

## FSA - UNIT - II

### • Characteristics of Ordinary Honeycomb Weave

1. Ordinary honeycomb weaves have a cell-like appearance formed by ridges and hollows.
2. The structure generally forms one honeycomb cell per repeat.
3. The weave is constructed using single or double diagonal line crossings.
4. It contains more warp and weft floats, which contribute to the texture.
5. Due to the presence of floats, the fabric is highly moisture absorbent.
6. The weave is constructed using a pointed draft.
7. It produces a reversible fabric with similar appearance on both sides.

### **Characteristics of Ordinary Honeycomb Weave (Short Points to remember)**

- Cell-like appearance
  - Ridges and hollows
  - Single cell formation
  - Single / double diagonal line crossing
  - More warp & weft floats
  - High moisture absorbency
  - Pointed draft construction
  - Reversible fabric
  - Similar effect on both sides
- Characteristics of Brighton Honeycomb Weave
1. Brighton honeycomb weaves produce **non-reversible fabrics**.
  2. The **face and back of the fabric differ in appearance**.
  3. These weaves are constructed using **straight drafts only**.
  4. The **repeat size is always a multiple of four**.

5. The structure is formed by **crossing a single diagonal line with a double diagonal line**.
6. Each repeat produces **four honeycomb cells**, consisting of two large and two small cells.
7. The **length of the longest float is  $(N/2 - 1)$** , where N is the repeat size.

### **Characteristics of Brighton Honeycomb Weave (Short Points to remember)**

- Non-reversible fabric
  - Face  $\neq$  back appearance
  - Straight draft only
  - Repeat multiple of 4
  - Single diagonal  $\times$  double diagonal
  - Four cells per repeat
  - Two large + two small cells
  - Longest float =  $(N/2 - 1)$
  - Diamond base construction
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- **Characteristics of mock leno woven fabrics**

Mock leno weaves, also known as imitation lenos, produce structural effects similar to true leno fabrics without actual crossing of warp threads. The main structural effects obtained are **perforated effects** and **distorted thread effects**.

Perforated effects are produced by grouping warp and weft threads with spaces between them. Reversal of small weave units forces adjacent threads apart, creating **open, gauze-like or netted structures** with visible empty splits.

Distorted thread effects are obtained by deliberately displacing selected warp or weft threads from the ground structure, usually plain weave. These threads float alternately over and under ground threads and are drawn together and separated, producing **zig-zag, spider-web or net-like appearances**.

Overall, mock leno weaves produce **lightweight, open, decorative fabrics** resembling true leno structures while being woven on ordinary looms.

#### **Mock Leno - Structural Effects (Keywords)**

- Imitation leno
- No warp crossing
- Ordinary weave construction
- Warp grouping
- Weft grouping
- Empty splits
- Perforated / open effect
- Gauze / net appearance
- Plain weave ground
- Distorted warp / weft
- Floating threads
- Alternate floating
- Zig-zag effect
- Spider-web / net effect
- Lightweight structure
- Decorative fabric

#### • **Characteristics of Backed Fabrics**

1. Backed fabrics consist of **two sets of yarn systems**, forming a face layer and a backing layer.
2. The **face weave provides appearance**, while the backing weave gives **support and strength**.
3. They are generally **thicker and heavier** than single-cloth fabrics.
4. Backed fabrics offer **better cover and opacity** due to the additional layer of yarns.
5. The backing yarns **bind the face fabric at regular intervals**, ensuring structural stability.

6. These fabrics show **improved durability and resistance to abrasion**.
7. Backed fabrics allow the use of **coarser or cheaper yarns in the backing** without affecting the face appearance.

### **Stages in the Construction of Backed Fabrics**

1. **Selection of the face weave**  
A suitable face weave (plain, twill, or satin) is first selected to obtain the required surface appearance and performance.
2. **Selection of the backing weave**  
A backing weave is chosen to support the face weave and to improve thickness, strength, or cover of the fabric.
3. **Arrangement of warp or weft systems**  
Two sets of yarns are arranged – either extra warp or extra weft – depending on whether the fabric is warp-backed or weft-backed.
4. **Planning of interlacement**  
The interlacement is planned so that the backing yarns bind the face structure at regular intervals without disturbing the surface design.
5. **Binding of face and backing layers**  
The backing yarns are made to interlace with the face yarns at selected points to firmly hold both layers together.
6. **Control of floats and spacing**  
The length and position of floats are controlled to ensure proper cover, stability, and durability of the fabric.
7. **Final checking of the weave designs**  
The complete design is checked to ensure correct binding, balanced structure, and suitability for the intended end use.

## 11.5 COMPARISON BETWEEN WARP BACKED AND WEFT BACKED FABRICS

Weft backed fabrics	Warp backed fabrics
<ol style="list-style-type: none"> <li>1. Softer and more lofty handling cloth can be obtained. This is due to weft containing less twist and being under less tension than the warp.</li> </ol>	<ol style="list-style-type: none"> <li>1. Less softer and loftier handle when compared to weft backed.</li> </ol>

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Weft backed fabrics	Warp backed fabrics
<ol style="list-style-type: none"> <li>2. Requires one warp beam and drop box (2 × 1)</li> <li>3. Costlier to produce due to more picks/cm</li> <li>4. Impossible to produce a solid appearance.</li> <li>5. Lower strength warp way</li> <li>6. Inferior from structural point of view</li> <li>7. Low quality of backing yarn can be used in weft due to less strain on yarn</li> <li>8. Drawing in is cheaper due to less number of ends</li> <li>9. Drafts are simpler</li> <li>10. The standard orders of arranging the picks are – 1 face to 1 back, 2 face to 1 back, 3 face to 1 back, 2 face to 2 back, 4 face to 2 back</li> </ol>	<ol style="list-style-type: none"> <li>2. Requires two warp beams and no drop box.</li> <li>3. Cheaper to produce owing to less picks/cm</li> <li>4. A more solid appearance can be given to the cloth by the formation of stripe patterns on the underside.</li> <li>5. Greater strength warp way.</li> <li>6. Superior from structural point of view.</li> <li>7. Low quality of yarn cannot be used in warp due to greater strain in weaving</li> <li>8. Drawing in is a costlier operation since there are more number of ends</li> <li>9. Drafts are usually more complicated, and a greater number of healds are required in producing similar effects</li> <li>10. The standard order of arranging the ends in warp backed cloths are – 1 face to one back, 2 face to 1 back and 3 face to 1 back.</li> </ol>