UNIT-II MECHANICAL FINISH

Finishing is a crucial part of the textile manufacturing process which aims to convert knitted or woven fabric into a usable product. It is a process that improves the product's hand-feel, performance, and overall look. It consists of different mechanical and chemical processes that bring the best out of the fabric. The textile industry's various mechanical fabric finishing methods help improve the fabric's physical principles.

Mechanical fabric finishing: An overview

Mechanical fabric finishing is the dedicated process of altering the fabrics' performance, appearance, and hand feel. Many different mechanical fabric finishing methods are popularly used in the industry. These methods can yield the required thickness, flatness, or toughness in the fabric and a change in its other physical properties.

Some of the properties of a fabric that can be altered with mechanical fabric finishing are:

1. Controlling surface friction
2. Removing surface flaws or burrs
3. Modifying electrical conductivity
4. Improving hardness
5. Improving appearance
6. Increasing corrosion resistance
7. Improving wettability or adhesion
8. Increasing solderability
9. Improving tarnish resistance
10. Increasing chemical and wear resistance

POPULAR MECHANICAL FABRIC FINISHING METHODS IN TEXTILES

In mechanical fabric finishing, manual processes change the properties of the fabric. These methods can be used according to the desired result. The main mechanical fabric finishing methods used in the textile business are:

1.Heat setting

Heat setting reduces fabric stress by stabilizing the fabric structure. The different steps in the fabric finishing process may cause stress and strain on the fiber, which can be effectively reduced with heat setting. It is one of the most common, effective, and widely used mechanical fabric finishing methods. Heat setting uses pressure, heat, moisture, etc., instead of chemical agents.

2. Compacting

Compacting reduces the fiber length by compressing its structure. It reduces fabric shrinkage as the open structure of fabric causes greater chances of shrinkage. Compacting is a sure-shot way to reduce fabric shrinkage to a considerable extent. It can be used on knitted and woven fabrics.

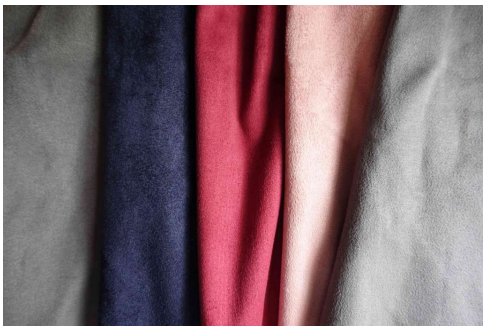
3. Sueding

It is a popular mechanical fabric finishing method in which abrasive surfaces like sandpapers or emery cloth are lined with rotating rollers. It is used to pile or mildly raise the fabric. The fabric is then passed through the abrasive rollers. It is easy to raise the short pile at length to decide the amount of pressure on the material by rollers. This is achieved by rotating the rollers in the opposite direction.

4. Shearing

The process of cutting the ends of the fiber to eliminate random lengths to achieve smooth piles and leveled surfaces is called shearing. All the fabrics due for napping have to go through shearing. Woven fabrics require multiple shearing machines or shredders, while knitted fabrics use a single device having one cutting head per unit. The distance between the rotating tables and the cloth rest regulates the desired pile height of fabrics.

5. Napping or Raising



Napping is a process in which a layer of fiber is lifted from the fabric's surface. It creates a pile on top of the fabric. Napping is widely used for knitted and woven fabrics and makes the fabric warmer. The accumulation of piles makes the fabric highly comfortable and soft. Further, it is easy to brush the nap in one direction of the fabric. Some common fabrics on which napping or raising is done are corduroy or velvet fabrics.

6. Calendaring

This process is done on textile fabrics to change their fundamental properties using the application of high pressure. The initial stages of the material define the efficiency of the calendaring process. Soft or open weave fabrics are widely calendared compared to hard or tightly woven fibers. The calendaring process eliminates creases and crinkles to make the fabric smooth.

Calendaring is a widely recommended mechanical fabric finishing method - the perfect solution for bringing luster to any fabric.

7. Embossing

Embossing is a type of calendaring process that can engrave any fabric pattern. The fabric is passed through a calendar to create a pattern in relief. The calendar has a heated metal bowl engraved with a pattern against the soft bowl. It is made with compressed paper or cotton on the metal center.

8. Wool glazing

A special machine is used for wool glazing in mechanical fabric finishing. It completes functional finishing on wool fabrics after raising.

9. Sanforizing or pre-shrinking

A sanforizer is a machine with hot steam that is used in the sanforizing process. It is done to control the fabric shrinkage. The mechanical forces and water vapors are applied to give optimal dimensional stability to the fabric.

AESTHETIC FINISHES:

Aesthetic finishes, also known as basic or common finishes, are treatments applied to textile fabrics primarily to alter their visual appearance (look) and tactile quality (hand or feel). They don't necessarily add functional performance benefits, but they are crucial for making fabrics desirable, comfortable, and suitable for fashion and home decor.

Think of it as the "beautification" of the fabric. These finishes can alter aspects like:

- **Luster/Sheen:** How shiny or dull the fabric appears.
- **Texture/Surface Hand:** How the fabric feels to the touch (e.g., smooth, rough, soft, crisp, fuzzy, velvety).
- **Drape:** How the fabric falls, hangs, or folds.
- **Appearance:** Adding patterns, crispness, body, or a specific visual effect.

Key Characteristics and Purpose:

- **Visual Appeal:** To make the fabric more appealing to the eye, aligning with current fashion trends or design requirements.
- **Tactile Quality:** To modify the "hand" or feel of the fabric, enhancing comfort or luxury.
- **Drape and Body:** To influence how the fabric hangs or holds its shape, essential for garment construction and interior design.
- **Marketability:** To add value and differentiate products in the competitive textile market.

Here are the main types of aesthetic finishes, often categorized by the effect they create:

I. FINISHES AFFECTING LUSTER/SHEEN:

These finishes aim to make the fabric more or less shiny.

1.GLAZING/CIRÉ:

Produces a high-gloss, polished surface, often with a somewhat stiff hand, by using highly polished, heated rollers. (e.g., ciré finish on nylon).

A **glazed finish** is an aesthetic textile finish that imparts a **smooth, highly polished, and lustrous (shiny) surface** to a fabric, making it appear as though it has a glossy coating, similar to a glazed ceramic or a polished piece of wood. It's a type of calendering, specifically **friction calendering**, often enhanced with stiffening agents.

The process of creating a glazed finish typically involves these steps:

1. **Application of Stiffening/Binding Agents:** The fabric is first impregnated with a chemical stiffening agent. Common substances used include:

- **Starches:** For a temporary glaze that washes out.
- **Waxes:** Can also provide a temporary or semi-durable effect.
- **Gums:** Natural thickening agents.
- **Resins (e.g., thermosetting resins like urea-formaldehyde or melamine-formaldehyde resins):** These are used for a more durable and permanent glaze, as they cross-link with the fibers upon curing.
- **Cellulose Ethers:** Can be used for durable glazes, often in combination with quaternary ammonium salts to fix the finish.

2. **Drying (Partial):** The fabric is usually partially dried after the application of the stiffening agent.
3. **Friction Calendering:** This is the core mechanical step. The fabric is then passed through a specialized **friction calender**. This machine consists of a series of rollers, typically:
    - One or more highly polished, heated metal rollers.
    - One or more softer, resilient rollers (e.g., made of paper or rubber).
    - Crucially, one of the metal rollers rotates at a significantly **higher speed** than the fabric itself and the other rollers. This speed difference creates **friction** between the hot, fast-moving roller and the fabric.
4. **Polishing and Setting:** The heat and intense friction generated by the fast-moving roller literally "polish" the surface of the fabric, pressing down and flattening the fibers and the applied stiffening agent. If resins are used, the heat also cures (sets) the resin, making the finish more permanent and resistant to washing.

Key Characteristics and Properties of Glazed Fabrics:

- **High Luster/Gloss:** The most distinctive feature is the shiny, reflective surface.
- **Smooth Hand:** The fabric feels exceptionally smooth to the touch due to the flattened fibers and coating.
- **Stiffer Drape:** Often, the fabric will have increased body and a crisper, stiffer drape due to the stiffening agents.
- **Reduced Pores:** The process can compact the fabric, making it less porous.
- **Improved Opacity:** If the original fabric was somewhat translucent, the compaction and surface changes can increase its opacity.
- **Durability (Varies):** The durability of the glaze depends heavily on the type of stiffening agent used:
  - **Temporary Glaze:** Uses starches or waxes; removed with washing.
  - **Durable Glaze:** Uses resins or specific cellulose ether/quaternary ammonium salt systems; can withstand multiple washes and dry cleaning.
- **Possible Water Repellency (for some Ciré finishes):** If very high temperatures and hydrophobic fibers (like synthetics) are used, the fibers might slightly fuse and flatten, which can impart some water repellency, a specific variation often called "ciré" (French for "waxed" or "polished").

Applications:

Glazed fabrics are primarily used for:

- **Decorative purposes:** Draperies, upholstery, wall coverings, lampshades.
- **Apparel:** Fashion garments where a crisp hand and high sheen are desired, such as formal wear, blouses, and some outerwear.
- **Accessories:** Handbags, shoes.

In summary, a glazed finish is an aesthetic treatment that uses friction calendering, often in conjunction with stiffening agents, to give textiles a distinctively shiny, smooth, and sometimes stiffer appearance.

2.MOIRÉ:

Moiré (pronounced "mwahr-AY" or "mwar") is a distinctive aesthetic textile finish that creates a wavy, rippled, or "watered" appearance on the fabric surface. It's not a print or a dyed pattern, but rather a unique visual effect produced by the interplay of light reflecting off subtly altered areas of the fabric.

The term "moiré" also refers more broadly to an optical phenomenon where two similar, repeating patterns (like grids or lines) are superimposed with a slight misalignment, creating a new, larger interference pattern. The textile finish gets its name from this visual effect.

How Moiré is Created on Fabric:

The true moiré effect in textiles is primarily achieved through a specialized **mechanical finishing process**, typically a form of **calendering**, with a specific focus on fabrics that have a distinct **ribbed** or **corded** weave structure (like taffeta, faille, or grosgrain).

Here's the common process:

1. **Fabric Preparation:** The fabric, usually with a prominent rib, is often dampened slightly.
2. **Folding and Superimposing:** Crucially, the fabric is folded lengthwise in half, face-to-face, so that the ribs on one half of the fabric are laid directly over the ribs on the other half. The two selvedges (edges) run together side by side.
3. **Friction Calendering (with Rib Alignment):** The folded fabric is then passed through a **calender machine** under very high pressure and high temperatures. The rollers of the calender can be smooth or have finely engraved patterns.
4. **Light Reflection:** When the two fabric layers are separated, the areas where the fibers have been crushed and flattened reflect light differently from the uncrushed areas. This differential reflection of light creates the characteristic shimmering, wavy, and iridescent patterns that shift with the viewing angle, resembling the patterns seen on agitated water.

Characteristics of Moiré Fabric:

- **Wavy, Watered Appearance:** The most defining visual feature.
- **Shimmering/Iridescent Effect:** The pattern appears to shift and change as light hits it from different angles.
- **Varying Luster:** Areas will have different levels of sheen (glossy vs. matte).
- **Crisp Hand:** Moiré fabrics often have a somewhat crisp or papery hand due to the calendering process.
- **Reduced Drape:** The finish can sometimes make the fabric stiffer.
- **Delicate:** The moiré effect can be delicate and may be susceptible to damage or loss if exposed to water or excessive creasing, especially if the finish is not permanent.

Applications:

Moiré fabric has a long history, particularly associated with luxury and formality. It's used for:

- **Formal Wear:** Evening gowns, wedding dresses, ceremonial sashes, and formal accessories.
- **Home Furnishings:** Draperies, upholstery, wall coverings, lampshades, decorative pillows, where its unique visual texture can add depth and elegance.
- **Bookbinding and Linings:** Historically used for elegant book covers and box linings.
- **Ribbons and Trims:** For decorative purposes.

Moiré is a classic aesthetic finish that adds a sophisticated and dynamic visual element to textiles.

3.SCHREINER CALENDERING:

Schreiner finish is a specialized **aesthetic finish** applied to textile fabrics, primarily to impart a **silk-like luster or sheen** and a **softer hand**. It's a type of **calendering**, but distinct from ordinary or friction calendering due to the unique design of the rollers used.

How Schreiner Finish is Achieved:

The process relies on a specific type of calender called a **Schreiner calender**, which typically involves:

1. **Engraved Roller:** The key component is a highly polished, heated **steel roller** that is engraved with a very large number of extremely fine, parallel lines. **Pressure and Friction:** The fabric is passed under high pressure between this engraved steel roller and a softer, resilient roller (often made of compressed cotton or paper).
2. **Micro-Grooves and Light Reflection:** As the fabric passes through the nip (the point of contact between the rollers) under intense pressure and heat, the fine lines on the engraved roller are subtly impressed onto the surface of the fabric. Instead of scattering light randomly (which would create a dull appearance), the uniform, angled grooves cause light to be reflected in a more organized, directional manner, similar to how light reflects off silk fibers. This results in a distinctive, soft, yet pronounced luster.

Key Characteristics and Properties of Schreiner Finishes:

- **Silk-like Luster:** The most notable characteristic is the creation of a soft, subdued, yet distinct sheen that mimics the natural luster of silk.
- **Enhanced Hand:** The process often makes the fabric feel smoother and softer to the touch.
- **Improved Opacity:** The high pressure compacts the fibers, which can increase the fabric's opacity (reduce translucency).
- **Reduced Pilling (sometimes):** By flattening surface fibers, it can contribute to a reduction in pilling.
- **Durability:** The durability of the Schreiner finish depends on the fiber type and whether resins or other setting agents are used. On thermoplastic fibers (like polyester or nylon), the effect can be quite permanent due to heat-setting. On cellulosic fibers (like cotton), it might be less permanent without additional resin treatments.
- **One-Sided Effect:** Typically, the luster is more prominent on one side of the fabric (the side that was in contact with the engraved steel roller).

Applications of Schreiner Finishes:

Schreiner finishes are widely used to enhance the aesthetic appeal of various textiles:

- **Cotton Fabrics:** Especially mercerized cotton, to give them a luxurious, silk-like appearance for apparel (e.g., dress shirts, blouses) and home furnishings (e.g., bed linens, curtains). Mercerized cotton takes this finish particularly well due to its increased luster and smoothness.
- **Synthetic Fabrics:** Polyester, nylon, and their blends are often Schreiner finished to improve their aesthetics, giving them a more sophisticated sheen for activewear, sportswear, and fashion garments.

- **Sateens:** To enhance their natural luster and create a smoother surface.
- **Lining Fabrics:** To provide a luxurious feel and appearance for garment linings.
- **Curtains and Draperies:** The subtle luster adds elegance to window treatments.

In essence, a Schreiner finish is a mechanical marvel that transforms the surface of a fabric, making it more visually appealing and tactilely pleasing by imparting a beautiful, often silk-like, luster through microscopic surface alteration.

4.EMBOSSING:

An **embossed finish** is an aesthetic textile finish that creates a **raised, three-dimensional pattern or design** on the surface of a fabric. The pattern is pressed into the fabric using specialized machinery, resulting in a textural and visual effect that is distinct from a woven or printed pattern.[1]

The process of embossing typically involves a specialized form of **calendering**, known as **embossing calendering**:[2]

1. **Engraved Roller:** The key component is a **heated metal roller** that has the desired pattern or design **engraved in relief** onto its surface.[3] This means the parts of the roller that will create the raised pattern on the fabric are themselves raised on the roller's surface.
2. **Softer Roller:** Opposite the engraved roller is a softer, resilient roller, often made of compressed paper or felt.
3. **Pressure and Heat:** The fabric is passed between these two rollers under very high pressure and elevated temperatures.[4]
4. **Transfer of Pattern:** As the fabric moves through the nip of the rollers, the pressure and heat from the engraved roller press its raised pattern directly into the fabric. The fibers in the pressed areas are compacted and sometimes partially fused (especially with thermoplastic fibers), creating the raised three-dimensional effect.
5. **Setting the Pattern:** For durable embossing, especially on synthetic fibers, the heat in the process also **heat-sets** the pattern into the fabric, making it resistant to washing and wear. For cellulosic fibers, resin treatments might be applied to help fix the pattern.

Key Characteristics and Properties of Embossed Fabrics:

- **Three-Dimensional Pattern:** The defining feature is the tactile, raised design that stands out from the fabric's background.[5]
- **Textural Appeal:** Adds depth and interest to the fabric's surface, making it appealing to both sight and touch.[6]
- **Varying Luster:** The embossed areas may reflect light differently from the un-embossed areas, creating subtle variations in sheen.
- **Reduced Drape (often):** The compaction and setting process can make the fabric stiffer and reduce its natural drape.
- **Durability (Varies):**
  - **Permanent:** On thermoplastic fibers (like polyester, nylon), the pattern is often heat-set and can be quite durable to washing and dry cleaning.[7]

- **Semi-durable/Temporary:** On cellulosic fibers (like cotton), the pattern may fade or flatten with washing unless a resin finish is also used to help fix it.
- **Can Mimic Other Materials:** Embossing is frequently used to simulate the texture of leather, bark, wood grain, or other natural surfaces.

Applications of Embossed Finishes:

Embossed fabrics are popular for their decorative qualities and are used in a wide range of products:[11]

- **Apparel:** Fashion garments such as dresses, skirts, jackets, blouses, where a distinctive texture is desired.[12] Also used for formal wear and accessories like handbags and shoes.[13]
- **Home Furnishings:** Upholstery, draperies, bedspreads, decorative pillows, where the 3D texture adds richness and visual interest.[14]
- **Footwear:** Synthetic leathers and textiles used in shoe uppers.
- **Automotive Interiors:** Seat covers and door panels to add texture and mimic luxury materials.[15]
- **Crafts and Decorative Items:** Scrapbooking, card making, and various decorative applications.[16]

In essence, an embossed finish transforms a flat fabric surface into a dynamic, tactile work of art, adding a new dimension of design and sensory experience.[17]

II. FINISHES AFFECTING HAND/DRAPE:

These finishes modify how the fabric feels and how it hangs.

1.CRISP AND TRANSPARENT:

A **crisp and transparent finish** in textiles refers to an aesthetic treatment that imparts two distinct and often complementary properties to a fabric:

1. **Crispness (Hand):** The fabric feels stiff, firm, and "crisp" to the touch, rather than soft, limp, or fluid. It has good body and tends to hold its shape well.
2. **Transparency (Appearance):** The fabric becomes translucent or semi-transparent, allowing some light to pass through and sometimes creating a sheer, delicate appearance.

This combination is most famously achieved through a process called **parchmentizing**, particularly on cellulosic fibers like cotton.

Parchmentizing Finish:

- **Mechanism:** Parchmentizing involves treating cellulosic fabrics (especially thin, plain-woven cottons like lawn or muslin) with a carefully controlled, dilute solution of **sulfuric acid** (or sometimes zinc chloride).
- The acid causes the cellulose fibers on the surface of the fabric to swell and undergo a chemical change (partial hydrolysis).

- This alters the fiber structure, making them denser and less opaque.
- When the fabric is subsequently washed and dried, the modified fibers become stiff and rigid, and the spaces between the yarns become filled or fused, leading to increased transparency and crispness.

- **Resulting Fabric:** The classic example of a fabric produced by parchmentizing is **organdy**. Organdy is known for its sheer, crisp, and stiff hand, which it retains even after washing, distinguishing it from fabrics simply stiffened with starch.
- **Durability:** The parchmentizing finish is considered **permanent** because the chemical alteration to the cellulose fibers is irreversible.

Other Methods for Crispness (without inherent transparency):

While parchmentizing specifically combines crispness and transparency, other finishes primarily target crispness:

- **Stiffening/Sizing:**
  - **Method:** Applying agents like starch, resins, glues, or gums to the fabric.
  - **Effect:** Adds body, weight, and stiffness.
  - **Durability:** Usually **temporary** (starch washes out) or **semi-durable** (some resins might last for several washes). Used for fabrics that need a sharp, structured look, like some shirtings or interlinings.

Other Methods for Transparency (without inherent crispness):

Many fabrics are inherently transparent or sheer due to their weave structure or fiber type, rather than a specific "transparent finish":

- **Sheer Fabrics:** Fabrics like chiffon, voile, organza (as mentioned, if parchmentized), georgette, and some muslins are naturally transparent due to their very open weave, fine yarns, or combination of both. While organza can be very crisp, chiffon and voile are known for their soft, flowing drape.
- **Burn-out Finish (Devoré):**
  - **Mechanism:** This is a chemical method where a chemical agent (usually an acid) is printed onto a fabric blend containing fibers with different sensitivities to the chemical (e.g., a polyester/cellulose blend). The chemical "burns out" or dissolves one of the fiber types in the printed areas, creating transparent or translucent patterns on an opaque background.
  - **Effect:** Creates a localized transparent pattern, often with a subtle texture difference between the opaque and transparent areas.

In summary:

When referring to a "crisp and transparent finish," the most precise and common textile finishing method is **parchmentizing**, which chemically alters cellulosic fibers to produce fabrics like organdy. Other methods can achieve crispness or transparency individually, but parchmentizing delivers both simultaneously and permanently.

2.BURNT OUT:

A **burnt-out finish**, also widely known by its French name **devoré** (meaning "devoured" or "eaten away"), is a chemical aesthetic finish applied to **fabric blends** to create patterned areas of **transparency** (sheer) against more **opaque** areas. It produces a distinctive textured and translucent effect.

The Fundamental Principle:

The core principle behind the burnt-out finish is the **selective destruction or dissolution of one fiber component** in a blended fabric, using a chemical agent that is specific to that fiber type, while leaving the other fiber(s) intact.

How it's Achieved (The Process):

1. **Blended Fabric Selection:** This finish requires a fabric composed of at least two different fiber types with **differing chemical sensitivities**.
   - **Common Blends:** Polyester/Cotton, Silk/Rayon, Silk/Viscose.
2. **Application of the Chemical Agent:**
   - A chemical paste or solution containing a **fiber-dissolving agent** (usually a strong **acid**, like sulfuric acid or hydrochloric acid, or an acid salt) is **printed** onto the fabric in a specific pattern. The areas of the fabric where the chemical is applied will be the "burnt-out" (transparent) areas.
   - The choice of acid depends on the fiber to be removed:
     - **Acids** dissolve cellulosic fibers (cotton, rayon, viscose) while leaving protein (silk, wool) or synthetic (polyester, nylon) fibers intact. This is the most common application (e.g., silk/viscose devoré, where viscose is burnt out, leaving sheer silk).
     - Less commonly, other chemicals might be used to remove specific protein fibers if the blend composition demands it.
3. **Drying:** The printed fabric is dried to allow the chemical paste to settle.
4. **Curing/Activation (Heating):** The fabric is then subjected to high heat (cured). This heat activates the chemical agent, causing it to attack and dissolve (or "burn out") the targeted fiber component **only in the printed areas**. The other, resistant fiber component remains untouched.
5. **Washing Off/Removal:** After curing, the fabric is thoroughly washed. This step serves two purposes:
   - It removes the degraded, dissolved fiber material from the "burnt-out" areas.
   - It washes away any residual chemical agent.

Examples of Burnt-Out Fabrics:

- **Silk/Rayon Devoré:** A classic combination. The rayon (a cellulosic fiber) is burnt out, leaving the silk (a protein fiber) intact, resulting in a luxurious velvet or chiffon with sheer silk patterns.
- **Polyester/Cotton Devoré:** The cotton (cellulosic) is burnt out, leaving the polyester (synthetic) intact, creating a durable and often more affordable devoré fabric.

Key Characteristics and Applications:

- **Aesthetic Appeal:** Highly decorative, creating intricate patterns with a delicate, often ethereal quality.
- **Texture:** Offers a unique tactile experience due to the contrast between opaque and sheer areas.
- **Versatility:** Can be applied to various fabric weights and compositions.
- **Applications:**
  - **Apparel:** Evening wear, scarves, blouses, overlays, and other fashion garments where elegance and a unique visual effect are desired.
  - **Home Furnishings:** Draperies, decorative panels, cushion covers.

The burnt-out finish is a sophisticated and visually striking technique that exemplifies the transformative power of chemical finishing in textile design.

3.Stiffening/Sizing: Involves applying starches, resins, or other stiffening agents to the fabric. Makes the fabric crisper, firmer, or adds body. (e.g., organza, crinoline).

III. Finishes Affecting Surface Texture/Nap:

These finishes create or modify the surface fibers of the fabric.

- **Napping/Raising:** A mechanical finish that uses rotating cylinders with wire brushes or sandpaper-like surfaces to pull fiber ends from the surface of the fabric, creating a soft, fuzzy, or hairy surface.
  - **Napping:** Creates a raised pile on fabrics like flannel, fleece, and blankets, improving warmth and softness.
  - **Shearing:** After napping, shearing may be used to uniformly trim the raised fibers to a consistent height, creating an even pile. It can also be used to create patterns by shearing only specific areas.
- **Sueding/Sanding/Emerizing:** Similar to napping but uses abrasive rollers (like sandpaper) to create a very short, fine, suede-like or peach-skin surface on fabrics, giving them a soft, luxurious feel.
- **Flocking:** Involves adhering short, fine fibers (flock) onto the surface of a fabric with an adhesive to create a velvety or suede-like texture, often in specific patterns.
- **Plissé:** A chemical finish (usually with caustic soda) that causes certain areas of a fabric to shrink, creating a puckered or crinkled effect in patterns. It imitates seersucker.
- **Brushing:** Uses rotating brushes to remove loose fiber ends from the fabric surface, creating a smoother and cleaner appearance. It can also be used for a light napping effect.
- **Embroidering:** While often considered a decorative art, machine embroidery applied to a fabric can be seen as an aesthetic finish that adds texture, pattern, and visual interest to the surface.
- **Devoré (Burnout):** A chemical process that selectively dissolves certain fibers in a blended fabric (e.g., rayon/polyester) to create sheer and opaque patterns, resulting in a unique textured aesthetic.