METHOD FOR THE DETERMINATION OF THE RECOVERY OF WOOL FABRICS FROM CREASING

C. S. 202 : 1973

~~Price Rs. 8/00~~

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This Standard does not purport to include all the necessary provisions of a contract.

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CEYLON STANDARD METHOD FOR THE DETERMINATION OF THE RECOVERY OF WOOL FABRICS FROM CREASING

FOREWORD

This Ceylon Standard has been prepared by the Drafting Committee on Test Methods for Textiles. It was approved by the Textiles Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council of the Bureau on 9th July 1973.

All quantities and dimensions specified in this standard are given in the International System of Units (SI). In reporting the result of a test made in accordance with this standard, if the final value, observed or calculated is to be rounded off, it shall be done in accordance with C. S. 102 : Ceylon Standard on Presentation of Numerical Values.

The cross recovery of wool and wool mixture fabrics cannot be determined by the method described in C S. ..... Recovery of Fabrics from Creasing, owing to several drawbacks. A more suitable test, based on the same method of creasing has been developed by the Wool Industries Research Association, and this has been adopted in the Ceylon Standard.

This Standard makes reference to the following Ceylon Standard C. S. 16 – Standard Atmosphere for conditioning and testing textile materials.

1. SCOPE

This method is applicable to wool and wool mixture fabrics of thicknesses ranging from about 0·13 mm to about 1 mm.

2. DEFINITIONS

For the pupose of the standard in following definition shall apply.

2·1 Crease recovery angle - The crease recovery angle of a specimen is the angle between the two arms of the test specimen after loading and recovery. It is measured in degrees. A crease recovery angle of 0 degrees signifies no recovery from creasing and a crease recovery angle of 180 degrees signifies 100 per cent recovery from creasing.

3. PRINCIPLE

A small rectangular specimen is folded in half and pressed between parallel plates under a specified load for a given time. The load is removed a specified time allowed for recovery, the specimen is placed on an optical projector and an image of the crease profile is projected on to a screen. The crease recovery angle of the test specimen is measured directly from this image with a protractor.

4. APPARATUS

4·1 An optical projector to give a 10x magnified image of the profile of a creased specimen. The general arrangement of a suitable projector is illustrated in Fig. 1 and the component parts are as follows:

i. A lamp assembly consisting of a 12 volt 24 watt light bulb and a condensor lens.

ii. A transformer for connecting the bulb to mains supply.

iii. The objective is a compensated lens assembly of focal length 50 mm.

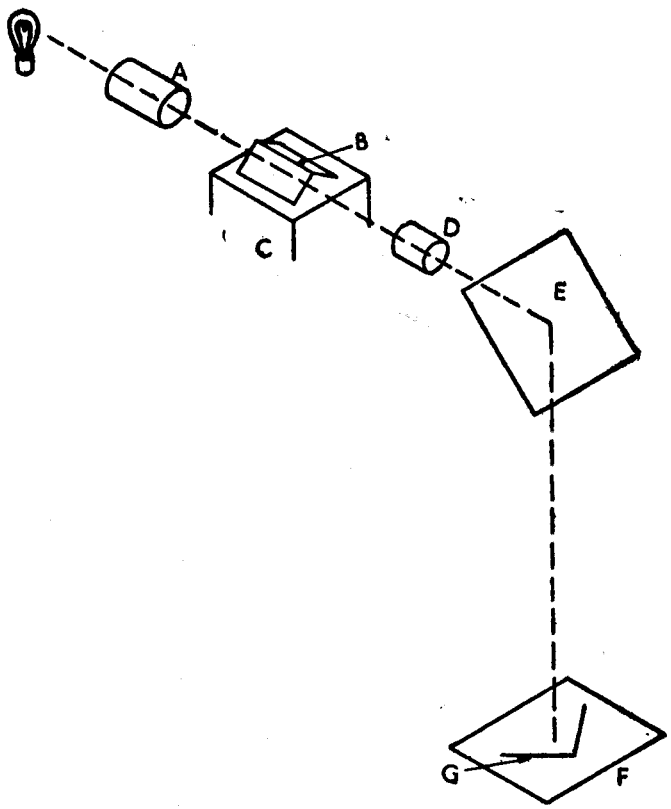
iv. A small platform surfaced with a piece of smooth plastic sheet somewhat larger than the specimen.

v. A small pocket mirror, about 50 mm X 80 mm to turn the light rays through 90 degrees.

vi. A piece of white cardboard about 180 mm square to act as a screen. This is anchored to a base plate.

vii. A frame to hold the various components in positson can be conveniently made of wood. (Not shown in Fig. 1). In order to obtain a clear image of the crease profile the frame must be designed so that most of the extraneous light is prevented from reaching the screen.

The objective is fixed at about 300 mm from the light bulb and the optical distance between the objective and screen is about 550 mm the distance between the end of the specimen nearest the objective and the objective is about 60 mm.



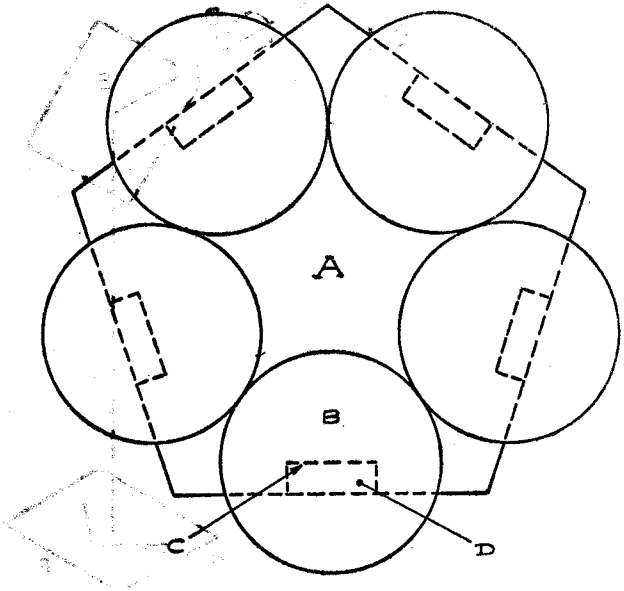
A. Condenser B. Specimen C. Platform D. Objective
E. Plane Mirror F. Screen G. Image

Fig. 1 Optical Projector

4·2 A perspex plate cut to the shape of a regular pentagon Thickness=65 mm; Side length=914 mm.

4·3 A somewhat larger piece of perspex of similar thickness for the base plate.

4·4 Cylindrical weights of diameters 635 mm. For easy handling it is convenient to make these in units of 2 kg and two such units are placed over each test specimen. Steel is a suitable material and the length of each unit is about 826 mm (depending on the density of the steel used). A coat of industrial enamel paints protects the weights from rusting. Figure 2.



Base Plate

A. Pentagon Plate
B. 4 kg Weight
C. Crease under Centre of Weight
D. Folded Specimen

Fig 2. Apparatus for Loading Specimens

4·5 A watch or clock.

4·6 Forceps with flat jaws.

4·7 A protractor graduated at intervals of 1° and in which the radial lines extend nearly to its centre. Figure 3.

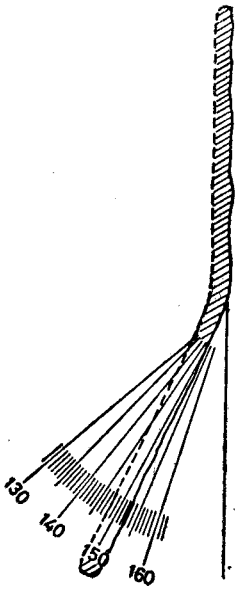


Fig. 3 Protractor and Magnified Image of a Profile

5. ATMOSPHERE FOR CONDITIONING AND TESTING

Condition the specimen to equilibrium and test in the standard atmosphere for testing as defined in C.S. 16* (relative humidity 65 ± 2 per cent and temperature 27 ± 2°C).

6. SELECTION AND PREPARATION OF TEST SPECIMENS

6·1 Dimensions and selection - Cut rectangular specimens, size 17 mm X 25 mm spread throughout the whole of the available material but not less than 50 mm from the selvedge. Cut half the total number of specimens with their long edges parallel to the weft direction in such a way that no two specimens contain common warp or weft threads. Avoid creased or folded placed of the material.

* C. S. 16 - Standard atmosphere for conditioning & testing textile materials.

6·2 Number - The number of specimens to be tested will depend on the accuracy required and as a guide to this it may be noted that the coefficients of variation of the mean crease recovery angles of many wool fabrics range from about 1 per cent to about 5 per cent. For routine purposes 20 test specimens (10 warp and 10 weft) have been found generally suitable.

7. TEST PROCEDURE

Fold a specimen exactly in half to bring the two longer edges together, grip these with the forceps, and slide the specimen under the middle of one side of the pentagon plate, the edges which have been brought together now being in line with the side of the plate. Fold and place four more specimens under the remaining sides of the pentagon plate and place 4 kg (i. e. two 2 kg weights) centrally over each specimen as shown in Fig. 2. (The correct positioning of specimens and loads is facilitated by marking lines and circular arcs on the pentagon plate with a steel scribe). After one and a half hours loading remove the loads and pentagon plate and allow the specimens on the base plate to recover for half an hour.

Transfer each specimen in turn to the platform of the optical projector, crease uppermost, using forceps, and taking care not to disturb the existing crease formation. Adjust the position of the platform slightly until a clear image of the crease profile is obtained on the screen. Place a protractor over the image, read off and record the crease recovery angle to the nearest degree. Measurements are taken from the convex face of the specimen as the image of the profile of this face is more distinct (see Fig. 3). Turn the platform round measure and record the crease recovery angle at the other end of the specimen in a similar manner. Calculate and record the mean of the two readings to the nearest degree, this is the crease recovery angle of the test specimen.

If a permanent record of the crease profiles is required place slips of plain paper on the screen, trace the images of the crease profiles, label and measure crease recovery angles as described above.

In carrying out this test procedure fold half the number of specimens face to-face and the other half back-to-back.

8. EXPRESSION OF RESULTS

Quote the mean values of the crease recovery angles to the nearest degree for warp and weft directions. Draw attention to differences in crease recovery angle found between face-to face and back-to-back folded specimens if mean values differ by more than 10 degrees.

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