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Effect of Some Fabric Parameters on Drapeability of Khadi

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Abstract: **The outlook of fabrics depends on several parameters such as, bending, drape along with luster, color and texture. Drape is an important property of fabric which play major rule in appearance of fabric. The effect of fabric weight, thickness and bending on drapeability of khadi fabric is measured. Khadi is an Indian fabric. Khadi is also known by another name Khaddar. It is made by spinning the threads on an instrument known as Charkha.**

Key Word: Drape , Bending, Cotton, Khadi.

INTRODUCTION

Aesthetic materialization is one of the most important criteria used by consumer in judging the total performance of clothing. The look of garment depends on superiority of fabric, seams used in manufacturing. The fabric properties such as bending and drape along with luster, color, texture, etc. defines fabric and garment appearance.

Drape is an especially vital character of fabric, as it plays main role in aesthetic appeal of fabric. Present-day fashion trends and current technologies impose increasingly requires to the textile industry. New and functional textile materials, recent methods of manufacture of clothes, contest in the world of fashion and clothing are the factors that enforce fashion and clothing industry to make constant modifications and to adjust to the market necessities. Draping is directly associated in presenting the aesthetics and functionality of textile materials and products. Generally, draping can be coefficient was used as a numerical indicator of textile materials drapery.

Drapeability of a fabric is affected by several factors such as stiffness, weight, cover, thickness etc. Stiffness is one of the most widely used parameters to judge bending rigidity and draping quality of fabric. This property can influence the aesthetic appearance as well as the comfort of a fabric. Stiffness of fabric itself depends upon geometrical parameters of the fabric. The thickness of a fabric is one of its essential properties, giving information on its warmth, weight and stiffness. Fabric thickness is dependent on the fabric weave as well as the thread's position in the binding repeat.

The cover of a cloth may be judged by the look of the cloth held up against the light, and it depends not only on the number of threads per cm and their linear density, but also on their regularity, hairiness, fiber composition, twist and the cloth finishing processes. The cover factor indicates the extent to which the area of a fabric is covered by one set of threads. The cover factor thus indicates the degree of closing or cover, the proportion of the area which is covered by the projection of the threads. For any fabric there are two cover factors: the warp cover factor and the weft cover factor. The cloth cover factor is obtained by adding the weft cover factor to the warp cover factor.

Khadi is an Indian cloth. Khadi is also known by another name Khaddar. Khadi - The Hand-woven cotton fabric produced using handspun yarn from natural fibers like cotton, silk, and woolen. Khadi derives its uniqueness from a distinct process: hand-spinning. The pure cotton collected from cotton farms are first ginned and made into rolls of bales. These bales are then converted into roving. The Roving thus obtained are distributed to different spinning units. In the spinning units, the cotton fiber is converted into yarns by hand by using charkas. The yarns are then woven into fabrics using handlooms.

MATERIALS AND METHODS

Materials:

Commercially available eight different types of cotton khadi fabrics are taken in to consideration for this work. Testing of geometrical parameter like yarn density, thread density fabric thickness, fabric weight and fabric cover is carried out and data given table-1.

Table-1: Geometrical Properties

Sl. No	Count (Tex)		Yarn Density		Thickness	Fabric Weight	Cloth Cover
	N_1	N_2	n_1	n_2	MM	GSM	
1	12	12	29	29	0.23	64.90	16.60
2	8	8	36	28	0.12	45.20	15.33
3	11	11	32	26	0.21	69.50	16.07
4	16	32	22	18	0.33	86.40	15.89
5	25	27	24	16	0.44	108.50	17.28
6	23	32	23	17	0.29	113.70	16.97
7	25	25	27	24	0.39	125.80	22.47
8	14	14	24	15	0.50	139.00	20.15

METHODS

Bending Rigidity:

Bending rigidity is a measure of ease with which the fabric bends. The bending rigidity measured using Shirley stiffness tester. The instrument works on cantilever principle which involves moving of fabric specimen over inclined plane until it has bent to angle of 41.5^0 .the bending length, c was determined. Bending length, c, is defined as the length of fabric which will bend under its own weight to a definite extent. It is a measure of the stiffness that determines draping quality. Then bending rigidity determined, it is a measure of stiffness associated with the handle.

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Fabric Drape:

Drape characteristic of the fabric affects aesthetic appearance of garment although it is a subjective characteristic. It can be measured by instrument called Drape meter and value is expressed as drape coefficient. In the present study the Cuscik drape meter was used for measuring drape coefficient of selected fabrics. Cusick drape meter was designed and developed by cusick and widely used to measure drape of fabrics. A circular fabric specimen is held concentrically between smaller horizontal disc and an annular ring of fabric is allowed to drape into folds around the lower supporting disc. The shadow of the draped specimen is cast onto an annular ring of paper of same size as the unsupported part of the fabric specimen. The outline of shadow is traced onto the ring of paper, the mass of which is then determined. The paper is then cut along the trace of shadow and the mass of inner part representing the shadow is determined. The drape co-efficient is calculated from two masses.

RESULTS AND DISCUSSIONS

The measured such as bending rigidity and drape coefficient of khadi fabrics are shown in the table -2.

Table-2: Aesthetic properties

Sl. No	Bending Rigidity	Drape Coefficient
1	68.63	40.02
2	56.75	43.39
3	152.31	50.45
4	258.64	52.08
5	168.15	49.08
6	261.82	44.45
7	130.32	64.74
8	364.65	71.09

The relation between fabric thicknesses with drape coefficient of the fabric is shown in figure 1. The correlation coefficient was calculated to find the relation; the falling ability of the fabric mainly depends on mass and thickness of fabric. As thickness increases drapeability is less.

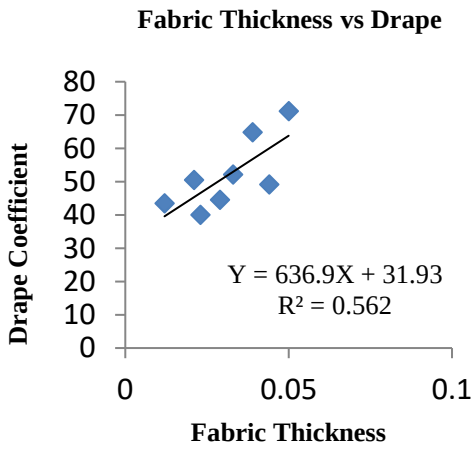

Fig. 1. Fabric Thickness vs. Drape Coefficient.

The relation between fabric weight and drape coefficient is shown in figure 2. It is found from the figure that the trend for varying fabric mass increases drape coefficient of the fabrics. The correlation coefficient for the fabric weight to drape coefficient is 0.76. This implies that an increase in weight of the fabric drape coefficient also increases.

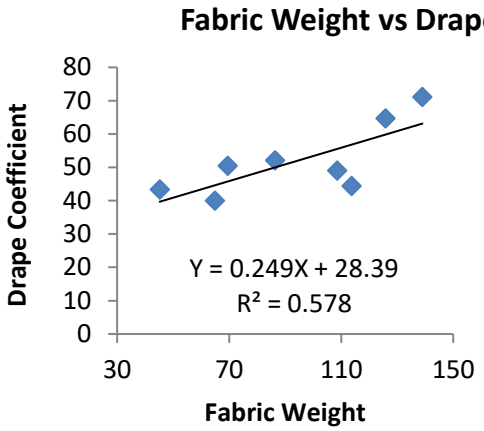

Fig. 2. Fabric Weight vs. Drape Coefficient

The fabric tightness or compactness depends on weave and cover factor. The effect of fabric cover actor on drape coefficient is shown in figure 3. It can be observed from the figure that the change in cover factor alters drape coefficient. The correlation value shows positive correlation between cover factor and drape coefficient.

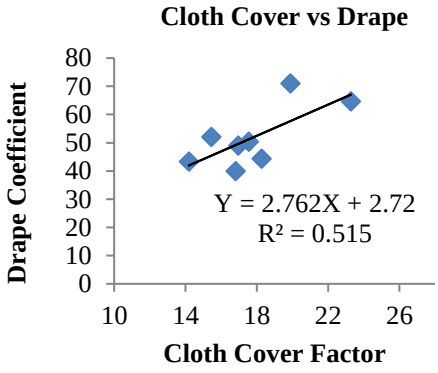

Fig. 3. Fabric Cover vs. Drape Coefficient.

Drape of the fabric is greatly affected by the bending rigidity. The correlation of bending rigidity and drape coefficient is shown in figure 4. There is a good correlation between fabric bending rigidity and drape properties.

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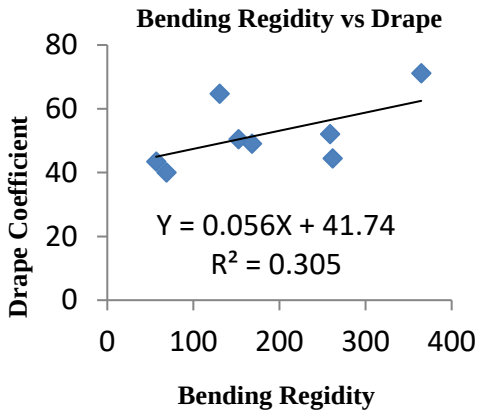

Fig. 4. Bending Rigidity vs. Drape Coefficient

CONCLUSION:

On the basis of investigation there is a positive correlation between drape and fabric parameters such as cloth thickness, cloth cover and fabric weight. There is a good correlation is observed between bending rigidity and drape.

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