

## TABLE OF CONTENTS

SI No	Contents	Page No.
1	Basic wet Processing Terms	2
2	Sequence of operations in Wet processing	3
3	Brief Note on Stenter machine	4
4	Details of stenter machine	4
5	Operating stenter machine	7
6	Instructions during shift changing	12
7	Importance of Health & Safety aspects	13

## 1. BASIC WET PROCESSING TERMS:

**ABSORBENCY:** The ability of one material to take up another material.

**BLEACHING:** It is a process to remove the natural and artificial impurities in fabrics to obtain clear white for finished fabric or in preparation for dyeing and finishing.

**CHEESE:** A cylindrical package of yarn wound on a flangeless tube.

**DENSITY:** The mass per unit volume

**DYEING:** It is a process of coloring fibers, yarns, or fabrics with either natural or synthetic dyes.

**DYES:** Substances that add color to textiles.

**EFFLUENT:** Waste water released after pretreatment, dyeing & finishing of Textile.

**FINISHING:** It includes various operations such as heat-setting, napping, embossing, pressing, calendaring, and the application of chemicals that change the character of the fabric.

**LUSTER:** The quality of shining with reflected light on textile material.

**pH:** Value indicating the acidity or alkalinity of a material.

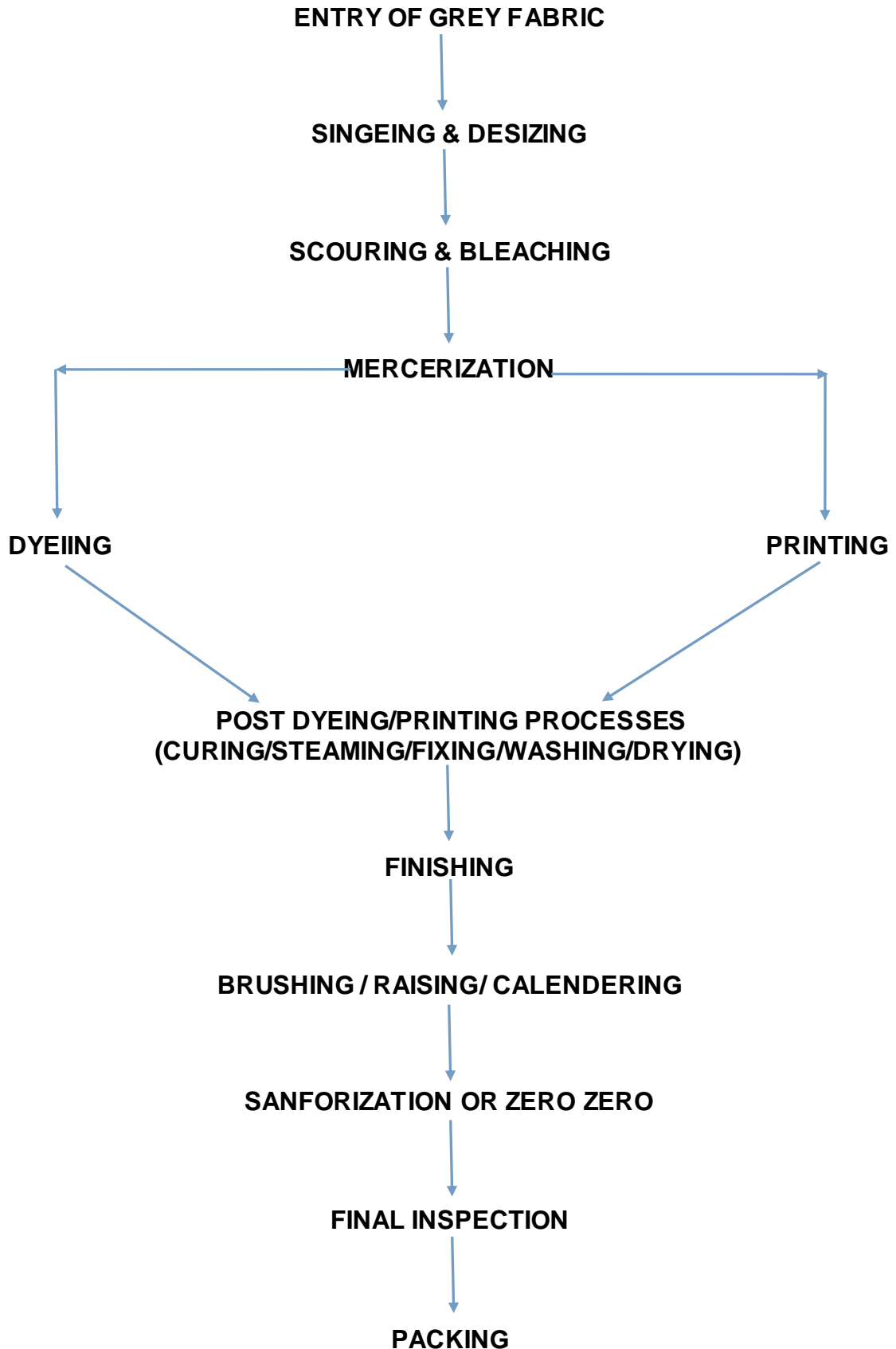
**PIGMENT:** An insoluble, finely divided substance, used to color fibers, yarns, or fabrics.

**SOFTENER:** A product designed to impart soft mellowness to the fabric.

**YARN:** A generic term for a continuous strand of textile fibers, filaments, or material in a form suitable for knitting, weaving, or otherwise intertwining to form a textile fabric.

**YARN COUNT:** Yarn count is the numerical expression of yarn, which defines its fineness or coarseness. (Linear density).

## 2. SEQUENCE OF OPERATIONS IN WET PROCESSING



### 3. Brief note about Stenter:

#### Stenter machine:

A Stenter is a fabric transport device for bringing dimensional stability to the fabric. This machine grasps fabric at both selvages simultaneously and continuously and carries it from one point to another. Two endless chains equipped with either clips or pins grasp the selvages and move in a proper way, carrying the fabric between them. The width between the two chains can be automatically adjusted by means of motor arrangements. A stenter is the best method of handling fabrics that require precise width control.

The following activities are carried out in stenter machine:

1. Application of finishing chemicals.
2. Drying and stretching
3. Curing
4. Heat setting
5. Pigment dyeing

### 4. Details of stenter machine:

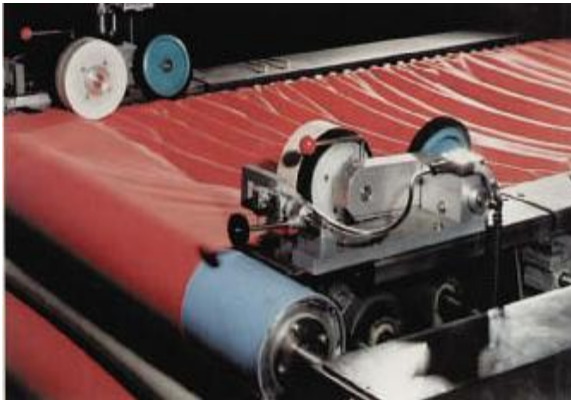
**Inlet J-scray:** This part is used to store the fabric during the batch change and Inlet unit contains various parts like tension device, draw roll, pressure roll and break roll. The important functions of the above rollers are to feed the fabric evenly throughout the machine.

**Padding mangle:** It contains chemical trough, guide rollers and squeezing mangle. Fabric is dipped into the finish chemical then sent to squeezing mangle. During this time finish chemicals are applied on the fabric and squeezes out extra chemicals from the fabric.

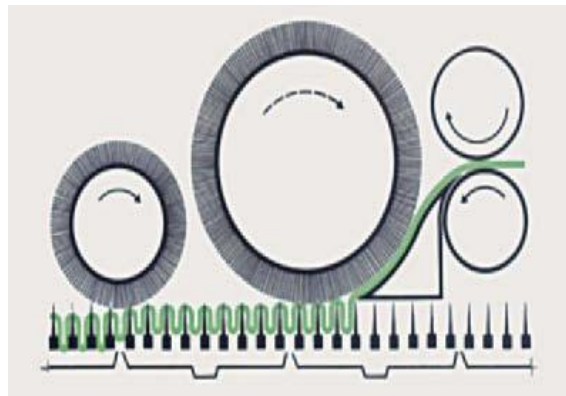
**Mahlo device (weft straightener):** It has two bow and three skew rollers which correct the skewness and bowing and make the weft yarns straight.

**Over feed system:** To give over feed or under feed of the fabric to respective chain track.

**Inlet chain track:** To aid proper pinning or clipping of the fabric.



**Inlet chain track**

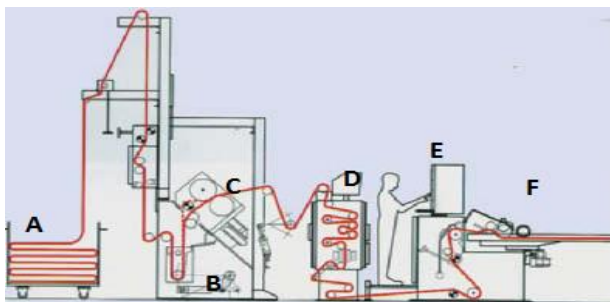


**Over feeding system**

**Drying chambers:** To dry the fabric or to fix the finishing chemicals by hot air from the blowers. The blower sucks hot air from radiator and blow it into the nozzles through which drying occurs. Inside the drying chamber also contains width adjustment spindle and pin/clip chain track.

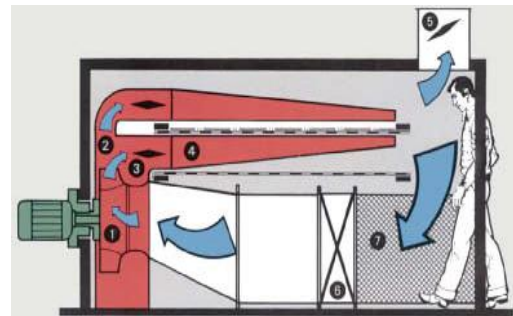
There are 8-10 drying chambers in stenter machine, each having 3 meter in length.

**Inlet feeding unit**

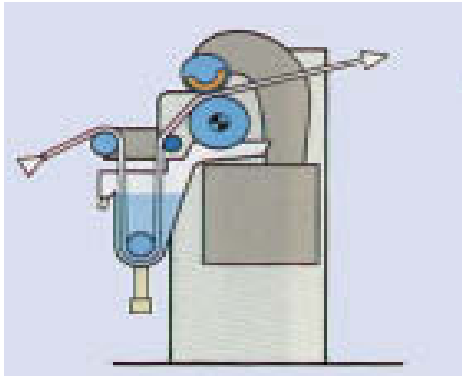


**A- Inlet feeding trolley, B- padding trough, c-squeezing mangle, D- Mahlo unit, E-operating panel, F- In feed chain track.**

**functioning of drying chambers**



**1-Air circulation fan, 2-distributor for upper and lower air flow  
3-throttle valves, 4- Nozzle boxes, 5-Exhaust air, 6-Heater,  
7-Fibre trapping filter**

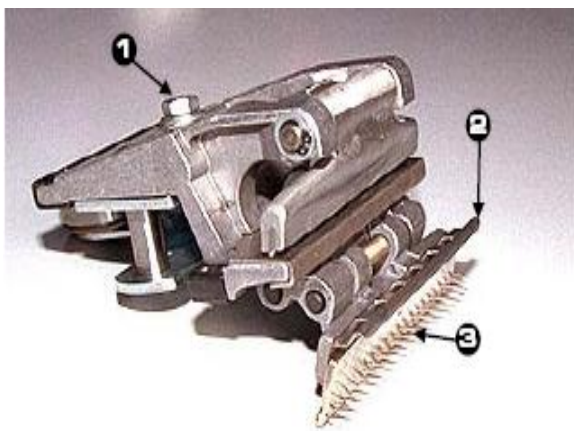


**Padding mangle**



**weft straighter**

**Pins & clip arrangement**



**Clip and pin together**



**Cleaning of clip and pin**

**Outlet chain track:** To facilitate de-pinning or De-clipping of fabric from pins/clips. And to give proper cleaning of the pins & clips.

**Batching and plaiting unit:** To wind the fabric on A-frame or plaiting of finished fabric in a suitable box/ trolley.

**Fabric requirements for finishing:**

- ABSORBENCY: 5-6 Seconds
- pH of the fabric : 5.5 to 7
- Temperature : 40°C or below

**Various finishes and their importance:**

**Soft finish:** This finish gives softness, good luster as well as smoothness to fabric.

**Resin finish (Crease resistance):** This reduces wrinkling tendency of cotton textiles as well as blends and avoids the necessity of ironing.

**Anti-microbial, dust mite finish:** This finish inhibits growth of microbes that causes unpleasant odour & helps textiles to maintain hygienity.

**Stain release/soil release finish:** This is a easy care finish which induces easy removal of soil & stains from the fabric during washing.

FINISH TYPE	General guideline for temperature setting in drying chamber No- 1-8 (°C)							
	1	2	3	4	5	6	7	8
SOFT FINISH	110	120	130	140	140	140	140	140
RESIN FINISH	110	130	150	160	160	160	160	160
WATER REPELLENT	110	130	170	180	180	180	180	180
AROMA FINISH	100	110	120	120	120	120	120	120

**5. Operating stenter machine:**



**Switch ON the main on panel**



**Open the steam, water and air valve**



**Find out the right batch for finish**



**placing the batch in the machine**





**Weighing of required chemicals**



**filtering the chemical**



**Proper feeding of fabric in chain track**



**Setting parameters in panel board**



**Inspecting of fabric final stage**



**Adjusting the machine settings**



**checking the width and other defects**

- ❖ Understand and follow the instructions from lot card and programme book.
- ❖ Switch ON main power and then open compressed air, water valve and thermic oil circulation.
- ❖ Check the quality and lot number of the fabric before putting on the machine by checking the label.
- ❖ Transport the dyed or printed fabric to be run, to the inlet feeding unit of stenter machine using hydraulic hand puller or electric truck.
- ❖ Stitch the two ends; one end is fabric to be finished and the other is the leader fabric in the machine.
- ❖ After stitching ensure the straightness of fabric without crease
- ❖ Ensure the required finish chemicals to be ready before starting stenter machine.
- ❖ Do chemical preparation in front of the shift in charge.
- ❖ Observe the defect in the fabric before and during the process and report to the supervisor if any irregularities observed.
- ❖ Adjust machine parts according to the parameters,
- ❖ Set the Speed of the machine according to instructions of supervisor (For normal finishing operation 80-100 m/min (meters per min), heat-setting, curing and other special finishes 15-50 m/min.)
- ❖ Check & ensure the level of finishing chemicals in padding mangle (normally 85%) and squeezing mangle pressure are set according to finishing type. Most of the finishing operation requires 65-85% of chemical pick-up.
- ❖ Keep Weft straightener (Mahlo) in ON and check visually the warp and weft pattern in the fabric are straight.

- ❖ Set over feed of the fabric in % (for mercerized qualities it may be set 0-4% and for unmercerised it can be 6-10 %.)
- ❖ Do not allow any selvedge folds or improper pinning/ clipping in the inlet chain track.
- ❖ Set the drying chamber temperature/blower fan speed based on finish required.
- ❖ Now check initially the width of each lot and set accordingly final required width, gradually increase in each chamber.
- ❖ In last chamber keep width 1 inch or (as per supervisor's instructions) more than the required width.
- ❖ Maintain required moisture content in finished fabric.
- ❖ Check for various process damages in the finished fabric like stains – dust, chemicals, rust, handling stains, crease, water dropping, oil, grease, etc.

#### **Cleaning in Stenter machine**

- ❖ Remove regularly accumulated dust and dirt from the machine.
- ❖ Clean all the rollers with the dry fabric.
- ❖ Clean the Drying chamber filter in every shift.
- ❖ Clean the Stenter inlet sensors and fabric guides properly.
- ❖ Clean all the pin/clips once in a day (or as specified by the supervisor) for effective width adjustment.
- ❖ Collect the waste from all cleaning activities and store at designated place .

## **6. INSTRUCTIONS DURING SHIFT CHANGE OVER:**

### **Taking charge of duties while starting of shift:**

- ❖ Come at least 10 - 15 minutes earlier to the work place.
- ❖ Meet the previous shift operator and discuss regarding the issues faced by them with respect to the quality or production or spare or safety or any other specific instruction etc.
- ❖ Understand the fabric being processed & process running on the machine .
- ❖ Ensure technical details are mentioned on the job card & display in machine.
- ❖ Check the next batch fabric to be processed is ready near the machine.
- ❖ Check the cleanliness of the machines & other work areas.
- ❖ Question the previous shift operator for any deviation in the above and bring the same to the knowledge of the shift superior.

### **Handing over charge at the end of shift:**

- ❖ Properly hand over the shift to the incoming operator.
- ❖ Provide all the details regarding Fabric quality & the process running on the machine.
- ❖ Provide all relevant information regarding the stoppages or breakdown in the machine, any damage to the material or machine.
- ❖ Ensure the next lot to be processed is ready near the machine
- ❖ Get clearance from the incoming counterpart before leaving the work spot.
- ❖ Report to the shift supervisor in case the next shift operator do not report for the shift.

- ❖ Report to the shift superior about the quality / production / safety issues/ any other issues faced in the shift and leave the department only after getting concurrence for the same from superiors.
- ❖ Collect the wastes from waste bags, weigh them & transport to storage area.

**7. Importance of Health and Safety:**

- ❖ Use and maintain personal protective equipment such as Hand Gloves, Gum Boots, head cap etc., as specified.
- ❖ Never handle chemicals with bare hands
- ❖ Report any service malfunctions in the machine that cannot be rectified to the supervisor.
- ❖ Store materials and equipment at their designated places.
- ❖ Minimize health and safety risks to self and others due to own actions .
- ❖ Monitor the workplace and work processes for potential risks.
- ❖ Do not carry any metallic parts during machine running as there are chances of fire and damage to machine parts.
- ❖ Take action based on instructions in the event of fire, emergencies or accidents, participate in mock drills/ evacuation procedures organized at the workplace as per organization procedures.