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1. BASIC TEXTILE 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.

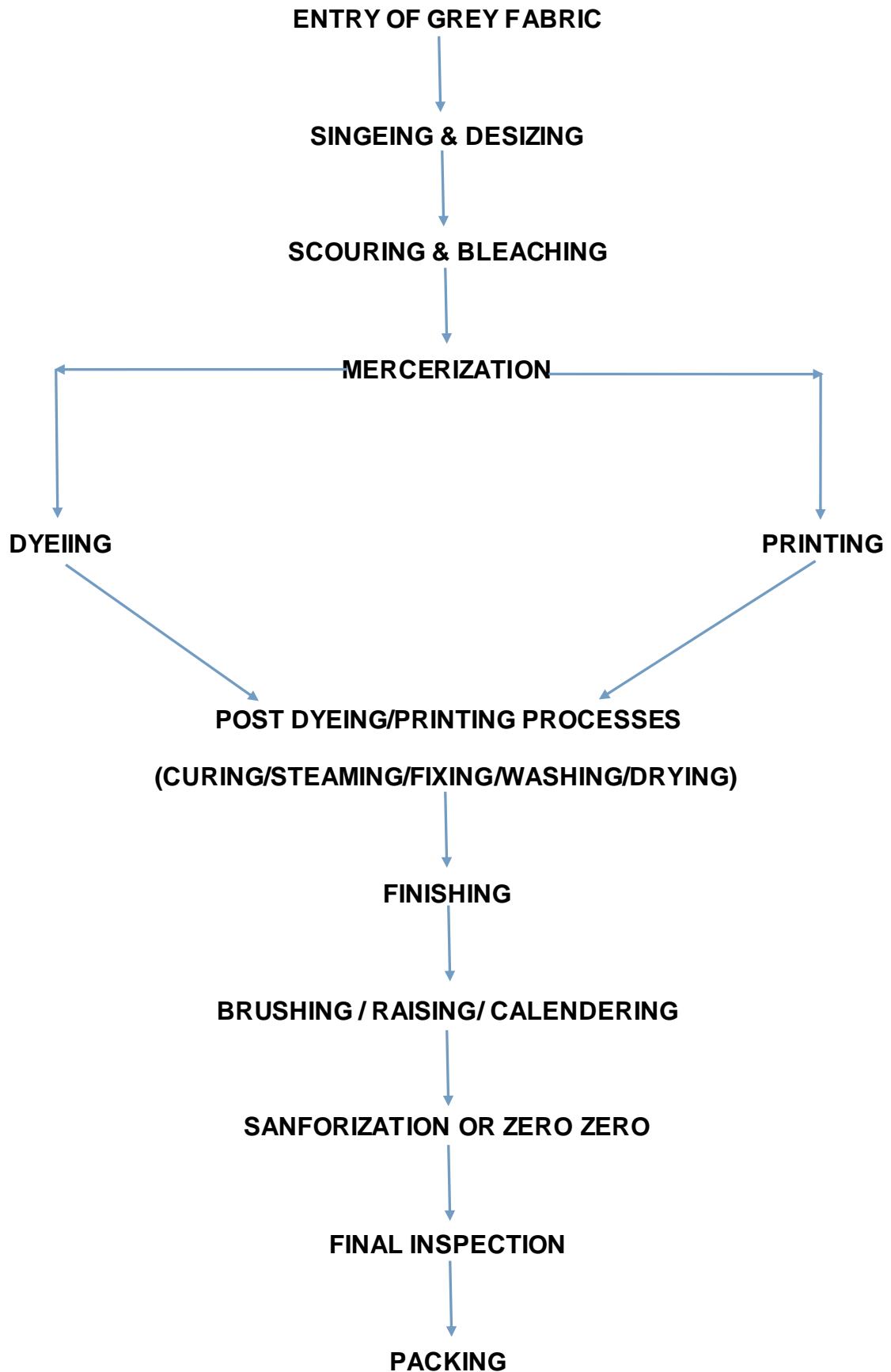
PIGMENT: An insoluble, finely divided substance, used to color fibers, yarns, or fabrics.

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 ON SINGEING MACHINE:

Singeing and its importance:

The aim of singeing is to bum-off the protruding fibres / hairiness of yarn in the fabric surface. The amount of protruding fibres in the fabric surface varies according to yarn counts (Higher the yarn count lower the protruding fibres level & vice versa).

Importance of singeing

1. Singeing improves the end use and wearing properties of textiles.
2. The burning-off of protruding fibres results in a clean surface of fabric.
3. Dyed fabric appearance becomes brighter as singeing reduces the fogginess caused by differing reflection of light by the protruding fibre .
4. Singeing is an effective means of reducing pilling in blended fabrics.
5. Unsinged fabrics soil more easily than singed fabrics.
6. A closely singed fabric is essential for effective printing.

Types of singeing:

1. Hot plate singeing
2. Roller singeing
3. Gas singeing

Hot Plate Singeing:

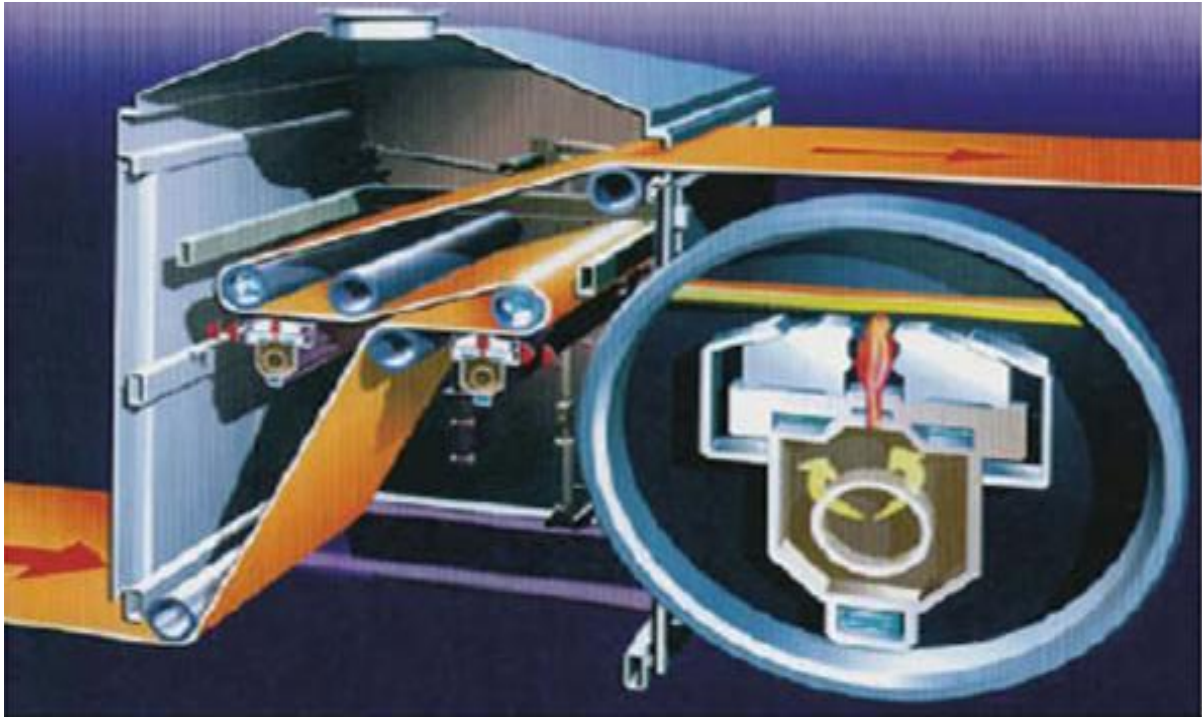
Dried Fabric is made to pass over the heated bright red plates at speeds up to 200 yards per minute, according to quality which burns out the protruding fibres and provided clear fabric surface.

Roller Singeing:

In this type of singeing machine the cloth passes over a hollow cylinder which revolves slowly in the opposite direction of the goods. The hollow cast iron or copper cylinder is fired internally. The fabric gets singed and runs through water bath for quenching and plaited.

Gas singeing:

The most common singer is a row of gas burners arranged so that the material passes rapidly through the open flame and it burns out the protruding fibres from the fabric surface. While singeing is a simple process, care must be taken to not damage the fabric.



4. Details of fabric singeing machine:

1. Inlet feeding unit: To feed the fabric into the machine It has guide bars ensuring smooth passage of fabric and one compensate (fabric tensioner) to set the necessary fabric tension.

2. Selvedge guide: To align fabric centrally and It helps in passing the fabric without folds into the machine.

3. Brushing unit: Cleans the running fabric and raises the loose fibres, It has two rotating brushing rollers, which rotate in a direction opposite to that of fabric passage. The fabric gets cleaned and the loose fibres also get straightened up to face the flame for singeing

4. Dust collector: Dust Collector is a cyclone separator in which the dirt (fluff) coming from Brushing unit gets collected into Dust bag.

5. Burner unit : It burns protruding fibres coming out from both sides of fabric. This unit has two burners with direct gas supply. LPG (liquefied Petroleum Gas) is used in burners to burn the protruding fibres. Both the burners can be turned into three different positions to get singeing positions.

Position A – Singeing directly on to the freely guided fabric.

Position B – Singeing on roller

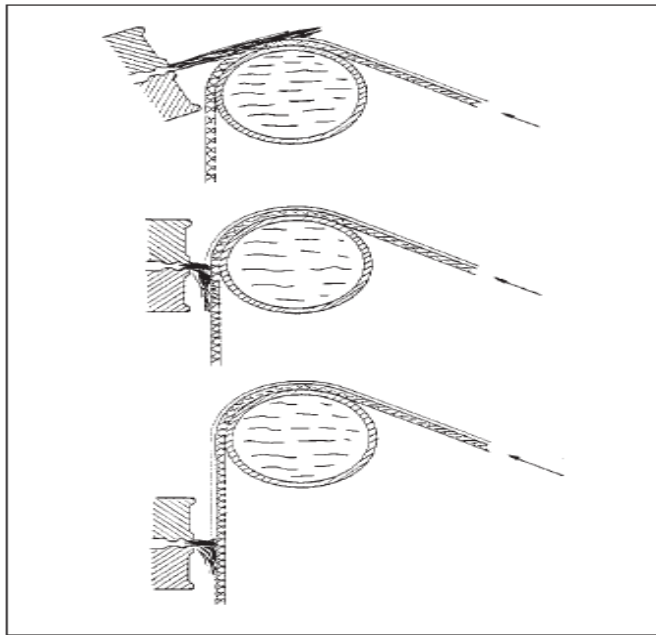
Position C – Tangential singeing

6. Spark extinguisher roll :To extinguish glowing or burning fabric selvages The selvedge guiding ribbons are pressed against burning selvages, to extinguish the spark.

7. Pulling device: For transport of fabric through machine (to pull the fabric) It reduces the fabric tension throughout the machine. It has a compensator / dancer which adjusts the fabric tension and trips if the tension in the fabric goes beyond the tolerance limit.

8 Beating unit: Cleans the running fabric by removing burnt-off fibres It consists of two rotating beating rollers which rotate in opposite direction to the direction of passage of fabric. The small burnt-off fibres fall into the suction tubes and go into Air Washer (Wet Filter).

9. Air washer / water filter: Air washer consists of 2 spray pipes for spraying cold water on the burnt-off fibres coming from the Beating unit. The burnt-off fibres thus become wet and settle down due to gravity (which can be drained) while the cleaned exhaust is led to waste collection point.



Various position of burner in Gas-singeing

Various parts of singeing machine:



Brushing unit



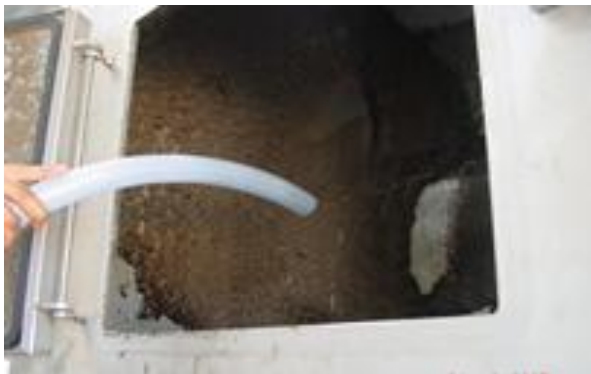
Beating unit



Burner unit



Selvedge spark extinguisher Roll



Air washers



Batching unit

5. Operating of singeing machine:



Placing the batch in machine



switch on the power panel

14/03/07 15:02:13

Machine speed: 80

Flame Intensity: 13.0

100

0m/min

0.3mbar

32°C

37°C

14 3 2007

Machine speed

Flame Intensity

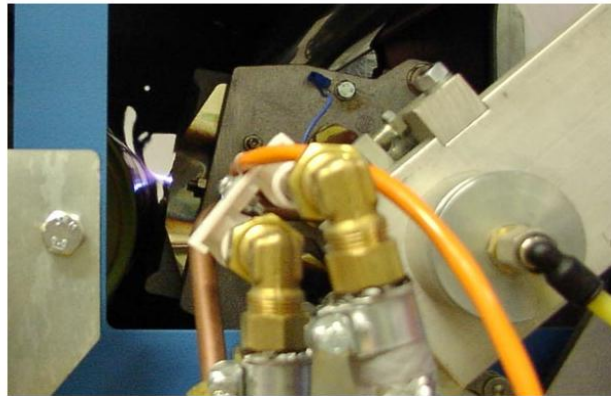
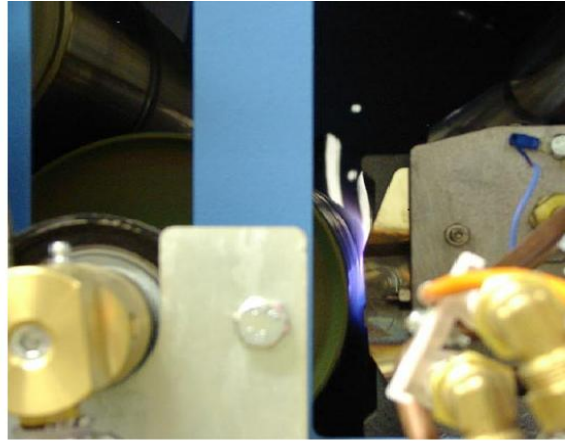
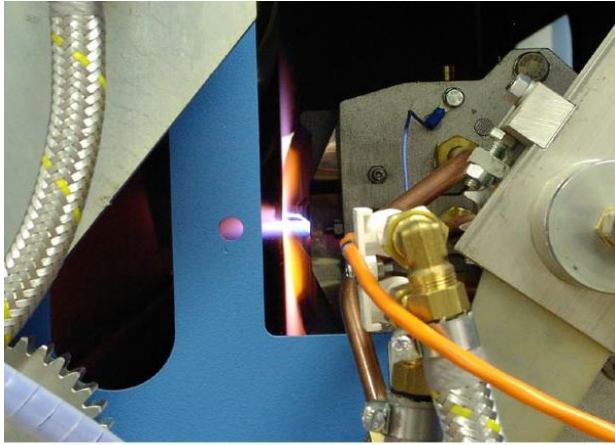
Burner Position

No. of Burners

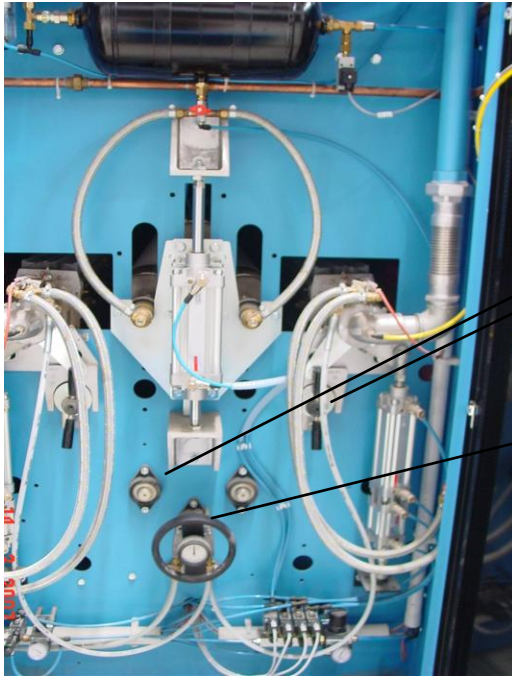
Temp. of Cooling Water

The image shows a touch screen control panel for the singeing machine. The screen displays various parameters and controls. At the top, the date and time are shown as 14/03/07 15:02:13. Below this, there are several control elements: a dropdown menu, a speed control set to 80, a flame intensity control set to 13.0, a temperature control set to 100, a pressure control set to 0.3mbar, and a temperature control set to 32°C. There are also buttons for "0m/min", "3", and "37°C". At the bottom, there are buttons for "Burner Position" and "No. of Burners". The date 14 3 2007 is displayed in red at the bottom right of the screen.

OPERATING (TOUCH SCREEN) PANEL



Three various positions of flame



Distance between burner & fabric

Flame width adjustment

Flame setting adjustments

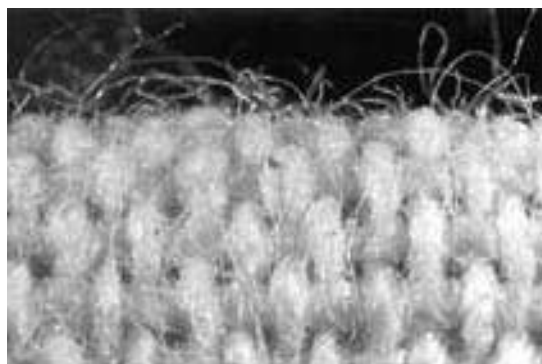


Parameters adjustments

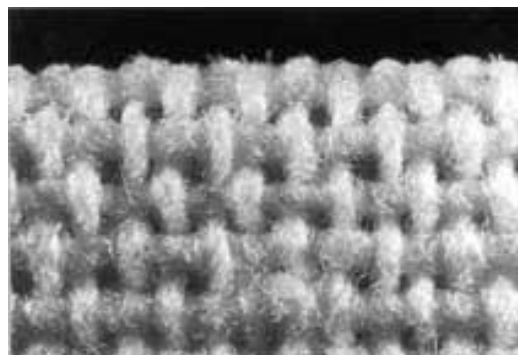


out batch without crease

Effect of singeing



BEFORE



AFTER

- ❖ Understand and follow the instruction from lot card and programme.
- ❖ Transport the grey fabric to be run, to the inlet feeding unit of singeing machine using hydraulic hand puller or electric truck from the grey batching section.
- ❖ Adjust machine parts according to the following parameters.
- ❖ Ensure the speed of the machine, speed can vary depends upon the quality fabric.
- ❖ Flame position: **Position A** -On fabric - medium and heavy weight fabric, **Position B** -On Roller - For light weight fabric, **Position C** -Tangential - For blended varieties.
- ❖ Set the flame to fabric distance and intensity of the flame according to fabric quality (for higher gsm- close distance and higher intensity of the flame may be maintained.)
- ❖ Set the Width of the flame according to width of the fabric.
- ❖ Set the brushing and beating roller according to the quality of the fabric processed. (Closer setting for heavy constructed material and vice versa.)
- ❖ Set all the above parameters in main panel of the machine.
- ❖ While running all the above set parameters to be verified from the panel board.

- ❖ Check for proper working of exhaust system.
- ❖ Feed dried fabric evenly & uniformly before singeing.
- ❖ Inspect feed fabric and outlet fabric continuously with the help of other operator.

Cleaning in singeing machine:

- ❖ Remove regularly accumulated dust and dirt from the machine.
- ❖ Clean all the rollers with the dry fabric while starting and at the end of the shift.
- ❖ Clean the Burner slots by means of cleaning gauge, and other equipment.
- ❖ Clean the Interior of the Brushing, Beating units and other rollers properly
- ❖ Clean the interior of the wet filter; check function of the spray nozzles.
- ❖ Collect all the waste 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 instructions 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 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 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 doesn't report for the shift.
- ❖ Report to the shift supervisor about the quality / 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
- ❖ 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, and participate in mock drills/ evacuation procedures organized at the workplace as per organization procedures.