TOPIC OF THE MONTH - PILLING

What is Pilling?

Pilling is caused by the entanglement of fibres that have worked loose and pulled out from yarns during wear and laundering.

Fibres or filaments are the base material from which yarns are made.

Staple yarns were traditionally made from natural fibres. Where natural fibres are blended with synthetics. E.g. Polyester/cotton, the polyester is cut to the length of the cotton fibre and blended together to produce a yarn.

Filament yarns are those in which each individual filament runs the entire length of the yarn. Fabrics made from continuous filament yarns typically do not pill as there is no sprouting out of fibres from the fabric surface.

Staple fibres may be spun into single ply yarns. The yarns can be used in this manner or they may be plied together for strength, durability or appearance. The yarns can then be woven or knitted into a fabric. Each step of this process may affect the propensity of the fabric to pill.

Selection of fibres - Shorter fibres are able to more easily work loose in a yarn and thus available to entangle. The combing process can reduce this by ensuring that the longest fibres are selected and spun. Yarns that are carded only will have a higher percentage of shorter fibre.

Synthetic fibres such as polyester, acrylic and nylon are relatively strong when compared to the strength properties of cotton and wool. Pills from natural fibres are generally likely to appear sooner, but are more likely to wear or break away. Fabrics produced using synthetic fibres are more likely to retain pills.

A combination of synthetic and natural fibres may pill faster but not wear away, as the pills formed by the natural fibres are anchored into place by the synthetic fibres.

Selection of spinning method - Ring spun yarns may be produced from carded or combed sliver. Rovings are formed from these slivers and consolidated together with twist on the spinning frames to form yarns of the desired linear density.

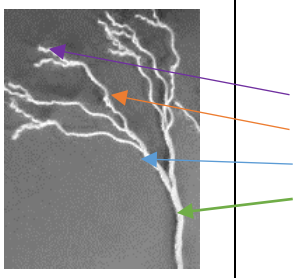
Open end or rotor spun yarns are spun directly from sliver and these tend to contain shorter fibres.

Twist - Other than the fibre content, the amount of twist imparted to the fibres when producing a yarn has possibly the highest effect on the propensity of a fabric to fuzz and pill.

It will also affect many other properties of the textile, so whether high twist or low twist yarn is used is dependent on a number of considerations.

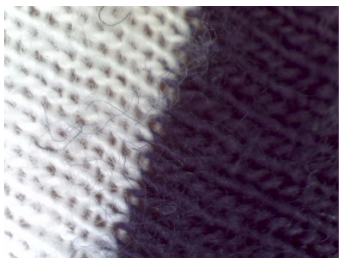
Lower twist level yarns typically result in a softer hand feel but have a higher propensity to pill. Conversely higher twist results in a harder feel but reduced pilling propensity.

Fabrics produced using single ply yarns will be more likely to pill due to less structure than a two-ply yarn and a two-ply yarn folded with another two-ply yarn etc.

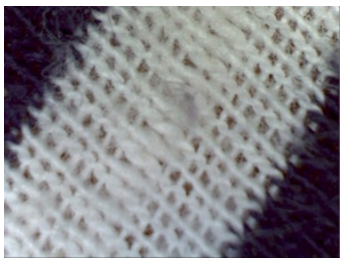


- Single ply yarn (1 ply)
- Two ply yarn (2 ply)
- Three X two ply yarn (6 ply)
- Two X three X two ply yarn (12 ply)

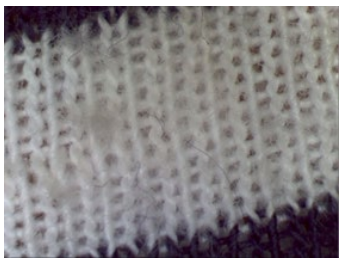
Fabric manufacturing method - Whether woven or knitted, the tightness of the material configuration will determine the ability of the fibres to work out from the yarn structure.



Loose fibres on fabric surface



Abrasion causing yarns to untwist slightly, allowing more fibres to protrude



Loose fibres tangling, causing pills & fuzzing on fabric surface

Knitted fabrics generally use a softer (i.e. lower twist) yarn to improve handle and softness, and the nature of the knitting process offers a greater surface area for the fibres to break free.

Link to additional Pilling Information:

Pilling Resistance - Summary Fact Sheet

CONTACT US:

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