

International Standard



4675

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Fabrics coated with rubber or plastics — Low temperature bend test

Support textile revêtu de caoutchouc ou de plastique — Essai de flexion à basse température

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4675 was developed by Technical Committee ISO/TC 45, *Rubber and rubber products*, and was circulated to the member bodies in September 1977.

It has been approved by the member bodies of the following countries :

Austria	Hungary	Spain
Belgium	India	Sweden
Bulgaria	Italy	Thailand
Canada	Korea, Rep. of	Turkey
Czechoslovakia	Mexico	United Kingdom
Egypt, Arab Rep. of	Poland	USA
France	Romania	USSR
Germany, F. R.	South Africa, Rep. of	Yugoslavia

No member body expressed disapproval of the document.

Fabrics coated with rubber or plastics — Low temperature bend test

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for determining the ability of fabrics coated with rubber or plastics to resist the effect of low temperature when subjected to bending at specified temperatures after definite periods of exposure. It is applicable to material with a thickness within the range 0,10 mm to 2,20 mm.

Because fabrics coated with rubber or plastics are used in different applications requiring low temperature flexing, no general relationship between this test and service performance can be given or implied.

2 REFERENCES

ISO 2231, *Fabrics coated with rubber or plastics — Standard atmospheres for conditioning and testing.*

ISO 2286, *Fabrics coated with rubber or plastics — Determination of roll characteristics.*

3 PRINCIPLE

Conditioning of test pieces in a specified atmosphere, followed by exposure for a specified time in a cold chamber with a specified atmosphere. Submission of the test pieces to a bend test using an appropriate apparatus and examination of the test pieces.

4 APPARATUS

4.1 Cold chamber, in which the test pieces are exposed to low temperature, sufficient in size to contain the bending fixture used for testing the test pieces and to permit the operation of the fixture to bend the test piece without removal from the chamber.

The cold chamber shall also have sufficient work space to permit the conditioning of test pieces as outlined in clause 7. It shall be capable of maintaining a uniform atmosphere of cold air or any other suitable gas at specified temperatures to within a tolerance of $\pm 1^\circ\text{C}$.

4.2 Bending jig, for bending the test pieces, as shown in figures 1 and 2.

Mass tolerance and dimensions shall be as specified in figure 2.

4.3 Glass plates, of sufficient number, having dimensions of approximately 125 mm $\times$ 175 mm, for use when conditioning all test pieces.

The thickness of the glass plates shall be such as to permit easy handling.

4.4 Gloves, for handling test pieces within the cabinet and which shall be exposed to the same temperature as the test pieces. A second pair of gloves at room temperature shall be available for wearing within the cold gloves as protection for the operator.

5 TEST PIECES

Take three test pieces, each 25 mm $\times$ 100 mm, equally spaced across the width of the fabric but not from within 150 mm of the edge, and with their lengths parallel to the longitudinal direction of the coated fabric, unless otherwise specified.

6 TIME-INTERVAL BETWEEN MANUFACTURE AND TESTING

6.1 For all test purposes the minimum time between manufacture and testing shall be 16 h.

6.2 For non-product tests, the maximum time between manufacture and testing shall be 4 weeks; and for evaluations intended to be comparable, the tests, as far as possible, should be carried out after the same time-interval.

6.3 For product tests, whenever possible, the time between manufacturing and testing should not exceed 3 months. In other cases, tests shall be made within 2 months of the date of receipt of the products by the customer.

7 CONDITIONING OF TEST PIECES

Immediately prior to testing, condition the test pieces in atmosphere "A" of ISO 2231.

NOTE — In ISO 2231, atmosphere "A" is defined by two of its characteristics as follows, and test pieces shall be exposed to these conditions for a minimum of 16 h :

- temperature $20 \pm 2^{\circ}\text{C}$,
- relative humidity $65 \pm 5\%$;

or,

- temperature $23 \pm 2^{\circ}\text{C}$,
- relative humidity $50 \pm 5\%$.

For tropical countries only :

- temperature $27 \pm 2^{\circ}\text{C}$,
- relative humidity $65 \pm 5\%$.

8 PROCEDURE

8.1 Place the three conditioned test pieces between glass plates (4.3) with sufficient space between each test piece to permit the passage of air during the conditioning period. Place the glass plates with the test pieces held in position, the bending jig (4.2) and the cold gloves (4.4) in the cold chamber (4.1). Unless otherwise specified, expose them for 4 h to the specified test temperature.

8.2 At the termination of the exposure period and while still in the test chamber, remove the test pieces from between the glass plates one at a time (CAUTION, see below) and place in the bending jig with the flexing plate held in the open position by the trigger pin. Unless otherwise specified, in the case of substrates coated on one side only, place the coated side away from the mandrel. In the case of double-coated fabrics either or both surfaces may be evaluated, unless otherwise specified.

CAUTION — Gloves must be worn at all times when handling test pieces prior to making the bend test.

8.3 As soon as the test piece is in position in the bending jig, release the trigger and permit the flexing plate to make a free fall.

8.4 After all the test pieces have been tested, remove them and examine for fractures or cracks in their coating under a magnification of 5 X. During the examination, fold all test pieces through 180° in the same direction as the bend during the test.

9 INTERPRETATION OF RESULTS

Test pieces shall not fracture or crack.

If, for all three test pieces, the coating remains continuous, i.e. free from any fractures or coating cracks, the material shall be considered to comply with this International Standard.

If all the three test pieces fracture or show cracks, the material does not comply with this International Standard.

If only one or two test pieces show failure, test three additional test pieces. If any of these show fractures or coating cracks, the material does not comply with this International Standard.

10 TEST REPORT

The test report shall include the following particulars :

- a) a reference to this International Standard;
- b) the thickness measured in accordance with ISO 2286;
- c) the temperature at which the test pieces were tested;
- d) the duration of the exposure period;
- e) identification, date of manufacture and date of test;
- f) the surface(s) tested;
- g) whether the material complies with this International Standard (see clause 9).

STANDARD ISO 4675-1979