International Standard 4592

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Plastics — Film and sheeting — Determination of length and width

Plastiques — Film et feuille — Détermination de la longueur et de la largeur

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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 4592 was developed by Technical Committee ISO/TC 61, *Plastics,* and was circulated to the member bodies in May 1977.

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

Australia	Hungary	Romania
Austria	India	South Africa, Rep. of
Belgium	Iran	Spain
Brazil	Ireland	Sweden
Bulgaria	Israel	Switzerland
Canada	Japan	Turkey
Chile	Netherlands	United Kingdom
Czechoslovakia	New Zealand	USA
Finland	Peru	USSR
France	Poland	
Germany, F. R.	Portugal	

No member body expressed disapproval of the document.

This International Standard has also been approved by the International Union of Pure and Applied Chemistry (IUPAC).

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Plastics — Film and sheeting — Determination of length and width

Section one : Reference method for determination of length of a roll

1 Scope and field of application

Section one of this International Standard specifies a method for the determination of the "free" length of a roll of plastics film or sheeting.

This method is intended for use with rolls of length up to 100 m as a reference method with which other methods may be checked. Any other method of determining the length may be used, provided that it gives the same results as the specified method. If automatic measuring devices are used, they shall be checked by measurements made by the specified procedure for each type of plastics film and sheeting.

Because the method is laborious it is permissible, in the case of long rolls, to check the other methods of measurement referred to above on an approximately 100 m length of film and sheeting measured by the specified method.

2 Apparatus

2.1 **Sharp knife** or **razor.**

2.2 **Metallic scale** or **profile,** longer than the width of the roll to be measured.

2.3 **Flat surface,** preferably at least 10 m long and at least as wide as the roll to be tested. The surface shall be marked off in 1 m lengths along each longitudinal edge, at least one of these lengths at one end of the surface being subdivided into 0,1 m divisions.

2.4 **Device,** over which the unrolled sheeting may be passed without stretching, for example a roller, at least as wide as the film or sheeting width, mounted 50 cm in front of and about 30 cm above the flat surface.

3 Procedure

3.1 Unroll the film or sheeting into lap form in such a way that the length of each lap does not exceed 5 m and so that there are not more than twenty laps directly one above the other. Allow the material to remain in this lap form for at least 1 h before the determination of length is carried out.

3.2 Take the uppermost cut end of the pile of material and pull it along the flat surface (2.3), taking care to ensure that only the minimum of stretch is applied to the material; one method of achieving this is to pass the film or sheeting over a roller (see 2.4) mounted so as to rotate freely on ball bearings approximately 30 cm above the surface on which the material is to be measured. Make the cut end coincide with the zero mark on the surface, trimming the end if necessary by means of the sharp knife or razor (2.1) and metallic scale or profile (2.2) so that it is at right angles to the longitudinal direction of the roll, such trimming being confined to a minimum. At the opposite end of the surface, mark each edge of the material by some suitable method to coincide with a known division of length.

3.3 Move the material along the surface so that the marked portions coincide with the zero mark and repeat the process of marking the edges of the opposite end.

3.4 Repeat the process until the whole of the roll has been passed over the surface and measured, trimming the last cut end, if necessary, in the same manner as the first cut end.

3.5 Measure the length to the nearest 0,1 m. Report the sum of all the measurements of length as the length of the roll, in metres, to the nearest 0,1 m.

4 Test report

The test report shall include the following particulars :

a) reference to this International Standard;

b) full identification of the tested roll;

c) length of the roll, in metres, to the nearest 0,1 m.

Section two : Reference method for determination of width of film and sheeting

5 Scope and field of application

Section two of this International Standard specifies a method for the determination of the average width of a roll and the width of a sample of plastics film or sheeting not less than 5 mm wide. If the width is only slightly greater than 5 mm, the accuracy of the method is only 2 %. Two procedures are specified, their application depending on the material width.

The method determines the "free" width of a roll of film or sheeting.

This method is intended for use as a reference method with which other methods may be checked. Any other method for measuring the width may be used, provided that it gives the same result as the specified method. If automatic measuring devices are used, they shall be checked by measurements made by the specified procedures for each type of film or sheeting.

6 Procedures

Two different procedures shall be used depending on whether the width to be measured is greater or less than 100 mm.

6.1 Procedure for widths greater than 100 mm

6.1.1 Apparatus

6.1.1.1 Flat surface, at least as wide as the material to be measured.

6.1.1.2 Linear scale, subdivided into 1 mm divisions.

6.1.2 Measurement

6.1.2.1 Unroll the material into lap form, as specified in 3.1, and allow it to remain in this form for at least 1 h before measurements are made. In the case of non-rolled samples, 30 min conditioning is sufficient.

6.1.2.2 Lay the material on the flat surface (6.1.1.1) and place the scale (6.1.1.2) on the material in such a manner that it is at right angles to the length direction of the material, with the zero mark on the scale aligned squarely with the left longitudinal edge of the material. Determine the exact position of the right edge of the material on the scale to the nearest 1 mm and record the result.

6.1.2.3 The number of measurements to be made depends on the overall length of the roll or sample to be inspected.

6.1.2.3.1 For lengths up to 5 m, determine the width at least three times along the sample length at approximately equal intervals.

6.1.2.3.2 For lengths longer than 5 m, determine the width at least ten times along the length at approximately equal intervals.

6.1.2.4 Record each width measured and report the arithmetic mean as the average roll or sample width.

6.2 Procedure for widths from 5 up to 100 mm

6.2.1 Apparatus

6.2.1.1 Flat surface, of width greater than 100 mm, across which a 100 mm linear scale subdivided into 1 mm divisions is finely marked, or **flat surface** of width greater than 100 mm and **linear scale** subdivided into 1 mm divisions.

6.2.1.2 Magnifying glass, giving 10 X enlargement, having a graticule scale marked on the glass.

6.2.2 Measurement

6.2.2.1 Condition the sample as specified in 6.1.2.1.

6.2.2.2 Align the zero mark of the recording scale squarely with the left longitudinal edge of the material, using the magnifying glass (6.2.1.2) to check proper alignment. By sliding the magnifying glass to the right, examine the position of the opposite edge of the material to check its position on the flat reference scale. After reading the value of the last millimetre division nearest to the right side edge of the material, make the zero mark of the graticule scale scribed on the magnifying glass coincide with the last millimetre division of the reference scale and measure the difference in width between this point and the right-hand edge of the material, in tenths of a millimetre, using the graticular scale.

6.2.2.3 The number of measurements to be made depends on the overall length of the roll or sample to be inspected.

6.2.2.3.1 For lengths up to 5 m, make at least three measurements at approximately equally spaced intervals along the length.

6.2.2.3.2 For lengths longer than 5 m, make at least ten measurements at approximately equally spaced intervals along the overall length.

7 Test report

The test report shall include the following particulars :

a) reference to this International Standard;

b) full identification of the sample;

c) overall length inspected;

d) widths recorded and average width.