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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 18318.1-2009

**Textiles -- Determination of bending behavior -- Part 1: Incline
method**

(English Translation)

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Foreword

GB/T 18318 "Textiles - Determination of bending behavior" includes the following parts:

- Part 1: Inclined method;
- Part 2: Heart loop method;
- Part 3: Gurley method;
- Part 4: Cantilever beam;
- Part 5: Pure bending method;
- Part 6: Saddle method.

This part is the part 1 of GB/T 18318.

This part uses the redrafting method to modify and adopt the ISO 9073-7:1995

"Textiles - Test methods for nonwovens - Part 7: Determination of bending length". As compared with ISO 9073-7:1995, the main differences of this part are as follows:

- MODIFY the standard name. EXPAND the scope of application, to make it

apply to not only non-woven fabrics, but also other types of fabrics;

- In the normative references, USE Chinese standards to replace international standards; DELETE the referenced ISO 186 Cardboard sampling method;
- In the normative references, ADD GB/T 4669 (see clauses 2 and 8.1);
- In clause 6, USE "Follow the provisions of product standards or relevant agreements to take sample" to replace "Follow ISO 186 to take sample";
- DELETE the recording time "after (8 ± 2) s" in clause 8.2;
- ADD the calculation result "retain three significant figures" (see 9.3);
- MOVE the note to clause 9.3 into clause A.1 in Appendix A;
- DELETE the note 1 to clause and the note 8 to clause 8.2.

This part replaces GB/T 18318-2001 "Textiles - Determination of bending length of fabrics". As compared with GB/T 18318-2001, the main differences of this part are as follows:

Textiles - Determination of bending behavior -

Part 1: Incline method

1 Scope

This part of GB/T 18318 specifies the method of using the incline method to determine the bending length of fabrics; gives the formula for calculating the flexural rigidity according to the bending length.

This section applies to all types of fabrics.

2 Normative references

The provisions in following documents become the provisions of this part through reference in this this part of GB/T 18318. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this part; however, parties who reach an agreement based on this standard are encouraged to study if the latest versions of these documents are applicable.

For undated references, the latest edition of the referenced document applies.

GB/T 4669 Textiles - Woven fabrics - Determination of mass per unit length and mass per unit area (GB/T 4669-2008, ISO 3801-1977, MOD)

GB/T 6529 Textiles - Standard atmospheres for conditioning and testing (GB/T 6529-2008, ISO 139:2005, MOD)

GB/T 24218.1 Textiles - Test methods for nonwovens - Part 1: Determination of mass per unit area (GB/T 24218.1-2009, ISO 9073-1:1995, MOD)

3 Terms and definitions

The following terms and definitions apply to this part of GB/T 18318.

3.1

Bending length

The length of a rectangular fabric specimen which is held at one end and suspended at the other end when it is bent to 7.1° under its own weight.

3.2

Flexural rigidity

The ratio of the minor change of bending moment to the corresponding change of curvature per unit width of material.

Note: The flexural rigidity may be calculated based on the bending length.

4 Principles

A rectangular specimen is placed on a horizontal platform. The long axis of the specimen is parallel to the long axis of the platform. Push the specimen along the long axis of the platform, so that it extends out of the platform and bends under its own weight. The extended end is suspended. Use a ruler to press against another part of the specimen which is still on the platform.

When the tip end of the specimen passes through the leading edge of the platform to an inclined surface at an inclination of 41.5° to the horizontal, the length of the projection is equal to twice the bending length of the specimen (see Appendix A), whereby the bending length may be calculated.

5 Instruments

A suitable bending length meter (as shown in Figure 1).

5.2 Platform: The width is (40 ± 2) mm. The length is not less than 250 mm. It

is supported at a height of at least 150 mm above the tabletop. The inclined surface which passes through the leading edge of the platform is at an angle of 41.5° to the bottom of the horizontal platform. The line connecting the side of the platform support to the inclined surface is L1 and L2.

Mark D at a position (10 ± 1) mm from the leading edge of the platform.

Note: To avoid adhesion of the specimen, it should coat or cover a layer of polytetrafluoroethylene (PTFE) on the surface of the platform.

5.3 Steel ruler: The width is (25 ± 1) mm. The length is not less than the length

of platform. The mass is (250 ± 10) g. The scale is millimeter. There is a rubber layer on the lower surface.

Note: The steel ruler has a thickness of 3.5 mm, which can obtain an accurate mass.

8.1 According to GB/T 4669 or GB/T 24218.1, determine and calculate the mass per unit area of the specimen.

8.2 Adjust the level of the instrument. Place the specimen on the platform. Let

one end of the specimen coincide with the leading edge of the platform. Place the steel ruler on the specimen. The zero point of the steel ruler is aligned with the mark D on the platform.

At a certain speed, push the steel ruler and the specimen forward, so that the specimen projects from the leading edge of the platform and bends under its own weight, until the projected end of the specimen contacts the inclined surface. Record the scale of the steel ruler corresponding to the mark D as the projection length of the specimen.