INTERNATIONAL STANDARD

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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

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 4592 was prepared by Technical Committee ISO/TC 61, *Plastics*, Sub-Committee SC 11, *Products*.

This second edition cancels and replaces the first edition (ISO 4592:1979), which has been technically revised.

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INTERNATIONAL STANDARD ISO 4592:1992(E)

Plastics — Film and sheeting — Determination of length and width

1 Scope

1.1 This International Standard specifies a method for the determination of the "free" length of a roll of plastics film or sheeting (see clause 2).

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 result as the specified method. If automatic measuring devices are used, it is necessary that they be checked by measurements made in accordance with the specified procedure for each type of film or 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.

1.2 This International Standard also 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 (see clause 3). 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 width of the material.

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 of determining the width may be used, provided that it gives the same result as the specified method. If automatic measuring devices are used, it is necessary that they be checked by measurements made in accordance with the specified procedures for each type of film or sheeting.

2 Reference method for determination of the length of a roll

2.1 Apparatus

2.1.1 Sharp knife or **razor**.

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

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

2.2 Procedure

2.2.1 Unroll the film or sheeting into lap form in such a way that the length of each lap does not exceed 5 m, and that there are no 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.

2.2.2 Take the uppermost cut end of the pile of material and pull it along the flat surface (2.1.3), taking care to ensure that only the minimum of stretch is applied to the material.

NOTE 1 One method of achieving this is to pass the film or sheeting over a roller 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 (2.1.1) and metallic scale or profile (2.1.2), 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.

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

2.2.4 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.

2.2.5 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.

2.3 Precision

The precision of this test method is not known because inter-laboratory data are not available. When inter-laboratory data are obtained, a precision statement will be added at the subsequent revision.

2.4 Test report

The test report shall include the following information:

a) a reference to this International Standard;

b) all information necessary for the complete identification of the tested roll;

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

3 Reference method for determination of the width of film and sheeting

Two different procedures are used depending on whether the width to be measured is greater or less than 100 mm. Use procedure A (3.1) for widths greater than 100 mm and procedure B (3.2) for widths from 5 mm up to 100 mm.

3.1 Procedure A

3.1.1 Apparatus

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

3.1.1.2 Linear scale, subdivided into 1 mm divisions.

3.1.2 Measurement

3.1.2.1 Unroll the material into lap form, as specified in 2.2.1, 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.

3.1.2.2 Lay the material on the flat surface (3.1.1.1) and place the scale (3.1.1.2) 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.

3.1.2.3 The number of measurements to be made depends on the overall length of the roll or sample to be inspected. For lengths up to 5 m, determine the width at least three times along the sample length at approximately equal intervals. For lengths longer than 5 m, determine the width at least ten times along the length at approximately equal intervals.

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

3.2 Procedure B

3.2.1 Apparatus

3.2.1.1 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.

3.2.1.2 Magnifying glass, giving × 10 enlargement, having a graticule scale marked on the glass.

3.2.2 Measurement

3.2.2.1 Condition the sample as specified in 3.1.2.1 .

3.2.2.2 Align the zero mark of the scale squarely with the left longitudinal edge of the material, using the magnifying glass (3.2.1.2) 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-hand 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 graticule scale.

3.2.2.3 The number of measurements to be made depends on the overall length of the roll or sample to be inspected. For lengths up to 5 m, determine the width at least three times at approximately equal intervals. For lengths longer than 5 m, determine the width at least ten times at approximately equal intervals.

3.3 Precision

The precision of this test method is not known because inter-laboratory data are not available. When inter-laboratory data are obtained, a precision statement will be added at the subsequent revision.

3.4 Test report

The test report shall include the following information:

a) a reference to this International Standard;

b) all information necessary for the complete identification of the sample;

c) the overall length inspected;

d) the widths recorded and the average width.

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