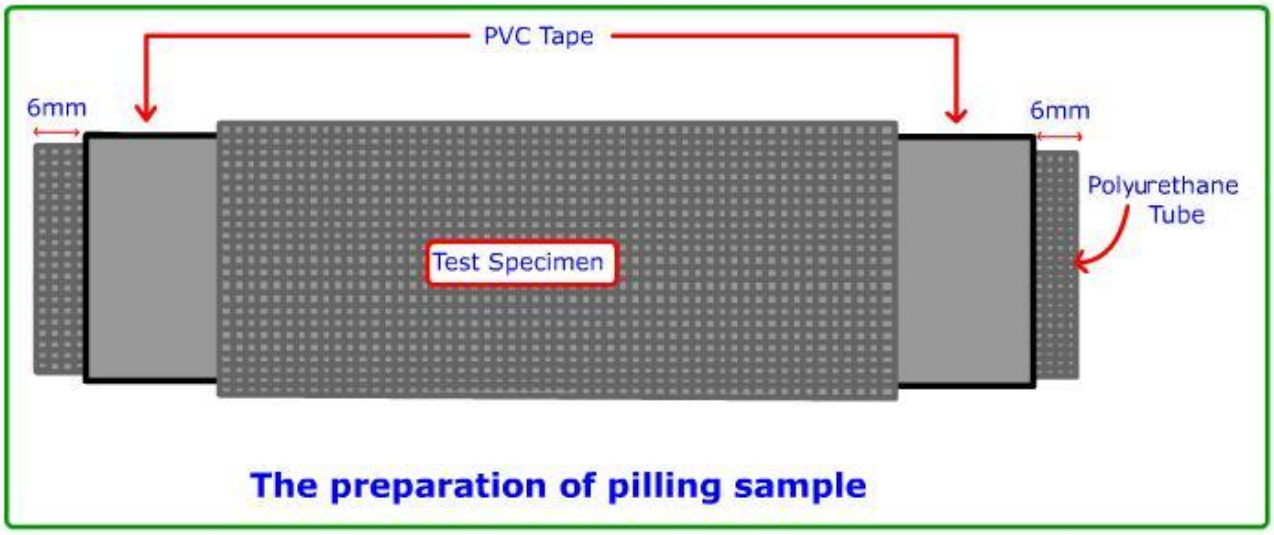
PILLING AND ABRASION TESTING

Methods of Measurement:

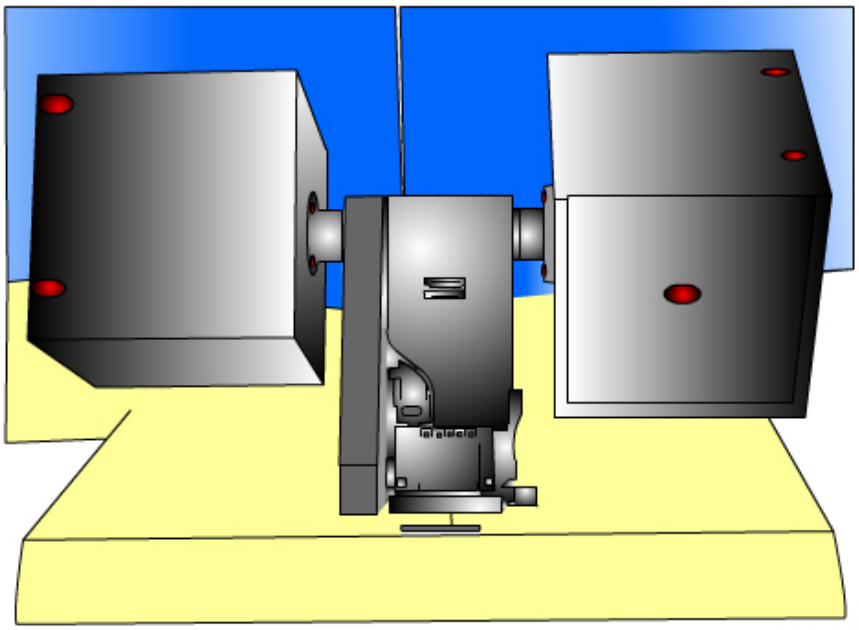
1. ICI pilling box
2. Random tumbling pilling test
3. Pilling test by Martindale Abrasion Tester

1. ICI pilling box:

- A specimen (125 mm x 125 mm) is cut from fabric (2 for warp 2 for weft).
- Stitched face-to-face and turned inside out.
- The fabric tube is then mounted on rubber tubes.
- The loose ends taped with PVC tape.
- All the four samples are then tumbled together in a cork-lined box 9'' x 9'' x 9'' and allowed for required revolution cycle.
- The specimens are taken out and removed from rubber tube and rated.
- Also, pilling is mainly due to fibres with very high “lateral strength” or "bending strength" or “low brittleness”.



The preparation of pilling sample



PILLING TESTER

created by:kbpujari

- High “lateral strength” may be advantageous in some applications like technical textiles, floor covering, etc.
- However, the pilling tendency also increases, so in the apparel sector “low lateral strength" is preferable, particularly in knitted goods.
- Polyester fibres are deliberately made brittle for use in knitted products to avoid pilling (anti pilling types).
- Pills do not form where fibres with low lateral strength are used (wool and anti-pill man-made fibres).
- They can be easily scrubbed off.
- But fibres with “high lateral strength” will have higher pilling tendency.
- Pilling resistance and durability are inversely related.

PILLING GRADES:

Grade 5 No or very weak formation of pills.

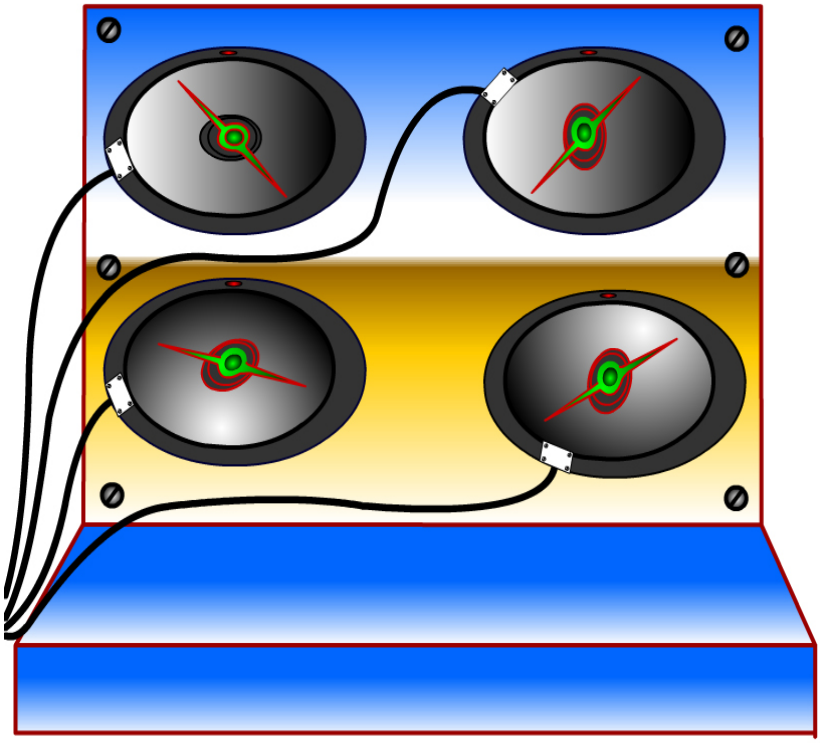
Grade 4 Weak formations of pills.

Grade 3 Moderate formations of pills.

Grade 2 Obvious formations of pills.

Grade 1 Severe formation of pills.

2.Random tumbling pilling test:



Random Tumble pilling Tester

- Random tumbling motion produced by tumbling specimen in a cylindrical test chamber lined with mildly abrasive material.
- To resemble the pills those with actual wear, small amount of cotton lint are added.
- Three specimen of 105 mm x 105 mm are cut an angle 45º to length and edges are sealed with rubber adhesive.
- All these samples along with cotton lint are tumbled in the test chamber.
- After certain time the fabric samples are assessed. The number and timing of the cycles depends on type of fabric being tested and would be laid down in the relevant specification.

3.Pilling test by Martindale Abrasion Tester:

- The specimens are mounted on large (bottom) and small (top) specimen holder.
- Then rubbed against each other (source sample).
- Two pressures are used : 2.5 cN/cm knitted fabric.
- 6.5 cN/cm for woven and upholstery fabric.
- In place of std. abradant, the fabric sample is placed in the lower holder.
- If the degree of pilling is different on the upper and lower holder, the upper specimen is assessed.
- The number and timing of the cycles depend on the type of fabric tested and would be laid down in the relevant specification.