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1. Basic Textiles terms

Yarn	Basic raw material for weaving
Type of yarn	Single ply, double ply and multiply
Yarn count	Defines thickness of yarn. Higher the count, finer the yarn
Warp	Lengthwise yarn in the fabric.
Weft (filling)	Width wise yarn in the fabric.
Selvedge	Edges of the fabric running lengthwise
Woven Fabric	Woven fabrics are made by using two or more sets of yarn interlaced at right angles to each other.
Knitted Fabric	Knitted fabrics are formed by series of interlocking loops (example: knit wears)
Sewing Thread	Thread is a type of yarn used for sewing.

2. Fusing

- Fusing or otherwise known as interfacing gives support and stabilizes areas of a panel ready to be attached to a garment. Interfacing is also used for reinforcing and preventing fabric from stretching.
- It is a process of attaching an interlining, especially to the part of a garment that requires stiffness.
- Some of the application areas of Fusing in a garment are placket, collar, cuff, waistband, men's jacket forefront, etc.

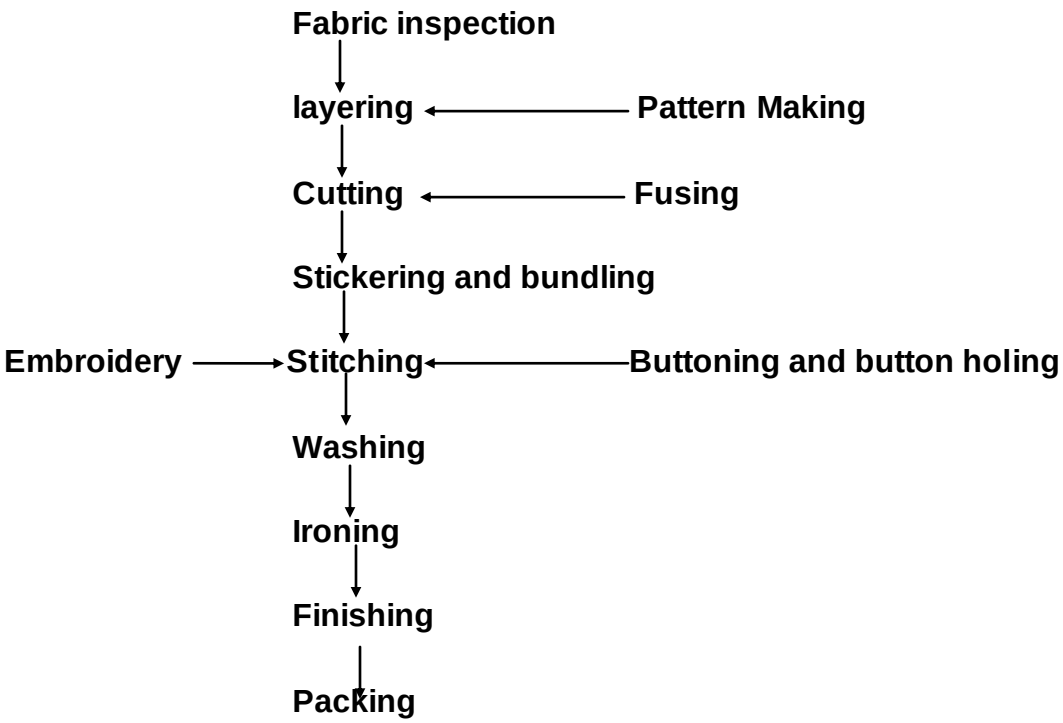
Ironing

- It is the process of using an iron to remove wrinkles from damp, washable clothing. Heat and pressure are used to flatten the fabric.
- Ironing is done with a gliding or sliding motion. It is done to entire garments after laundering.

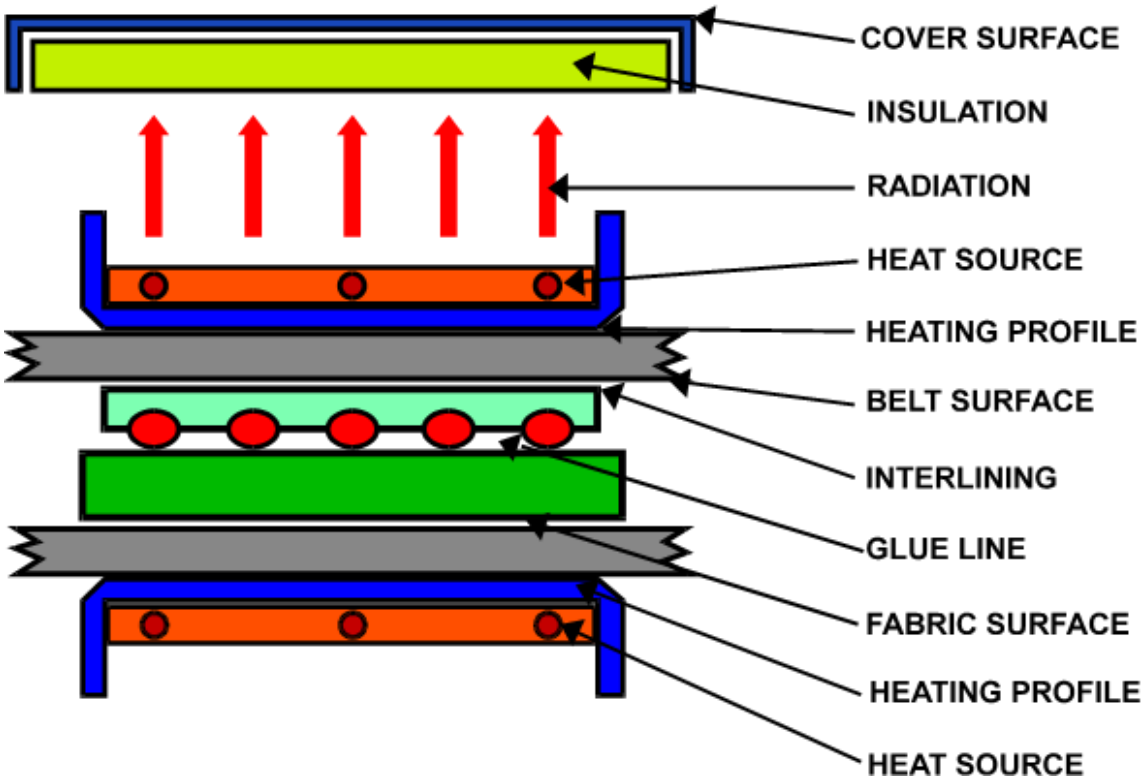
Pressing

- Involves no sliding of the iron. The iron is placed on the fabric and then lifted. Moisture is added from a pressing cloth or steam in the iron.
- This procedure is good for wool clothing and loose or bulky textures. It is also done while constructing garments.

➢ **Sequence of Operations In Garment production**



3. Fusing MACHINE



Requirements for Fusing

- The laminate produced by fusing should show the aesthetic qualities required by the designer in the finished garment.
- The strength of bond of the laminate must be sufficient to withstand handling during subsequent operations in the garment manufacturing process as well as the flexing which takes place when worn.

- Fusing must takes place without either strike-through or strike back occurring. When the softened adhesive resin is pressed into the garment fabric, it is important that it does not go right through to the face side of that fabric, and that it does not go back to the outside of the interlining base cloth.
- The fusing process must not cause thermal shrinkage in the outer fabric. Fusing commonly takes place at around 150^{o}c and at this temperature many fabrics may subject to thermal shrinkage.
- A further possible effect of the heat of the fusing process is that of dye sublimation. Fabrics may change colour to a level which is unacceptable and in a way which causes a miss-match between the fused and un fused parts of the garment.

Base Cloth + Resin ⟹ **Coating System** **Interlining**

It is an interlining material onto which the thermoplastic resin is coated, sprayed or printed.

Properties of Garment which are influenced by fusing process:

- Handle and Bulk
- Shape Retention
- Shrinkage Control
- Crease – Recovery
- Appearance
- Durability

➢ **Different type of Resins are like- Polyester, PVC resins etc.,**

Methods of Fusing

Single Fusing

- Fusible positioned on the top of the Cloth

Reverse Fusing

- Cloth is Positioned on the top of Fusible

Sandwich Fusing

- Fusing 2 components in 1 operation
- Cloth on the outside, 2 fusible in the middle

Double Fusing

- Fusing 2 fusible positioned one on the top of other, to the top cloth in 1 operation

Top Fusing

- Fusible components are positioned on the top of the cloth and heat applied directly to the top cloth

4. Fusing Equipments

Flat Bed Press

Padded top and Bottom bucks
Heating Element in 1 or both bucks
Bottom Buck Static, Top buck can be moved vertically Option of Single tray and Twin tray systems. Low Productivity
The three processes are Loading, Fusing and Cooling.

Continuous Fusing Machine

Use of Conveyor Belt as a mean of transport Synchronized belt speed
Heating plates, cylinder, rollers, and heating zones are used
Rubber covered steel rollers to apply pressure
Air cooling and water cooling systems
Take off could be done manually or mechanically

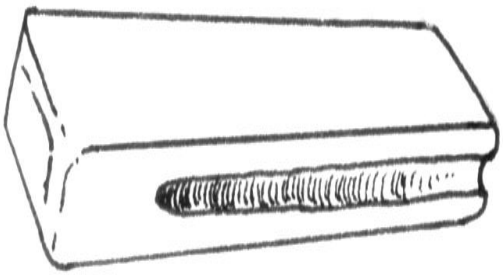
High Frequency Fusing

Multiple plies are stacked up (up to 70 mm height) and fused simultaneously
High Productivity
Heat from high frequency energy
No shrinkage or color change

Dielectric heat: plates generate high frequency field, heat effect is distributed uniformly in length ,width and full height between platen

Heating effect is different for different polymers

Adhesive is heated up faster than fabric or interlining

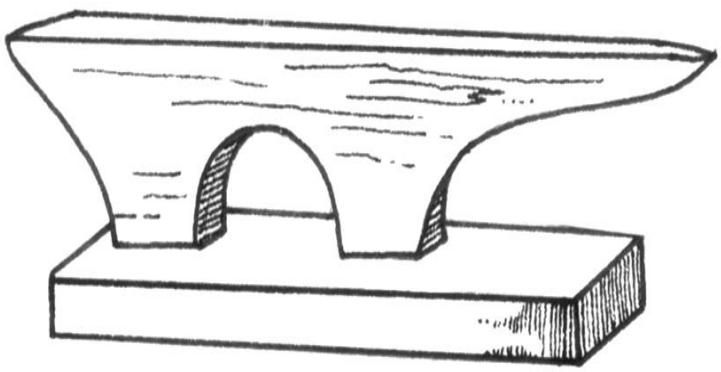


➢ Parts of Ironing Machine

Point Press

- It is a proper pressing equipment to achieve a more professional finish:
- The **point press** is made of hard wood and is used to press points, curves and straight edges.
- It enables one to press seams flat and open without wrinkling the surrounding area.

Sleeve Board



- The **sleeve board** is designed for pressing small or slim areas, such as sleeves, that do not fit over your regular ironing board.
- It should have a silicone cover and padding.

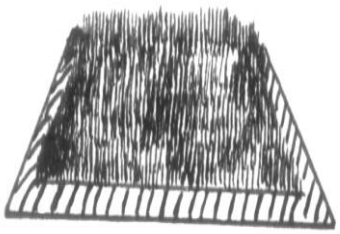
Clapper

- The **clapper** is a block of smooth wood. It is used along with steam to flatten seam edges and a “must” for tailoring.
- To use, make as much steam as possible with steam iron and/or iron with a damp press cloth.
- Remove iron quickly while steam is still present and pound area firmly. Regulate your pressure to suit the desired edge.
- Do not use clapper on fabrics with pile or hair, as the pile will crush or the fibers may break.

- An 8-10" piece of hardwood 2 x 4 makes a good substitute for a commercial clapper.

Needle Board

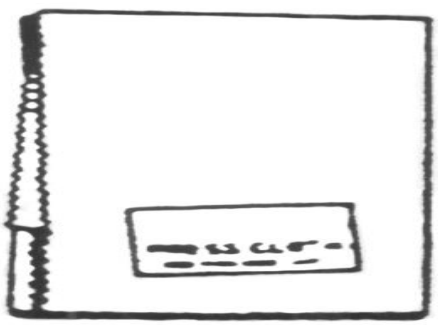
The **needle board** is used to press pile and easily marred woollens fabric to prevent them from flattening.

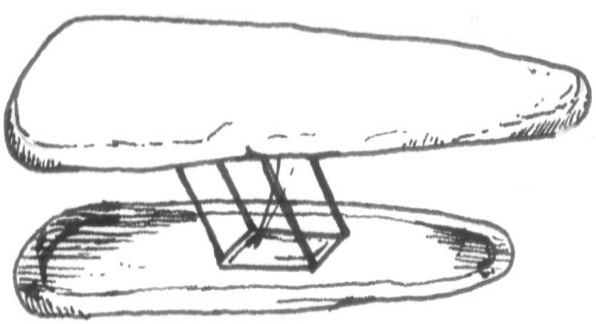


- The fabric is placed face down on the board so that the pile falls in between the needles.
- Sometimes a heavy terry bath towel can be substituted when a needle board is not available.

Press Cloth

- The press cloth is one of the most important pressing items. It is used to prevent shine and to protect your fabric from direct heat.
- A cloth that is approximately 12 x 18" makes a good size.
- Generally, a wool cloth is best to hold the moisture when pressing wool, firm cotton is great for cottons, and medium weight blends. A large piece of cheese cloth can be folded, manipulated and adapted to most pressing situations.





5. Prepare for ironing operations

Power on off in Ironing machine

Switching On the Steam pressure

Start Ironing

- Make sure the work area is free from hazards
- Follow the instructions on the work ticket/ job card in line with the responsibilities of respective job role
- Ask questions to obtain more information on tasks when the instructions you have are unclear
- Agree and review your agreed upon work targets with your supervisor and check for special instructions, if any
- Check that equipment is safe and set up in readiness for use
- Select the correct pattern and inserts for the style being worked on
- Check that the materials to be used are free from faults
- Report faults in the materials

- Carry out operations at a rate which maintains work flow and meets production targets
- Ensure the iron box is placed in the appropriate position as per the standard operating procedure
- Conform to company quality standards
- Report any damaged work to the responsible person
- Follow company reporting procedures about defective tools and machines which affect work and report risks/ problems likely to affect services to the relevant person promptly and accurately
- Sort and place work to assist the next stage of production and minimise the risk of damage
- Leave work area safe and secure when work is complete. Complete forms, records and other documentation

Iron garments to finish apparels

- Make sure the work area is free from hazards
- Carry out work functions in line with the responsibilities of your job role
- Examine the specific item to identify what type of ironing is best suited
- Ask questions to obtain more information on tasks when the instructions are Unclear.
- Estimate the expected length of time for the process
- Set up ironing machine according to manufacturers' instructions and production requirements
- Use the correct machine, tools and equipment
- Set machine controls for the materials being ironed
- Perform a test run to ensure machine is operating correctly
- Adjust machine controls where necessary
- Report defective machines, tools and/or equipment to the responsible person
- Operate machines safely and in accordance with guidelines
- Optimize the positioning and layout of materials to ensure a smooth and rapid throughput
- Identify the different kinds of ironing required for different parts and apparel and ensure they are ironed as per the specified requirement
- Ensure the creases are removed or applied as per the customer's requirements
- Ensure the garments are inserted with the inserts and folded as per the work instruction

- Ensure the garments are not stained or burnt during the process
- Identify mark and place rejects in the designated locations
- Carry out alterations to meet customer requirements
- Pass the ironed item to the next stage in the manufacturing process after validation
- Respond accordingly where ironed items do not meet production specification

6. Types of Stain and methods of removing them

Stain	Treatment
Adhesive tape, chewing gum, rubber cement	1. Apply ice or cold water to harden surface; scrape with a dull knife. 2. Saturate with prewash stain remover or cleaning fluid. 3. Rinse, then launder.
Beverages (coffee, tea, soft drinks, wine, alcoholic beverages)	1. Sponge or soak stain in cool water. 2. Pre treat with prewash stain remover, liquid laundry detergent, liquid detergent booster or paste of powder laundry product and water. 3. Launder using sodium hypochlorite bleach, if safe for fabric, or oxygen bleach. NOTE: Older stains may respond to pre treating or soaking in a product containing enzymes, then laundering.
Collar, cuff soil	1. Pre treat with prewash stain remover, liquid laundry detergent or paste of powder detergent and water. 2. Launder.
Dye transfer	1. Attempt restoration of white fabrics that have picked up color from other fabrics by using a packaged color remover, following label directions. 2. Launder. NOTE: If dye remains, launder again using sodium hypochlorite bleach, if safe for fabric. For non-colorfast fabrics, soak in oxygen bleach, then launder. NOTE: This type of stain may be prevented if proper sorting and laundering procedures are followed.
Fabric softener	1. Dampen the stain and rub with bar soap. 2. Rinse out, then launder.

Grease, oil	*Light Stains*: 1. Pre treat with prewash stain remover, liquid laundry detergent or liquid detergent booster. 2. Launder using hottest water safe for fabric. *Heavy Stains*: 1. Place stain face down on clean paper towels. Apply cleaning fluid to back of stain. 2. Replace paper towels under stain frequently. 3. Let dry, rinse. Launder using hottest water safe for fabric.
Ink	NOTE: Some inks in each of the following categories – ballpoint, felt tip, liquid- may be impossible to remove, Laundering may set some types of ink. Try pretreating using one of the following methods: *Prewash Stain Remover*: 1. Pretreat using a prewash stain remover. Launder. *Denatured Alcohol or Cleaning Fluid*: 1. Sponge the area around the stain with the alcohol or cleaning fluid before applying it directly on the stain. 2. Place stain facedown on clean paper towels. Apply alcohol or cleaning fluid to back of stain. Replace paper towels frequently. 3. Rinse thoroughly. Launder. *Alternate Method for Denatured Alcohol or Cleaning Fluid*: 1. Place stain over mouth of a jar or glass; hold fabric taut. 2. Drip the alcohol or cleaning fluid through the stain so ink will drop into the container as it is being removed. 3. Rinse thoroughly. Launder.
Nail polish	NOTE: Nail polish may be impossible to remove. 1. Try nail polish remover but do not use on acetate or triacetate fabrics. 2. Place stain facedown on clean paper towels. Apply nail polish remover to back of stain. Replace paper towels frequently. 3. Repeat until stain disappears, if it does. 4. Rinse and launder.

7. Finishing Defects

Unwanted marks on fabric:

Oily stains with dust adhered to surface which makes the stains more prominent and difficult to remove, due to contact with oil or grease covered exposed machine parts, careless handling could be another cause.

Decolorized patch on fabric:
Caused due to

- Chemical spillage on fabric.
- Localized excess bleaching.
- Localized excess enzyme wash.
- Can be result into weakening of the fabric.

Pin holes :

- Holes along selvage caused by pins holding fabric while it processes through Stenter frame.
- Major defect if pin holes extend into body of fabric far enough to be visible in the finished product.

Water Spots :

- Usually caused by wet fabric being allowed to remain too long before drying; color migrates leaving blotchy spots.

Cuts or Nicks :

- Caused by indifferent handling of scissors. snips or mechanical trimmers.

Seam Tears :

- Frequently caused by the turning equipment used to reverse garments in finishing.

Soil :

- Caused by oil, grease or dirt. Often times originating from a dirty work area or machinery not properly cleaned

Inadequate Pressing:

- Caused by excessive heat or pressure resulting in poor pleating, fullness or twisting of a seam on garment surface.

Pressing Producing Shine on Fabric:

- Usually caused by excessive heat or incorrect type of pressing surface.

Loose Threads:

- Loose threads will get wound on guide rollers forming ridges in the processing machines and cause creases at these places.
- Also loose threads can cause problems of Dye /Print transfer in a padding / Printing application

Folding Defects:

- Garment not Folded to Specifications
- Garment not Folded with proper Materials:
- Cardboard, tissue or other specified packaging materials omitted
- Garments not Buttoned, Flys not Closed,
- Incorrect Number of Pins

8. Maintenance of Fusing machines

- Periodically Check & Clean the Fusing machine.
- Check the Temperature: make sure the temperature areas inside the machine are stable and coincide with temperature gauge.
- Check the pressure, make sure the pressure roller and surface are even.
- Check the time, make sure the fusing time is accurate as setting time.
- Clean the conveyor belts.
- Interlinings and cutting pieces should be a smaller than the fabric pieces.
- Always keep clean between fusible and fabric.
- Do not let the pins or hard metals put inside the machine.
- Before stop the production, Low down the Machine temperature to about 60° C first, then turn-off the machine.

9. Safety Measures

- Comply with health and safety related instructions applicable to the workplace
- Use and maintain personal protective equipment as instructed.
- Carry out own activities in line with approved guidelines and procedures
- Maintain a healthy lifestyle and guard against dependency on intoxicants.
- Identify and correct (if possible) malfunctions in machinery and equipment
- Report any service malfunctions that cannot be rectified
- Store materials and equipment in line with manufacturer's and organisational requirements, safely handle and move waste.
- Minimize health and safety risks to self and others due to own actions
- Seek clarifications, from supervisors or other authorized personnel in case of perceived risks
- Monitor the workplace and work processes for potential risks and threats
- Carry out periodic walk-through to keep work area free from hazards and obstructions, if assigned
- Report hazards and potential risks/ threats to supervisors or other authorized personnel
- Participate in mock drills/ evacuation procedures organized at the workplace
- Undertake first aid, fire-fighting and emergency response training, if asked to do so
- Take action based on instructions in the event of fire, emergencies or accidents
- Follow organization procedures for shutdown and evacuation when required