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**Test methods for seam strength of
textiles**

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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 1093 : 2005** is replaced with this Standard.

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Test methods for seam strength of textiles

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of ISO 13935-2 published in 1999 with some modifications of the technical contents to reflect the realities of the usage of the product in Japan.

Method A-1 (horizontal seam method), method A-2 (vertical seam method) and method B (bursting method) given in this Standard are not specified in the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the test methods for seam strength of general textiles.

For tests performed in accordance with method A-3 (ISO method), the requirements in Annex A shall apply in place of those in clause 5, clause 6 and clause 8.

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

ISO 13935-2:1999 *Textiles – Seam tensile properties of fabrics and made-up textile articles—Part 2: Determination of maximum force to seam rupture using the grab method* (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 21-1.

2 Normative references

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

JIS B 9003 *Glossary of terms used in household sewing machines (Name of stitches, seams and stitchings)*

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 L 1096 *Testing methods for woven and knitted fabrics*

JIS Z 8401 *Guide to the rounding of numbers*

ISO 10012 *Measurement management systems—Requirements for measurement processes and measuring equipment*

EN 10002-2 *Metallic materials—Tensile testing—Part 2: Verification of the force measuring system of the tensile testing machines*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in JIS B 9003, JIS L 0105 and JIS L 0208 apply.

4 Classification of tests

Classification of tests shall be as follows.

a) Method A (grab method)

- 1) **Method A-1 (horizontal seam method)**, mainly applied to woven textile fabrics.
- 2) **Method A-2 (vertical seam method)**, mainly applied to elastic woven and knitted textile fabrics.
- 3) **Method A-3 (ISO method)**, mainly applied to woven textile fabrics.

b) Method B (bursting method), mainly applied to knitted textile fabrics.

5 Test conditions

The test shall be carried out at the test place specified in 5.1 of JIS L 0105. The initial load (mN) to be applied shall be equivalent to the mass per 10 m of specimen in the case of the sample of woven fabrics, and 30 mN in the case of knitted fabrics.

If any other load than above is applied, it shall be stated in the test report.

6 Sampling and preparation of specimens

Specimens shall be taken from the part where the type of sewing thread and the shape of seam are the same and the sewing up direction, sewing direction, seam allowance and the number of stitches per unit length are uniform. The specimens then shall be made constant weight according to 5.3.1 of JIS L 0105, or conditioned by being left to stand in a test room at standard condition for 4 h.

7 Test methods

7.1 Method A (grab method)

7.1.1 Method A-1 (horizontal seam method)

The test of method A-1 (horizontal seam method) shall be as follows.

a) Standard seam tensile strength and elongation

- 1) Five specimens, measuring 100 mm in the direction parallel to the seam and at least 150 mm in the direction perpendicular to the seam shall be taken from the

sample such that the seam is positioned at the centre.

On each specimen, a straight line shall be drawn at a distance of 38 mm from one edge of the specimen which is perpendicular to the seam, running the full length of the specimen so that it crosses the seam line at right angles.

- 2) Mount the specimens on the tensile tester by applying the initial load under the following conditions (see figure 1).
 - 2.1) The clamping area shall be 25 mm×25 mm in the front side and not less than 51 mm×25 mm in the back side for both the upper and lower sides.
 - 2.2) The clamping interval shall be 76 mm, and the seam shall be positioned at the centre between clamps.
- 3) Pull the specimen at a rate of 300 mm/min $\pm$ 20 mm/min, and measure the tensile strength at the first break of seam to three significant figures. Measure at the same time the elongation at break of seam to 1 mm. Calculate the elongation ratio from this elongation and round the result to three significant figures according to rule B given in JIS Z 8401.
- 4) Obtain the mean value of five measurements, and round the result to three significant figures according to rule B given in JIS Z 8401. At this time, any measurement obtained when the break was near the clamps shall be discarded.

Unit: mm

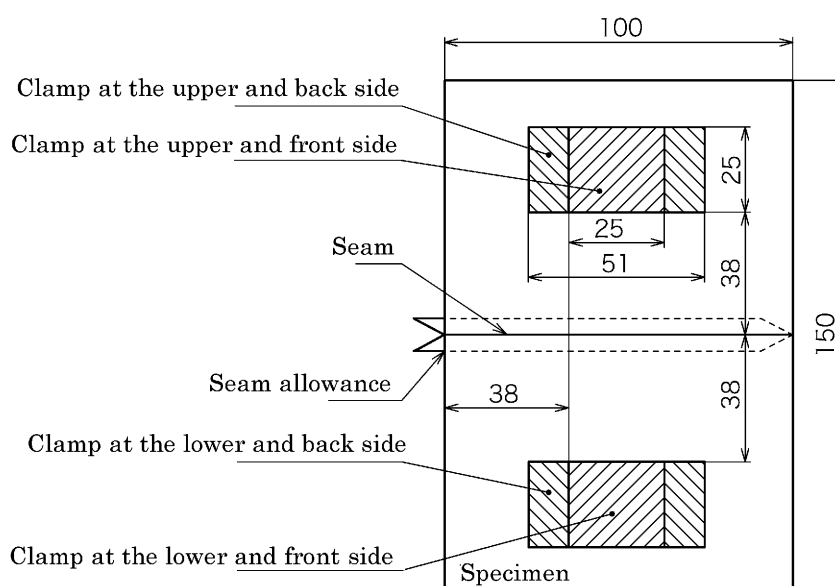


Figure 1 Specimen for method A-1 (horizontal seam method)

b) Wet seam tensile strength and elongation

- 1) Specimens prepared as specified in a) 1) shall be used.
- 2) Place the specimens in separate containers, and leave them as they are until they sink in water at 20 °C $\pm$ 2°C by their own weight or keep them sunk under the water for at least 1 h. For woven fabrics difficult to wet, an aqueous solution contain-