

TC HLM 03

BLOCK PRINTING OPERATOR



Developed by Textiles Committee, Resource Support Agency, for exclusive distribution and use for trainees under Integrated Skill Development Scheme of Ministry of Textiles, Government of India

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## 1. BASIC TEXTILE WET PROCESSING TERMS

**ABSORBENCY:** The ability of textile material to take up water particle.

**BLEACHING:** It is the process to remove the natural and artificial impurities in fibres, Yarns or fabrics to obtain clear whiteness.

**DEFECTS:** A general term that refers to some flaw in a textile product that detracts from either performance or appearance properties.

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

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

**FINISHING SPOT:** A discolored area on a fabric caused by foreign material such as dirt, grease, or rust.

**LUSTER:** The quality of shining with reflected light.

**MERCERIZATION:** A treatment of cotton yarn or fabric to increase its luster and affinity for dyes. The material is immersed under tension in a cold sodium hydroxide (caustic soda) solution.

**MIGRATION:** Movement of dye from one area of dyed fabric to another.

**SATURATION:** The maximum intensity or purity of a color.

**SELVEDGE:** The narrow edge of woven fabric that runs parallel to the warp. It is made with stronger yarns in a tighter construction than the body of the fabric to prevent raveling.

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

**PRINTING:** It is the process of applying colour to fabric or yarn in definite repeated patterns or designs.

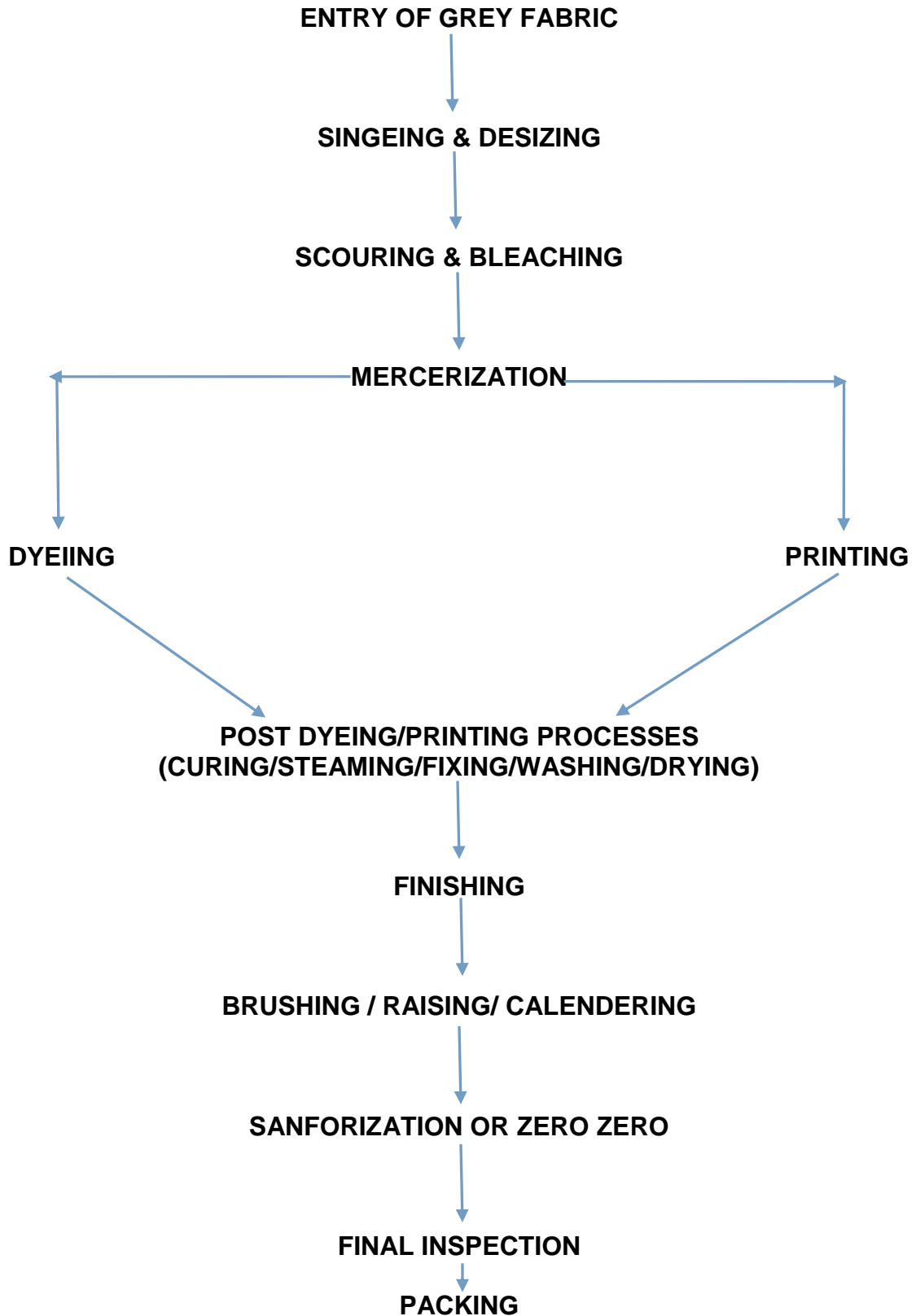
**SOFTENER:** A product designed to impart a soft mellowness to the fabric.

**STITCHING:** The process of passing a fiber or thread through the thickness of fabric layers to joining them.

**WEAVING:** The method or process of interlacing two yarns of similar materials so that they cross each other at right angles to produce woven fabric.

**WIDTH:** A horizontal measurement of a material. In woven fabric, it is the distance from selvage to selvage, and in flat-knit fabric, the distance from edge to edge from selvage to selvage, and in flat-knit fabric, the distance from edge to edge.

## 2. SEQUENCE OF OPERATIONS IN WET PROCESSING



### 3. Brief note on Hand Block Printing:

The first textile-printing technique (making impressions) was that using blocks with raised printing surfaces, which were inked and then pressed on to the fabric. By repetition, the image from a single block builds up into a complete design over the fabric area. Some early blocks were made of clay or terracotta, others of carved wood. Wooden blocks carrying design motifs were found in tombs near the ancient town in Upper Egypt. A combination of block printing and painting (usually described as penciling) was used for some time. The biggest problem was that of achieving bright and fast colours. Madder (madder is a fast, rich red colour natural dye stuff obtained from the root of a herb) was the most important dye that was able to satisfy the need.



The major centers in India where block printing is done on a large scale are as follows:-

- ✓ Gujarat (Surat, Ahmedabad, Sangner, Pethapur).
- ✓ Rajasthan (Bagru).
- ✓ Andhra Pradesh.
- ✓ Uttar Pradesh (Farukhabad).
- ✓ West Bengal



#### 4. Details of Hand block Printing

##### Block making:

The typical hand block print had no large, uniform areas of colour but was skillfully built up from many small coloured areas, because wooden surfaces larger than about 10 mm in width would not give an even print. This had the advantage that a motif such as a flower would have an effect of light shade obtained from three or four blocks, each printing a different depth of the same colour or shade.

A fairly hard wood was required, such as pear wood, and four or five layers were usually glued together with the grain running in different directions. The design was traced on to the surface and a fine chisel used to cut away the nonprinting areas to a depth of perhaps 1 cm. To obtain more detail from some blocks, strips and pins of copper or brass (more usually) were hammered into the wood.

In the 19th century some blocks were made with the printing surface entirely in brass, which gave very delicate prints. Another technique used for complex designs was to prepare a mould to cast the image from molten type metal, fasten the casting to the block, and then grind the surface perfectly flat.

When large areas of solid colour were required, the areas within metal or wooden outlines were filled with felt, which would absorb and print the paste uniformly. Finally, each block required corner 'pitch pins' which printed small dots; these allowed the succeeding blocks to be correctly positioned by accurately locating the pitch pins above the already printed dots.



**Different techniques of hand block printing:**

**Discharge printing:**

In this technique before the printing is carried out first the fabric is dyed to desired colour, then the dye is to be removed at selected places by chlorine or other colour destroying chemicals (which yields a white pattern on a coloured ground) from the part of the fabric where the design is to be printed. Coloured patterns on a dyed ground are possible in this method by adding to the bleaching paste a dye not affected by the bleaching agent used, so that another colour is substituted for white on the dyed ground.



**Discharge print effect**



**Discharge print effect**



**Discharge print effect**



**Discharge print effect**

**Direct block printing:**

The fabric is first bleached and then dyed with desired colour. After that the hand block printing is done with carved wooden blocks in borders and in the inside of the fabric.





## Resist printing:

In resist printing the design desired, is printed on the fabric with a material (Wax or resin) which will resist dyeing. The fabric is then dyed with desired colour. Washing after dyeing removes the resist material in which design is printed leaving a white pattern like the following print effect is achieved on the fabric.



Rich and colourful prints can be created through block printing. In olden times it was done with natural dyes but now a days, it is done with artificial colours and synthetic dyes. The colours commonly used for printing are saffron, yellow, blue and red. The wooden blocks are used for printing.

They are of different shapes and have designs carved at the bottom of the block. Teak wood is used for making them on which designs are made by skilled craftsman. These blocks are known as 'Bunta'. Every block consists of a wooden handle and 2-3 holes which are made for the purpose of free movement of air. The blocks before taken into use are kept in oil for 10-15 days, which provide them the required softness.

**5. Operations involved in Hand Block Printing (Step by step):**



**A. Sketch the design on the wood**



**B. Small-tipped knives for engraving**



**C. Making the design on the wooden block**



**C. Making the design on the wooden block**



**D. Application of paste on block**



**E. After printing on fabric**

- Select the fabric batch for printing as instructed.
- Wash the fabric selected and bleach if required as per instructions
- If the borders are to be made, tie the cloth at the border area and take for dyeing as instructed.
- When the fabric is ready for printing spread the fabric on the printing table and fix firmly with small pins on the table
- While spreading ensure that the fabric is laid on the table uniformly and no crease/hold is there.
- Keep the colour tray ready with required colours of proper mixing as instructed by supervisor.
- Dip the wooden block up to design level in the colour tray to transfer colour on the design portion of the wooden block.
- Ensure to evenly immerse the design portion of hand blocks.
- Ensure to avoid over inking or an evenly inked block.
- Now take the ink immersed hand block on the fabric and apply (printing on fabric) by pressing it hard on the cloth in an uniform manner.
- Always commence the process of block printing from left to right.
- Repeat the printing by following the point marked on the block which facilitates sequential order of printing on the fabric
- Ensure to make uniform repeats of design as instructed and avoid an evenly placing of blocks on the fabric.
- Follow the instructions of supervisor and skilfully print to get uniform and clear

block printing motifs on the fabric.

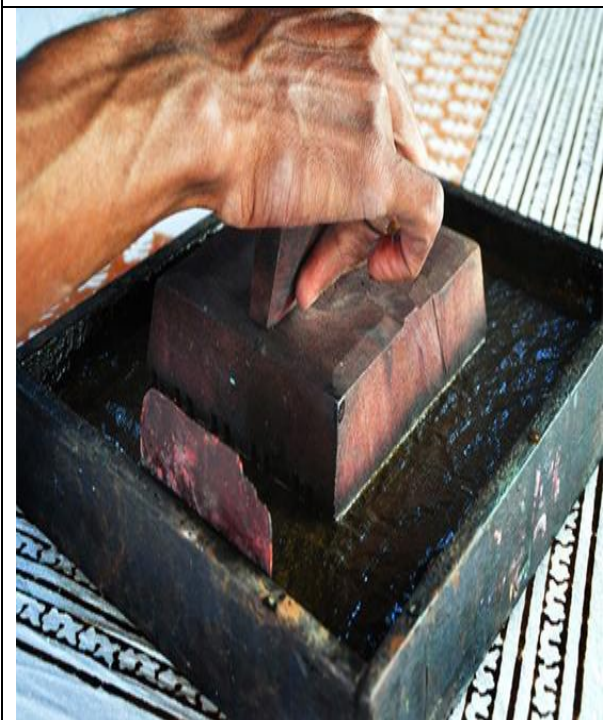
- Single colour printing shall be done by one operative and takes less time for printing.
- In case of multiple design / colour printing carry out printing with the help of additional operatives.
- In block printing, it is not easier to bring colour variations. Bring colour variations as instructed.
- If testing of colours is requirement for their fastness before applying on the fabric, ensure to get the sample tested and the reports are approved by supervisor to proceed further.
- Confirm with supervisor which type of dye is to be used, as there are different types of dyes are used for printing cotton fabric- such as indigo sol, pigment dyes and rapid fast dyes.
- In case of rapid dyes once prepared for printing have to be utilized on that day itself and can not be stored, hence confirm with supervisor what is the quantity to be mixed for printing.
- The Pigment colours are commonly used as its procedure for usage is simpler compared to other dyes.
- The other advantage is after mixing pigment colours for printing, it is not necessary to use the mix on the same day, as they can be stored in containers having lids for some time.
- Before application for printing the pigment colours mix in right proportion with kerosene and binder as instructed.
- It is the operator's responsibility to ensure about proper proportion of mixing as per supervisor's instructions before applying for printing.



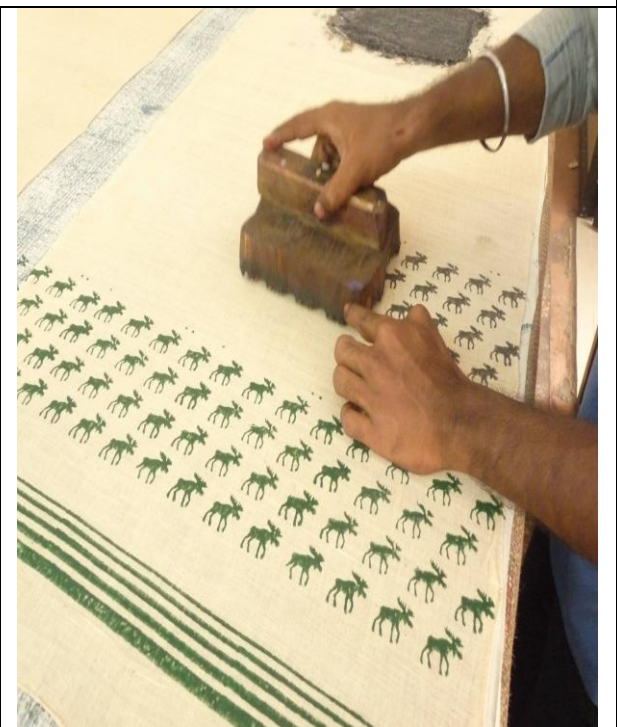
- If new shades to be obtained by combination of basic colours confirm with supervisor for different proportions to be followed.
- The drawbacks of pigment colours are that, they consists of tiny particles which don't dissolve completely as a result, minute residues are left on the fabric, while applying pigment colours be extra cautious to avoid quality problems because of tiny particles.
- Indigo sols and rapid dyes normally get completely soaked into the cloth and work as instructed for these dyes. Indigo sols do provide vibrant colours like pinks and greens.
- After printing dry the printed material in sun, to fix the dye to the cloth.
- After drying, roll each layer of cloth in newspaper and steam them in boilers.
- This procedure of steaming is to be done for all kind of fabrics.
- After steaming process, take the fabric for washing
- Follow the no. of washes as instructed by supervisor.
- Once washing is completed take the fabric for drying in sun
- Dry in sun shine for no. of hours as instructed by supervisor.
- Finally iron the steamed, washed and dried fabric as instructed.
- While ironing ensure to keep the folds as instructed.
- This whole procedure fixes the print permanently on the material printed. Various garments like saris, kurtas, shirts, salwar kameez, dupattas, skirts, etc are made from block printed fabrics.



**Various designs of blocks**



**Application of colour on block**



**Application of colour on fabric**

### **Cleaning operation while printing:**

- ❖ Remove regularly accumulated dust and dirt on the fabric to be print.
- ❖ The print table is free from dust particles.
- ❖ While placing the fabric on the print table it should be free from crease and folding. And the fabric is free from all kind of defects.
- ❖ The dyes and other chemicals are transported in a proper way.
- ❖ All the waste is to be collected and disposed in a systematic way.
- ❖ The collected waste to be stored in a proper place and should be transported to 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, printing design or type of colour used or safety or any other specific instruction etc.
- ❖ Understand the design being printed & the fabric on the print table.
- ❖ Ensure the print paste is prepared as per requirement.
- ❖ Ensure the next batch to be printed is / will be ready near the print table.
- ❖ Check the cleanliness of the printing table, Hand Blocks & 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 the details regarding fabric quality & the design to be printed.
- ❖ Provide all relevant information regarding the problem faced if any during the shift.
- ❖ Inform about the next lot to be printed to the incoming operator as per the instructions of the supervisor.
- ❖ Get clearance from the incoming counterpart before leaving the work spot.
- ❖ Report to the shift supervisor in case the next shift operator doesn't report for the shift.
- ❖ Ensure to hand over the shift properly to the incoming shift operator.
- ❖ Report to the shift superior about the design / production / safety issues/ any other issue faced in the shift and leave the department only after getting concurrence for the same from supervisor
- ❖ 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.
- ❖ 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.
- ❖ 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.