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**Testing methods for crease recovery of
textiles — Part 1: Determination of the
recovery from creasing of a horizontally
folded specimen by measuring the angle
of recovery**

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In the event of any doubts arising as to the contents,
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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Textile Evaluation Technology Council (JTETC)/ Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently, **JIS L 1059-1:1998** is replaced with this Standard.

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Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS L 1059 series consists of the following 2 parts under the general title “*Testing methods for crease recovery of textiles*”:

Part 1: Determination of the recovery from creasing of a horizontally folded specimen by measuring the angle of recovery

Part 2: Evaluation of the wrinkle recovery of fabrics — Appearance method

Testing methods for crease recovery of textiles — Part 1 : Determination of the recovery from creasing of a horizontally folded specimen by measuring the angle of recovery

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of ISO 2313 published in 1972 with some modifications of the technical contents to conform to the actual situation of testing methods for crease recovery of textiles in Japan.

The portions given dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of modifications with the explanations is given in Annex JB.

1 Scope

This Standard specifies the testing method for evaluation of crease recovery of textiles from the creasing of fabrics by measuring the angle of recovery (Monsant method).

The results obtained by this method for fabrics of very different types cannot be compared directly. Attention is drawn to the fact that for some types of fabrics, the limpness, thickness and tendency to curl may give rise to very ill-defined crease recovery angles, and an unacceptable lack of precision in measurements. Many wool and wool mixture fabrics come under this heading.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 2313 : 1972 *Textile fabrics — Determination of the recovery from creasing of a horizontally folded specimen by measuring the angle of recovery* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent edition of the standard (including amendments) indicated below shall be applied.

JIS K 8625 *Sodium carbonate (Reagent)*

JIS L 0105 *General principles of physical testing methods for textiles*

NOTE : Corresponding International Standard : **ISO 139** : 2005 *Textiles — Standard atmospheres for conditioning and testing* (MOD)

JIS L 0208 Glossary of terms used in textile industry — Testing

JIS L 0860 Test methods for colour fastness to dry cleaning

JIS Z 8401 Guide to the rounding of numbers

3 Terms and definitions

For the purposes of this Standard, the terms and definitions given in JIS L 0105 and JIS L 0208, and the following definition shall apply.

3.1 crease recovery angle

an angle between two limbs of a specimen over the fold measured at a specified time after removal of the load, which is formed due to the load under specified conditions

4 Principle

A rectangular specimen of specified dimensions is folded by means of a suitable apparatus and maintained in this state for a specified time under a specified load. After that, the load is removed, the specimen is allowed to recover for a specified time, then the crease recovery angle shall be measured.

5 Types of test

The types of test shall be as follows.

a) **Method A (10 N load method)**

b) **Method B (4.9 N load method)**

NOTE : See Annex JA for the determination of recovery from creasing of horizontally folded specimen by measuring angle of recovery (wire method).

6 Specimen

6.1 Sampling of specimens

Specimens shall be taken from the representative part of fabric to be tested not less than 50 mm from selvages, and shall not be taken from creased, wrinkled, bent, or deformed parts.

6.2 Dimensions of specimens

Dimensions of specimens shall be 40 mm × 15 mm.

6.3 Number of specimens

Not less than 20 specimens shall be prepared to obtain the reliable values of crease recovery angle. Half of them shall be taken with their long sides parallel to the length direction [warp (woven fabric), wale (knitted fabric) or length direction (non-woven fabric)] and the other half with their long sides parallel to the transverse direction [weft (woven fabric), courses (knitted fabric) or at right angles to length direction (non-woven fabric)]. The same direction (for example, the length direction) shall be marked on each specimen. An example of sampling method of specimens is shown in figure 1. When agreed between the purchaser and the manufacturer, the sampling method shall be in accordance with the agreement.

Unit : mm

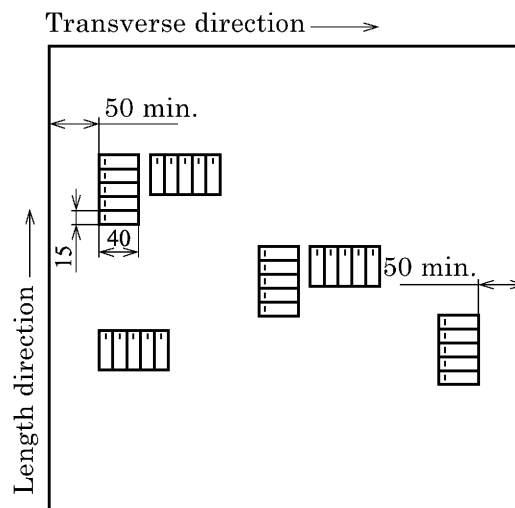


Figure 1 Example of sampling method of specimen

6.4 Conditioning of specimens

The conditioning of specimens shall be as follows.

- a) **Standard conditions** Specimens shall be conditioned for at least 24 h under the conditions of 5.1.1 of JIS L 0105. Specimens shall be handled solely with tweezers or fingerstalls.

NOTE : Strict observance of all test conditions in respect of preparation and handling of specimens is essential if reliable values of crease recovery angle are to be obtained.

- b) **High humidity conditions** For measurements under high humidity, specimens shall be conditioned under the conditions at a temperature of $35\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and relative humidity of $(90 \pm 2)\%$ for at least 24 h.
- c) **Wet conditions** Specimens shall be immersed in the aqueous solution at a temperature of $40\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ containing 0.2 % of non-ionic surface active agent specified

in JIS L 0860 and 0.2 % of sodium carbonate (guaranteed) specified in JIS K 8625 for 15 min, then washed with water. The excess moisture shall be removed with a sheet of filter paper. Specimens left as wet shall be measured.

6.5 General conditions

Specimens conditioned in a), b) or c) of 6.4 shall be tested under the environment specified in 5.1.1 of JIS L 0105. In this case, the testing apparatus of crease recovery angle shall be horizontally installed, and of which draughts, operator's breath and excessive heat radiation from lighting appliances shall be shut off. For the tests using the specimens conditioned in b) or c) of 6.4, the crease recovery angle shall be obtained immediately after conditioning.

7 Method A (10 N load method)

7.1 Apparatus for loading

The apparatus for loading shall be as follows.

- a) **Press** That capable of applying a total load of 10 N on an area of 15 mm × 15 mm of the folded specimen (15 mm × 20 mm) including the fold. This load shall be possible to be removed completely within 1 s.
- b) **Plate** Two flat plates which remain parallel to one another throughout the application of the load to the specimen. On the plate, an area of 15 mm × 20 mm shall be marked or other provisions made to facilitate correct placement of the specimen. An example of apparatus for loading of 10 N is shown in figure 2.

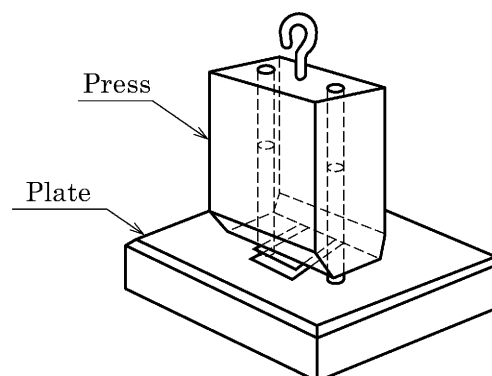


Figure 2 Example of apparatus with vertical guides for loading of 10 N

7.2 Auxiliary device

7.2.1 Stop-watch

7.2.2 Tweezers with broader and spade shaped forceps

7.2.3 Paper or metal foil of 0.02 mm or under in thickness

7.3 10 N Monsanto type testing apparatus for crease recovery angle

The testing apparatus shall be as follows.

- The testing apparatus shall consist of the mark or indicator capable of confirming the perpendicular line from the centre of protractor, the recovery angle measuring plate (specimen grip fixed to the disk capable of rotating by making the centre of fixed protractor the axis and the mark or pointer for reading angle are provided).
- The protractor shall be circular divided in 1° having the accuracy of $\pm 0.5^\circ$. It shall be capable of reading the correct angle without reading error.
- The specimen grip shall consist of a specimen pedestal, a back-stop device and a specimen fixing device. The specimen pedestal shall be capable of being held on the horizontal line passing through the centre of protractor and the end of central side shall be apart from the extension line of protractor centre by 2 mm (see figure 3).

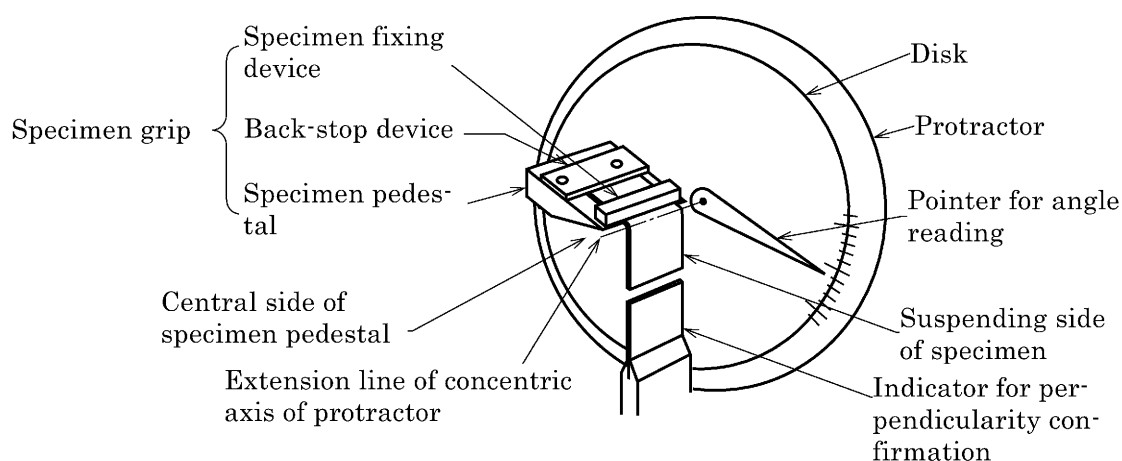


Figure 3 Reference diagram when specimen is inserted to 10 N testing apparatus

7.4 Test procedure for method A (10 N load method)

The test procedure shall be as follows.

- Fold the specimen end to end and hold it in this position by tweezers gripping not more than 5 mm from the ends. Where the surfaces of the specimens show any tendency to adhere, place a sheet of paper or metal foil of 18 mm $\times$ 15 mm between the limbs of the specimen (see figure 4).
- Perform the test on both sides of the specimen. Fold half the number of test specimens face to face, and the other half back to back.
- Place the specimen on the marked area of the plate of the apparatus for loading, and apply the load of 10 N without delay.
- The loading time shall be 5 min $\pm$ 5 s.
- Remove the load quickly but smoothly so that the specimen does not suddenly