

INTERNATIONAL STANDARD

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Draughting media for technical drawings — Draughting film with polyester base —

Part 1:

Requirements and marking

Sample Document

*Supports de traçage pour dessins techniques — Films à dessin à base
de polyester —*

Partie 1: Caractéristiques et marquage



Reference number
ISO 9958-1:1992(E)

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 9958-1 was prepared by Technical Committee ISO/TC 10, *Technical drawings, product definition and related documentation*, Sub-Committee SC 9, *Media and equipment for drawing and related documentation*.

ISO 9958 consists of the following parts, under the general title *Draughting media for technical drawings* --- *Draughting film with polyester base*:

- *Part 1: Requirements and marking*
- *Part 2: Determination of properties*

Annexes A and B of this part of ISO 9958 are for information only.

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Draughting media for technical drawings — Draughting film with polyester base —

Part 1: Requirements and marking

1 Scope

This part of ISO 9958 specifies the requirements for draughting film with a biaxially oriented polyethylene terephthalate base (commonly known as a polyester base) used as a medium for drawn and written information which it is possible to duplicate, revise and store.

In addition, this part of ISO 9958 specifies the contents of the label to be affixed on the outside of the draughting film package, and gives an example of the product information which may be prepared by the manufacturer or retailer of the draughting film.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9958. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9958 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4593:—¹⁾, *Plastics — Film and sheeting — Determination of thickness by mechanical scanning*

ISO 9177-1:1989, *Mechanical pencils — Part 1: Classification, dimensions, performance requirements and testing*.

ISO 9177-2:1989, *Mechanical pencils — Part 2: Black leads — Classification and dimensions*.

1) To be published. (Revision of ISO 4593:1979)

ISO 9958-2:1992, *Draughting media for technical drawings — Draughting film with polyester base — Part 2: Determination of properties*.

3 Definitions

For the purposes of this part of ISO 9958, the following definitions apply.

3.1 draughting film: A film for drawn and written information with either chemically or mechanically produced drawing surfaces on one or both sides.

3.2 total thickness of the draughting film: The thickness of the draughting film, measured in accordance with ISO 4593.

3.3 base film; raw film: Biaxially oriented film made of polyethylene terephthalate (a polymer of polyester type) without any coating(s).

3.4 base film thickness: The thickness of the base film, measured in accordance with ISO 4593.

3.5 drawing layer: A coating on the base film, mainly composed of binder substances containing pigments or fillers and bonded to the base film. The bonding may be produced by an adhesion layer.

3.6 adhesion: The state in which two surfaces are held together by chemical and/or physical forces.

3.7 adhesion layer: A layer on the surface of the base film that ensures adhesion between the base film and the drawing layer or anti-curling layer.

3.8 anti-curling layer: On a draughting film having one drawing surface (i.e. a single-sided draughting film), a coating bonded to the base film on the surface opposite the drawing surface which compensates the curling that may be caused by the drawing layer. The bonding may be produced by an adhesion layer.

3.9 coating²⁾: The process of covering a surface with one or more layers of coating slip or other materials in a fluid form.

3.10 top layer: The last layer coated on a basic material in order to obtain the required surface characteristics.

3.11 visual density: ISO standard diffuse visual transmission density used as a measure of the amount of light, in the visual region, absorbed by the material (method specified in ISO 5-2^[1]).

3.12 machine direction²⁾: Feeding direction when manufacturing the draughting film.

3.13 cross direction²⁾: Direction perpendicular to the machine direction.

4 Structure

Various types of draughting film are shown in figure 1.

5 Requirements

5.1 General

Draughting film shall be free from defects which might affect its appearance or fitness for use.

5.2 Thickness

The base film thickness, rounded to the nearest 5 µm, shall be specified in the designation of the draughting film. This thickness shall be recorded in the designation box on the draughting film label (see 7.1).

The product information (see 7.2 and annex A) shall include the base film thickness, with tolerance, and the total thickness of the draughting film, with tolerance.

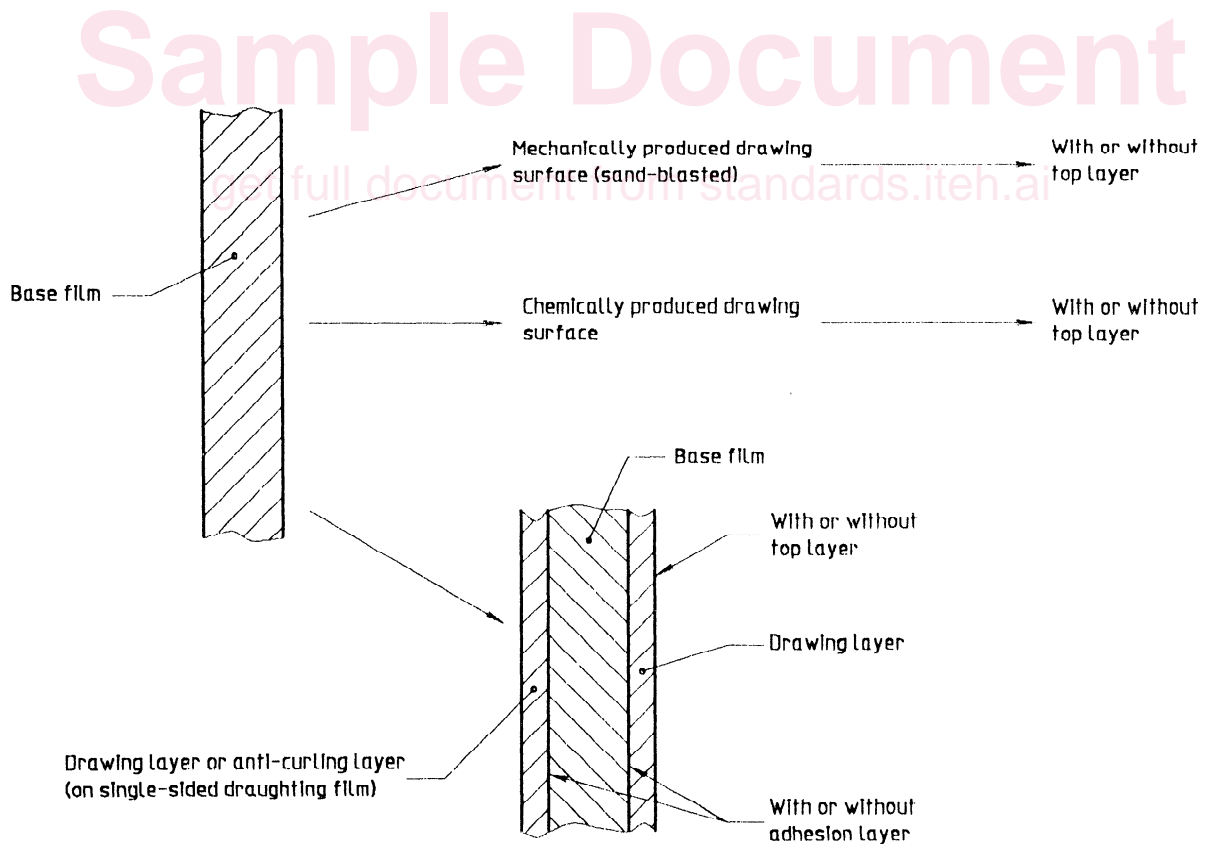


Figure 1 -- Various types of draughting film

2) See also ISO 4046^[3].

5.3 Dimensional stability, permanent dimensional change and stability of form

NOTE 1 The sizes of and tolerances for pre-cut draughting film sheets are given in ISO 216^[2].

5.3.1 Dimensional stability

Changes in the dimensional properties of film depend not only on the film composition and method of manufacture but also on its thermal and moisture history.

5.3.1.1 Thermal coefficient of expansion

The draughting film, tested in accordance with ISO 9958-2, shall have a thermal coefficient of expansion of no more than 30 ppm³⁾ for each degree of change in temperature in the range 20 °C to 50 °C at (50 ± 5) % relative humidity.

The thermal coefficient of expansion of the draughting film shall be reported in the product information (see 7.2 and annex A).

5.3.1.2 Hygroscopic coefficient of expansion

The draughting film, tested in accordance with ISO 9958-2, shall have a hygroscopic coefficient of expansion of no more than 20 ppm³⁾ for each per

cent change in relative humidity in the range 40 % to 80 % at $23 \text{ °C} \pm 2 \text{ °C}$.

The hygroscopic coefficient of expansion of the draughting film shall be reported in the product information (see 7.2 and annex A).

5.3.2 Permanent dimensional change

The permanent dimensional change of the draughting film, tested in accordance with ISO 9958-2, shall not be more than 400 ppm³⁾.

The permanent dimensional change of the draughting film shall be reported in the product information (see 7.2 and annex A).

5.3.3 Stability of form

5.3.3.1 Curling

Pre-cut sheets of draughting film, tested in accordance with ISO 9958-2, shall not curl more than 5 mm (see figure 2).

5.3.3.2 Bulging

Draughting film, tested in accordance with ISO 9958-2, shall not have round or elliptical bulges visible to the naked eye or transverse bulges longer than $1/4$ of the width of the draughting film (see figure 3).

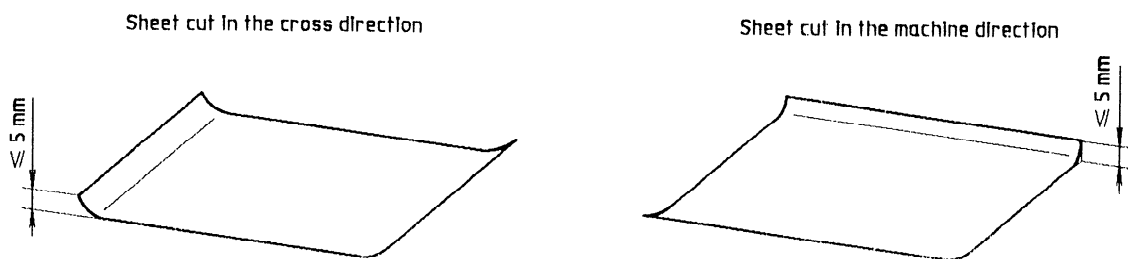


Figure 2 — Curling

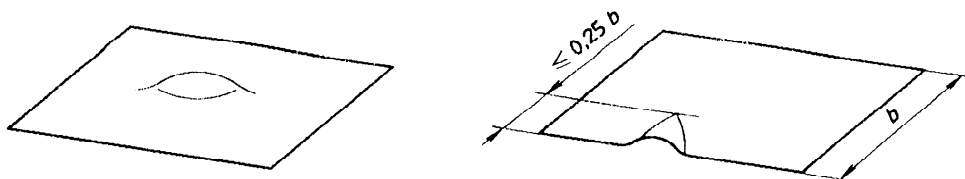


Figure 3 — Bulging

3) ppm = parts per million.