

Textiles — Method for assessing appearance of apparel and other textile end products after domestic washing and drying

ORIGINAL

CONTROLLED

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British Standard

ICS 59.080.01

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National foreword

This British Standard is the official English language version of EN ISO 15487:2001. It is identical with ISO 15487:1999.

The UK participation in its preparation was entrusted to Technical Committee TCI/82, Textiles - Care labelling, dry cleaning, domestic laundering and drying, which has the responsibility to:

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- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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This British Standard, having been prepared under the direction of the Sector Board for Materials and Chemicals, was published under the authority of the Standards Committee and comes into effect on 15 September 2001

Summary of pages

This document comprises a front cover, an inside front cover, the EN ISO title page, the EN ISO foreword page, the ISO title page, pages ii to iii, a blank page, pages 1 to 10, the Annex ZA page and a back cover.

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13643 Incorporating Corrigendum No. 1	29 January 2002	Corrected the EN ISO foreword page and inserted the Annex ZA page.

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English version

**Textiles - Method for assessing appearance of apparel and other
textile end products after domestic washing and drying (ISO
15487:1999)**

Textiles - Méthode d'évaluation de l'aspect des vêtements
et autres produits finis textiles après lavage et séchage
domestiques (ISO 15487:1999)

Textilien - Verfahren für die Bewertung des Aussehens von
Bekleidung und anderen textilen Fertigerzeugnissen nach
Haushaltwäsche und Trocknen (ISO 15487:1999)

This European Standard was approved by CEN on 9 June 2001.

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Foreword

The text of the International Standard from Technical Committee ISO/TC 38 "Textiles" of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 248 "Textiles and textile products", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2002, and conflicting national standards shall be withdrawn at the latest by January 2002.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 15487:1999 has been approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

EN ISO 15487:2001

**INTERNATIONAL
STANDARD**

**ISO
15487**

First edition
1999-12-15

**Textiles — Method for assessing
appearance of apparel and other textile end
products after domestic washing and
drying**

*Textiles — Méthode d'évaluation de l'aspect des vêtements et autres
produits finis textiles après lavage et séchage domestiques*

Reference number
ISO 15487:1999(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15487 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 2, *Cleansing, finishing and water resistance tests*.

Textiles — Method for assessing appearance of apparel and other textile end products after domestic washing and drying

1 Scope

This International Standard specifies a method of test for evaluating the smoothness appearance of flat fabric and seams, and the retention of pressed-in creases in garments and other textile products after one or several domestic washing and drying treatments. This International Standard is applicable to any washable textile end product of any fabric construction. Techniques for seaming and creasing are not included since the purpose is to evaluate textile end products as they will be supplied by the manufacturer or as ready-to-use. Techniques for seaming and creasing are controlled by fabric properties.

This method has been developed for use primarily with domestic washing machines of Type B as defined in ISO 6330, but it may be possible to use it with machines of Type A defined in the same International Standard.

It is recognized that prints and patterns may mask the wrinkled appearance present in textile end products. The rating process is, however, based on visual appearance of specimens including such effects.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 105-A03:1993, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining.*

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

ISO 6330:1984, *Textiles — Domestic washing and drying procedures for textile testing.*

3 Terms and definitions

For the purposes of this International Standard the following terms and definitions apply.

3.1

appearance (of apparel and textile end products)

overall visual impression of apparel and other textile end product quantified by comparison of individual components with appropriate reference standards

3.2

crease retention (in fabrics)

visual impression of an inserted crease quantified by comparison with a set of reference standards

3.3
dryer creases (in fabrics)
sharp folds or lines running in any direction in a laundered or dried specimen

NOTE Dryer creases are an unintended result of restricted movement of specimens in the washer or the dryer.

3.4
durable press
substantial retention of the initial shape, flat seams, pressed-in creases and unwrinkled appearance during use and after laundering

3.5
laundering (of fabric, apparel and textile end products)
process intended to remove soils and/or stains by treatment (washing) with an aqueous detergent solution and normally including rinsing, extracting and drying

3.6
seam smoothness (in fabrics)
visual impression of flatness of a seamed specimen quantified by comparison with a set of reference standards

3.7
smoothness appearance (in fabrics)
visual impression of flatness of a specimen quantified by comparison with a set of reference standards

4 Principle

4.1 Garments or other textile end products are subjected to procedures simulating domestic laundering practices. One of the washing and drying procedures specified in ISO 6330 is used, as agreed between interested parties.

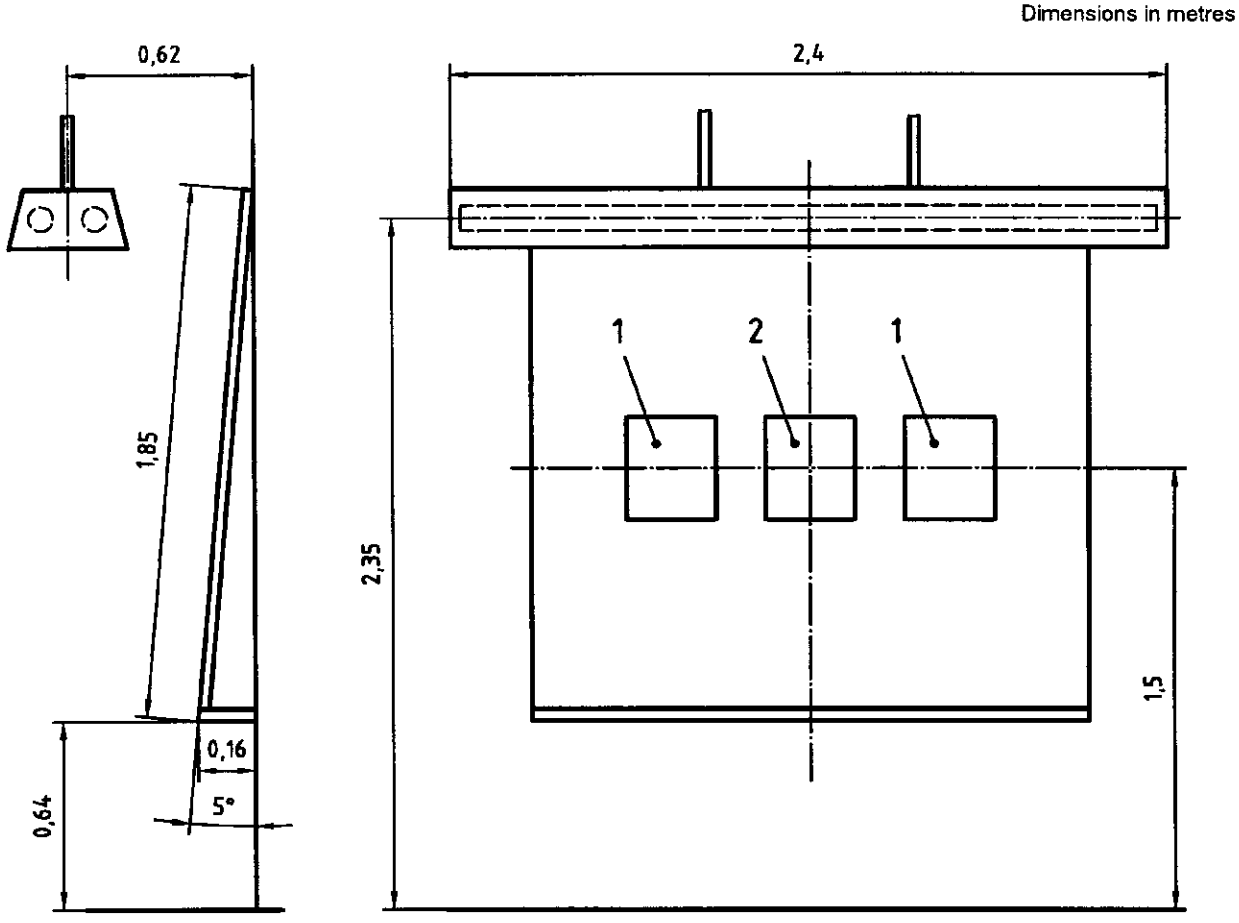
4.2 Garments or other textile end products are compared visually with plastic smoothness appearance replicas, plastic crease replicas and/or photographic seam standards under specified illumination. A supplemental spot light suitably placed to highlight the creased area of the textile is used in crease evaluation.

5 Apparatus and reagents

5.1 Washing and drying apparatus, as specified in ISO 6330

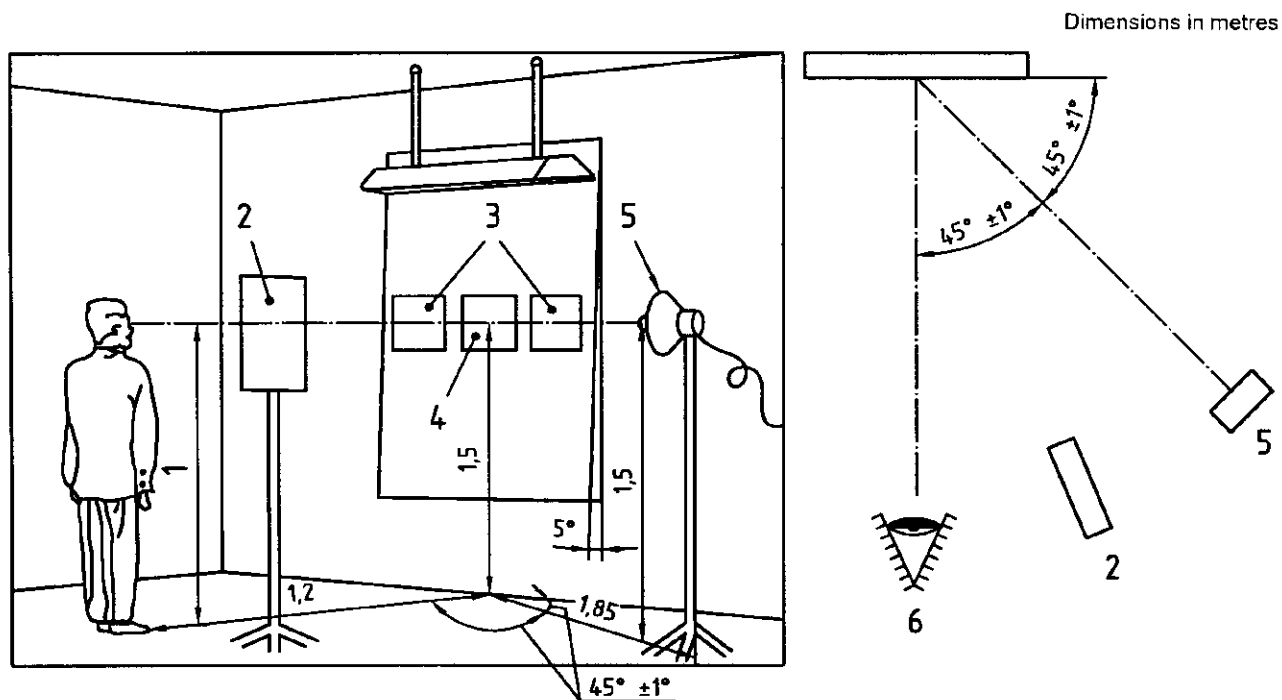
5.2 Lighting and evaluation area, in a darkened room using lighting arrangement shown in Figures 1 and 2 and comprising the following items:

- a) two 2,4 m in length CW (cool white) fluorescent lamps, without baffle or glass;
- b) one white enamel reflector, without baffle or glass;
- c) one 6 mm thick plywood mounting board, outside dimensions 1,85 m × 1,20 m, painted grey to match No. 2 rating on the grey scale for assessing staining specified in ISO 105-A03;
- d) one 500 W reflector floodlight and lightshield (for the purpose of protecting the viewer's eyes from direct light as illustrated in Figure 2).



- Key**
1 Standard
2 Test specimen

Figure 1 — Lighting equipment for viewing test specimens



Key

- | | |
|-----------------------|------------------------------|
| 1 Arbitrary eye level | 4 Test specimen |
| 2 Lightshield | 5 500 W reflector floodlight |
| 3 Standard | 6 Observer |

Figure 2 — Lighting and viewing arrangement

5.3 American Association of Textile Chemists and Colorists (AATCC) standard plastic crease replicas, prepared for evaluating creases, as shown in Figure 3

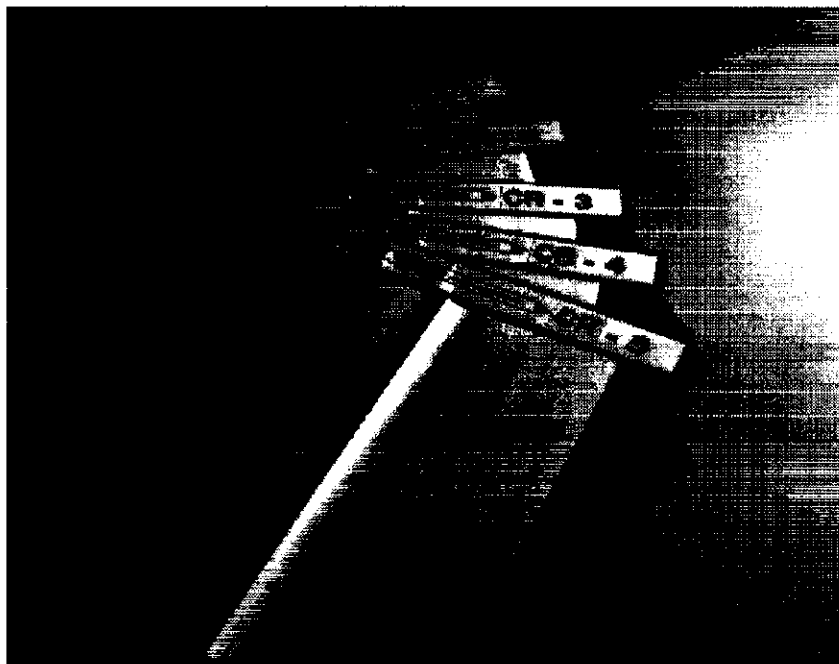


Figure 3 — AATCC standard plastic crease replicas

6 Test specimens

For textile end product tests, select three items for testing.

7 Procedure

7.1 Washing and drying

Wash and dry the specimens in accordance with one of the procedures specified in ISO 6330, as agreed between the interested parties.

If required, repeat the selected washing and drying cycle four times, to give a total of five cycles.

If dryer creases develop in specimens after any drying cycle except the last, they shall be rewet and an attempt made to remove the creases prior to additional washing and drying. No attempt to remove wrinkles or creases shall be made after the fifth cycle of drying.

7.2 Conditioning

Condition the test specimens for 4 h in one of the atmospheres specified in ISO 139, by hanging on a hanger, straightening and smoothing facings, seams, etc.

7.3 Observation

Three observers shall rate each treated test specimen independently, as follows:

- a) The overhead fluorescent light [5.2 a)] shall be the only light source for the viewing board [(5.2 c)]. All other lights in the room shall be turned off except when rating crease appearance. In that case, the floodlight with reflector and lightshield [(5.2 d)], positioned as shown in Figure 2, is also required.
- b) Apparel and other end use items shall be placed on the viewing board so that, as far as possible, the observer views them in the spatial placement in which they are encountered in use.
- c) The observer shall stand directly in front of the specimen 120 cm \pm 3 cm away from the board. It has been found that normal variations in the height of the observer above and below the arbitrary 1,5 m eye level have no significant effect on the grade given.

7.4 Smoothness appearance

7.4.1 Mount the test specimen on the viewing board as illustrated in Figure 1, with the fabric length in the vertical direction. Place the most similar three-dimensional plastic replicas (5.5) on each side of the test specimen to facilitate comparative rating.

7.4.2 Although the 3-D Smoothness Appearance (SA) replicas (5.5) were cast from woven fabrics, it is understood that these wrinkled surfaces do not duplicate all possibilities of fabric surfaces. The replicas shall be used as guides which represent various levels of fabric smoothness or freedom from wrinkles. The observer shall mentally integrate the degree and frequency of wrinkles in the specimen in order to determine a level of smoothness that can be identified with the SA replica number which most closely represents that smoothness appearance level; see Table 1.

7.4.3 Assign the numerical grade of the replica which most closely matches the smoothness appearance of the test specimen, or assign a grade midway between those whole-number standards which have no half-number standards separating them (SA-1,5, SA-2,5, SA-4,5) if the appearance of the test specimen warrants it.

7.4.4 An SA-5 grade is equivalent to the SA-5 replica and represents the smoothest appearance, while an SA-1 replica represents very poor appearance.

Table 1 — Fabric smoothness grades by SA replica equivalents

Grade	Description
SA-5	Equivalent to the SA-5 Replica. Very smooth, pressed, finished appearance.
SA-4	Equivalent to the SA-4 Replica. Smooth, finished appearance.
SA-3.5	Equivalent to the SA-3.5 Replica. Fairly smooth but nonpressed appearance.
SA-3	Equivalent to the SA-3 Replica. Mussed, nonpressed appearance.
SA-2	Equivalent to the SA-2 Replica. Rumpled, obviously wrinkled appearance.
SA-1	Equivalent to the SA-1 Replica. Crumpled, creased and severely wrinkled appearance.

7.4.5 If dryer creases are present on any specimens to be evaluated, take care in rating the specimens. Some dryer creases can be disregarded (commonly called "reading out"). When the grade of a dryer-creased specimen differs from the other specimens by more than one grade, the test should be repeated with new specimens, taking all precautions to avoid the occurrence of dryer creases.

7.5 Appearance of seams

7.5.1 Mount the test specimen on the viewing board with the seam in the vertical direction. Place the appropriate single- or double-needle standard seam smoothness (SS) replicas beside the specimen in order to facilitate comparative rating.

7.5.2 Confine observations to the area influenced by the seam and disregard the appearance of the surrounding fabric.

7.5.3 Assign the numerical grade of the photographic standard (5.4) which most nearly matches the appearance of the seam in the test specimen.

7.5.4 A seam smoothness grade of SS-5 is equivalent to the appearance of Standard No. 5, the best level of seam appearance; a seam smoothness grade of SS-1 is equivalent to that of Standard No. 1, which represents a very poor level of seam appearance.

7.6 Appearance of creases

7.6.1 Mount the test specimen on the viewing board with the crease in the vertical direction. Place the most similar three-dimensional plastic crease replicas (5.3) on each side of the test specimen to facilitate comparative rating. Mount replicas 1, 3 and 5 on the left and 2 and 4 on the right.

7.6.2 The floodlight with reflector and lightshield shall be positioned in the viewing area, as shown in Figure 2, and used during the rating process.

7.6.3 Confine observations to the crease itself and disregard the appearance of the fabric.

7.6.4 Assign the numerical grade of the replica which most nearly matches the appearance of the crease in the test specimen.

7.6.5 A crease retention grade of CR-5 is equivalent to the appearance of Standard No. 5, the best level of crease appearance; a crease retention grade of CR-1 is equivalent to that of Standard No. 1, which represents a very poor level of crease appearance.

7.7 Appearance of textile end products

7.7.1 The individual components to be evaluated in each test item shall be determined and entered in a Rating Chart (see Figure 7).

7.7.2 If it is desired to designate certain components as more or less important to the overall appearance of the item, weighting factors should be added to the Rating Chart.

7.7.3 The weighting factors to be assigned to each component are:

- 3 – Very important to overall item appearance.
- 2 – Moderately important to overall item appearance.
- 1 – Slightly important to overall item appearance.

7.7.4 Mount the item on the viewing board so that the centre of the area or component to be rated is approximately 1,5 m from the floor as illustrated in Figure 1. Place the appropriate three-dimensional plastic replicas or photographs in proper position to facilitate comparative rating (refer to 7.4, 7.5 or 7.6).

Identification:

Component (characteristic, attribute)	Weighting factor	Average grade	Point value
	x	=	
	x	=	
	x	=	
	x	=	
	x	=	
	x	=	
	x	=	
	x	=	

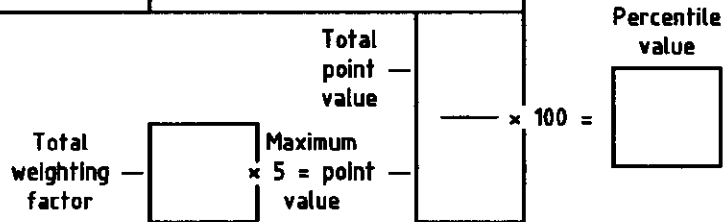


Figure 7 — Rating Chart

7.7.5 If the item is exceptionally large, such as a sheet, comforter, bedspread, curtain or drapery, fold the item lengthwise to produce a panel half the original width. Place this half panel over a rod so that the fabric length is vertical and the folded item is in equal quarters. The rod should be sufficiently long to accommodate the half width item. Attach the rod with the large item to the rating board at approximately 1,8 m from the floor. Position the standard replicas or photographs in such a way as to facilitate comparative rating. Evaluate the area across the full width of the quartered panel at the same eye level as the replicas. Evaluate all four quarters in the same manner and report average grade for each component evaluated in the test item.

8 Expression of Results

Average the nine (9) observations made by the three observers on the set of three test specimens for each of the evaluation procedures 7.4, 7.5 and 7.6. Report the three averages to the nearest half rating.

a) Option 1: Using weighting factors

Total the weighting factors assigned to each component in the rating chart (Figure 7) and multiply by 5. This gives the maximum point value achievable by the item. Multiply the average grade recorded for each component by its assigned weighting factor. Total these values to obtain the actual point value achieved by the item. Report as the percentile value of the item the number obtained by dividing the actual point value by the maximum point value achievable and multiplying by 100. This value is the unit of measure of this test method.

b) Option 2: Calculate and report average grades on each individual component of each test item, using the average grade column of the rating chart.

9 Test Report

The test report shall include the following information:

- a) reference to this International Standard, i.e. ISO 15487:1999;
- b) details of the sample evaluated;
- c) details of the washing and drying procedures used as specified in ISO 6330;
- d) the number of washing and drying cycles used;
- e) the value calculated according to 8 a);
- f) average grades calculated according to 8 b);
- g) if fraying occurs in laundering at seams or elsewhere within the product, the location and amount should be noted;
- h) details of any deviation from the specified procedure.

Bibliography

- [1] ISO 7768:1985, *Textiles — Method for assessing the appearance of durable press fabrics after domestic washing and drying.*
- [2] ISO 7769:1992, *Textiles — Method for assessing the appearance of creases in durable-press products after domestic washing and drying.*
- [3] ISO 7770:1985, *Textiles — Method for assessing the appearance of seams in durable press products after domestic washing and drying.*

Annex ZA (normative)
Normative references to international publications
with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 105-A03	1993	Textiles - Test for colour fastness - Part A03: Grey scale for assessing staining	EN 20105-A03	1994
ISO 139	1973	Textiles - Standard atmospheres for conditioning and testing	EN 20139	1992
ISO 6330	1984	Textiles - Domestic washing and drying procedures for textile testing	EN 26330	1993

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