

# INTERNATIONAL STANDARD

**ISO**  
**9867**

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## Textiles — Evaluation of the wrinkle recovery of fabrics — Appearance method

**iTeh STANDARD PREVIEW**  
*Textiles — Évaluation de la défroissabilité de tissus — Méthode  
d'évaluation de l'aspect*  
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ISO 9867:1991

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INTERNATIONAL

ISO



Reference number  
ISO 9867:1991(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9867 was prepared by Technical Committee ISO/TC 38, *Textiles*, Sub-Committee SC 2, *Cleansing, finishing and water resistance tests*.

Annex A of this International Standard is for information only.

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# Textiles — Evaluation of the wrinkle recovery of fabrics — Appearance method

## 1 Scope

This International Standard describes a method of evaluating the appearance of textile fabrics after induced wrinkling. It is applicable to fabrics made from any fibre or combination of fibres.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 105-A03:1987, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining*.

ISO 139:1973, *Textiles — Standard atmospheres for conditioning and testing*.

## 3 Principle

A test specimen is wrinkled under specified atmospheric conditions in a wrinkling device under a predetermined load for a prescribed period of time. The specimen is reconditioned in a standard atmosphere and evaluated for appearance by comparison with three-dimensional wrinkle recovery replicas.

## 4 Apparatus

4.1 **Wrinkle tester**<sup>1)</sup> (see figure 1).

4.2 **Three-dimensional wrinkle recovery replicas**<sup>1)</sup> (see figure 2).

4.3 **Lighting and evaluation area**, in a darkened room, using the overhead lighting arrangement shown in figure 3. The evaluation area shall be maintained under the conditions specified in clause 5 b).

4.4 **Clothes hangers with clips**.

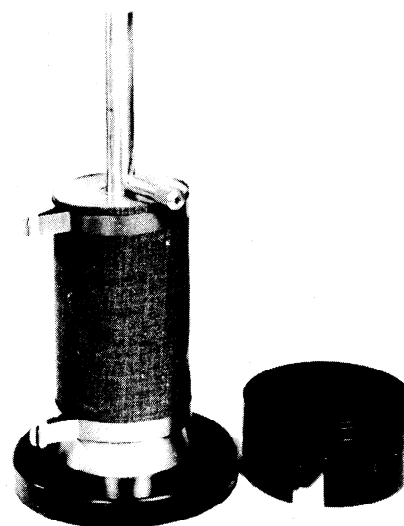


Figure 1 — Wrinkle tester

1) For details of the source of supply of wrinkle testers and three-dimensional wrinkle recovery replicas, apply to national standards institutions.

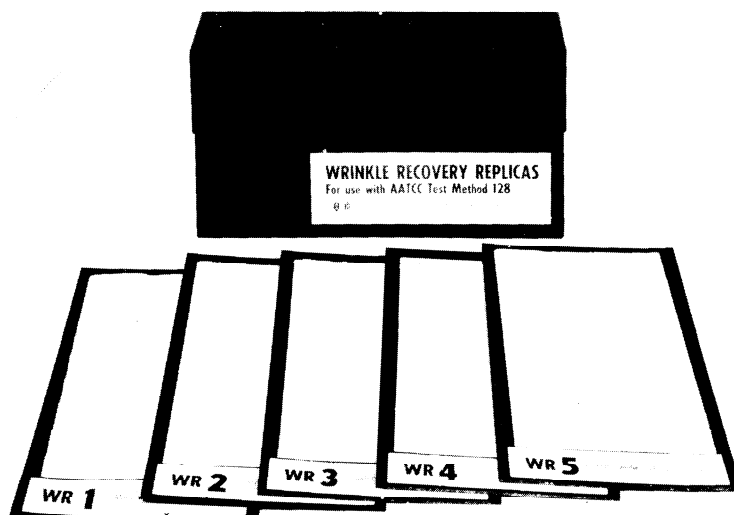
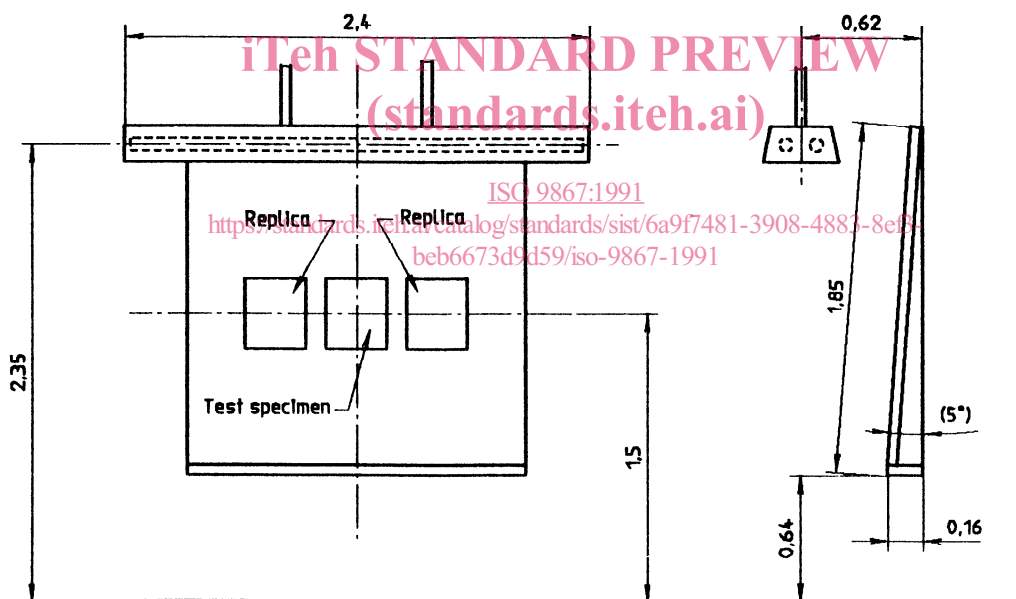


Figure 2 — Wrinkle recovery replicas

Dimensions in metres



Materials list

- a) Two 2,4 m length CW (cool white) fluorescent lamps, without baffle or glass.
- b) One white enamel reflector, without baffle or glass.
- c) One general-type fabric mount, spring-loaded. Fabricate using light sheet metal (22 ga).
- d) One 6 mm thick plywood mounting board, outside dimensions 1,2 m x 1,85 m, painted grey to match No. 2 rating on the grey scale for assessing staining specified in ISO 105-A03.

Figure 3 — Lighting equipment for viewing test specimens

## 5 Atmospheres for conditioning and testing

Unless otherwise indicated, the following atmospheres, as specified in ISO 139, shall be used:

- a) for preconditioning, an atmosphere having a relative humidity of 10 % or lower and a temperature of 50 °C or lower;
- b) for conditioning and testing, an atmosphere having a relative humidity of  $(65 \pm 2)$  % and a temperature of  $(20 \pm 2)$  °C or  $(27 \pm 2)$  °C.

## 6 Test specimens

### 6.1 Preparation

From the fabric to be tested, cut three specimens, each measuring 150 mm × 280 mm, and each with the long dimension running in the warp direction of a woven fabric or the wale direction of a knitted fabric. Identify each specimen along one edge of the face side.

Cut the specimens from a wrinkle-free area of the fabric. If any wrinkles are unavoidably present in the test specimens, press each lightly with a steam iron before conditioning.

### 6.2 Conditioning

Precondition and then condition the test specimens in accordance with ISO 139 in the respective atmospheres specified in clause 5.

## 7 Procedure

**7.1** Raise the top flange of the wrinkle tester (4.1) and hold in the top position with the locking pin.

**7.2** Wrap one long edge (i.e. the 280 mm side) of a preconditioned and conditioned (see 6.2) test specimen around the top flange of the wrinkle tester, with the face side of the specimen on the outside, and clamp in position using the steel spring and clamp provided. Arrange the ends of the specimen so that they are opposite the opening in the spring clamp.

**7.3** Wrap the opposite long edge of the specimen around the bottom flange and clamp as described in 7.2.

**7.4** Adjust the specimen by pulling on its bottom edge so that it lies smooth without sagging between the top and the bottom flanges.

**7.5** Withdraw the locking pin and lower the top flange gently with one hand until it comes to rest.

**7.6** Immediately place a total mass of 3 500 g on the top flange and record the time.

There may be differences in the weights supplied with different wrinkle testers. If necessary, add additional weights to the top flange to achieve a total mass on the top flange of 3 500 g.

**7.7** After 20 min, remove the mass, the springs and the clamps. Raise the top flange and gently remove the specimen from the wrinkle tester so as not to distort any induced wrinkles.

**7.8** With a minimum of handling, place the shorter edge (i.e. the 150 mm side) under the clips on the clothes hanger (4.4) and allow the specimen to hang vertically in the long direction.

**7.9** After 24 h in the standard atmosphere [see clause 5 b)], gently remove the hanger with the specimen to the evaluation area (4.3).

## 8 Evaluation

**8.1** Three trained observers shall rate each test specimen independently.

Since previous tests have proven that specimens change in appearance during the first few hours, it is important that accurate times be observed and that a minimum time elapses while the three observers are evaluating the specimens. Because of these changing conditions, the duration of recovery before rating in this method has been standardized at 24 h.

**8.2** Mount the test specimen on the viewing board as illustrated in figure 3, with the warp or wale direction vertical. Place three-dimensional wrinkle recovery replicas (4.2) one on each side of the test specimen to facilitate comparative rating. Mount replicas 1, 3 or 5 on the left side and 2 or 4 on the right side.

The overhead fluorescent light shall be the only light source for the viewing board, and all other lights in the room shall be turned off.

**NOTE 1** It has been the experience of many observers that light reflected from the side walls near the viewing board can interfere with the rating results. It is recommended that the side walls be painted black or that blackout curtains be mounted on either side of the viewing board to eliminate the reflective interference.

**8.3** The observer shall stand directly in front of the specimen, 1,22 m away from the bottom front of the board.

NOTE 2 It has been found that normal variations in the height of the observer above and below the arbitrary 1,50 m eye level have no significant effect on the rating given.

8.4 Assign the number of the replica which most nearly matches the appearance of the test specimen (see table 1).

NOTE 3 A No. 5 rating is equivalent to the WR-5 replica and represents the smoothest appearance and best retention of original appearance, while a No. 1 rating is equivalent to the WR-1 replica and represents the poorest appearance and poorest retention of original appearance.

8.5 Similarly, the observer independently rates the other two test specimens. The other two observers proceed in the same manner, assigning ratings independently.

**Table 1 — Fabric smoothness ratings**

Rating No.	Fabric appearance
5	An appearance equivalent to the WR-5 replica
4	An appearance equivalent to the WR-4 replica
3	An appearance equivalent to the WR-3 replica
2	An appearance equivalent to the WR-2 replica
1	An appearance equivalent to or worse than the WR-1 replica

## 9 Expression of results

Calculate the average of the nine observations for each sample and express to the nearest half-rating.

NOTE 4 Annex A gives a summary of the report of an international interlaboratory study on wrinkle recovery of fabrics.

## 10 Test report

The test report shall include the following information:

- a) the number and year of publication of this International Standard, i.e. ISO 9867:1991;
- b) the average of the nine observations made for each sample, to the nearest half-rating;
- c) the conditioning atmosphere used for testing.

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equivalent to or worse than the WR-1 replica  
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## **Annex A**

(informative)

### **Summary of international interlaboratory study on wrinkle recovery of fabrics**

In the spring of 1986, eleven laboratories agreed to participate in an interlaboratory trial to determine the reproducibility of this method. Data was received from nine of the laboratories, in Belgium, South Africa, Sweden, the United Kingdom and 5 laboratories in the United States.

The within-laboratory variability demonstrated in this study is negligible and, while there is more variability between laboratories, that variability is

within statistical control. From the data presented, it can be concluded that this method of test does provide a test procedure which will allow laboratories to compare the wrinkle behaviour of fabrics in a reproducible manner.

NOTE 5 The full study containing all raw data is available from the secretariat of ISO/TC 38/SC 2 (ANSI) upon request.

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