Side)	7620	61"	120 x 2 x 100	2.000	1.500	3.500
Organzine	2/20/22 Pure Silk Twist 400	2/20/22 Pure Silk Twist 400	5100	48"	104 x 2 x 112	2.700	2.500	5.200
Kosa Silk	50/36 Bright flat Poly. Sized	50/36 Bright Flat I.M. or 450-T	5400	50.75"	104 x 2 x 80	3.500	2.300	5.800
Kora Silk	50/36/1800 'S' & 'Z' Semi dull crimp Poly.	50/36 Bright flat 450-T	4920	50"	96 x 2 x 80	3.200	2.300	5.500
Masoor Silk	50/36 Bright flat Poly. Sized	50/36/1200 'S' & 'Z' Semi dull crimp Poly.	6000	49.5"	80 x 3 x 72	3.900	2.000	5.900 5.800

Quality Particulars of Some Popular Fabric Varieties

Quality	Warp	Weft	Total Ends	Reed Space	Reed x Pick	Weight		
						Warp	Weft	Cloth
Poonam	62/36/1770 '2S2Z' Semi Dull Crimp Poly	Same as Warp	3840	51.1"	72 x 2 x 68	3100	2500	5600
Dani Chiffon	20/6/1400 Full dull Nylon 'S' & 'Z'	Same as Warp	4080	40"	96 x 2 x 80	1.050	0.750	1.800
100 X 100 Georgette	100/44/1770 Viscose 'S' & 'Z'	Same as Warp	3276	50"	64 x 2 x 60	4.300	3.600	7.900 7.800
Marble Chiffon	50/48/2800 'S' Semi Dull Flat Poly	50/48/3025 'Z' Semi Dull Flat Poly	4600	58"	76 x 2 x 76	3.100	3.000	6.100 6.200
China Yoryu Saree	50/36 Bright Flat Poly Sized	50/36/2800 Semi Dull Flat Poly	6000	59"	100 x 2 x 80	3.900	2.900	6.800
Dechine Dress	50/36 Bright Flat Poly Sized	75/36/2150 Semi Dull Crimp Poly	6000	49"	80 x 3 x 80	3.900	3.600	7.500
Fuji Chiffon	30/12/1000 Bright Flat Poly	50/36/2800 Semi Dull Flat Poly	6100	58"	100 x 2 x 84	2.200	3.000	5.200
Silver Matt	84/34/400 Semi Dull Crimp Poly	84/34/'0' Twist Semi Dull Crimp Poly	4080	50"	80 x 2 x 80	4.200	3.700	7.900

Quality Particulars of Some Popular Fabric Varieties

Quality	Warp	Weft	Total Ends	Reed Space	Reed x Pick	Weight		
						Warp	Weft	Cloth
Sumo Satin	50/36/600 'S' Bright Flat Poly. / Sized,	50/24/1000 'S' Cationic Crimp Poly.	8800	51"	68 x 5 x 80	5.700	2.500	8.200
Summer \Cool	62/36/2200 'S' & 'Z' Semi dull crimp Poly.	Same as Warp	7200	53"	88 x 3 x 72	5.800	2.700	8.500
Cationic Dupion	50/24/800 'S' Cationic Crimp Poly.	160 Denier Dupion	3520	49"	68 x 2 x 60	2.500	5.300	7.800
Japan Crape	50/36/600 'S' Bright Flat Poly.	50/48 Crape 'S' & 'Z'	12000	52"	92 x 5 x 92	7.500	3.000	10.500
Italian Crape	60/100 Semi dull flat Poly. Sized	50/48 Crape 'S' & 'Z' 6000		55"	104 x 2 x 80	4.700	2.700	7.400
Pearl Silk	50/36 N.S.Y. Poly.	62/36/1400 'S' & 1560 'Z' Semi dull crimp Poly.	6000	49"	80 x 3 x 72	3.500	2.500	6.000



B-TEX Laboratory Engineering

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