

## Effect of fabric thickness on abrasion resistance of khadi fabric

■ MOHINI GUPTA AND SUMAN PANT

See end of the paper for authors' affiliations

Correspondence to:

**MOHINI GUPTA**

Department of Clothing & Textiles, College of Home Science Punjab Agricultural University, LUDHIANA (PUNJAB) INDIA  
monaa.gupta@gmail.com

### ABSTRACT

Present study was undertaken to find out the effect of fabric thickness on abrasion resistance of khadi fabrics. For this purpose, different varieties of khadi fabrics of cotton, silk, wool, cotton-polyester blend were used. After abrading with Emery paper and Canvas fabric for 100, 200, 300, 400, 500 rubbing cycle, thickness of khadi fabric were assessed. Thickness increased initially in all the fabrics after that it decreased with increase in rubbing cycles. Emery paper was more severe in action. Effect of fabric thickness was found on abrasion resistance of khadi fabric.

**KEY WORDS :** Abrasion, Khadi fabric, Fabric thickness, Abradant

**How to cite this paper:** Gupta, Mohini and Pant, Suman (2011). Effect of fabric thickness on abrasion resistance of khadi fabric. *Asian J. Home Sci.*, 6 (2) : 269-272.

**Article chronicle: Received:** 26.09.2011; **Revised:** 20.10.2011; **Accepted:** 25.11.2011

One of the most important physical properties of a textile fibre in relation to durability is its ability to withstand abrasion. Abrasion is rubbing away of component fibres and yarns of fabric (Booth, 1968).

Fabrics are subjected to three type of abrasion namely, flat, flexed and edge. In flat abrasion, a flat of material is abraded, edge abrasion for example, the kind of abrasion which occurs at collars and folds. In flex abrasion rubbing is accompanied by flexing and bending (Agrawal, 1987).

Many factors influence abrasion. Some fibres which are inherently tough have better abrasion resistance than do the others. Yarn construction is also an influencing factors. Loosely twisted yarns abrade more easily than do tight twisted yarns. In the loosely twisted yarns, the individual fibres are more likely to be subjected to being pulled out from the body of yarn on to the surface of fabric (Sumanthi *et al.*, 2004).

Smooth fabric constructed of firm yarns with optimum yarn interfacing and relatively compact yarn arrangement are less subjected to damage by flat abrasion than fabric with irregular surface, low yarn count and minimal yarn interlacing. Pile fabric, loop yarn (complex yarn) are subjected to abrasion damage. Knit structure tends to abrade more easily than woven fabric. Size of yarn also influences abrasion resistance. Thick yarn resist damage from abradant where as fine yarns may abrade easily. Yarn uniformity is also important for irregular yarn may show wear very quickly in selected location (Kalaoglu, 2003).

Khadi is a hand spun and hand woven fabric. It has a rugged texture, a unique look and feel and makes the wearer look different. On the other hand, machinery woven fabrics

are uniform and appear monotonous and lifeless.

As khadi is hand spun and hand woven fabric, its yarn structure is different from machine spun and woven fabric. Spinning is done on charkha and weaving is done on handloom. Hand spun yarns are not very uniform and fabric surface is uneven and textured.

Due to difference in fabric quality, abrasion resistance of khadi will be different from mill made fabric. It is on the basis of above consideration that an attempt was made to assess the abrasion resistance of khadi fabrics. Effect of fabric thickness on abrasion resistance of khadi fabric was studied.

### RESEARCH METHODS

Commercially available fourteen different varieties of khadi fabrics varying in constructional parameters were selected. Two type of abradant material *i.e.* emery and canvas were used in the study. First of all, fabrics were tested to determine constructional details *viz.*, thickness, fabric count, yarn count, amount of twist, cloth cover. Eureka abrasion tester (Martindale type) was used to abrade the fabrics. It has multidirectional rubbing movement. The fabrics were given 100, 200, 300, 400, 500 rubbing cycles. Fabrics samples were abraded separately with canvas fabric and emery paper. Evaluation of abrasion damage was done by calculating thickness. Before and after every 100, 200, 300, 400, 500 rubbing cycles, thickness was taken.

### RESEARCH FINDINGS AND DISCUSSION

Findings obtained from the present study have been