INTERNATIONAL STANDARD

ISO 12635

Second edition
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Graphic technology — Plates for offset printing — Dimensions

Technologie graphique — Plaques pour impression offset — Dimensions

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

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The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 12635 was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

This second edition cancels and replaces the first edition (ISO 12635:1996). It has been extensively revised in all sections; requirements for perforations and designations have been deleted.

Introduction

This International Standard stipulates dimensional properties of printing plates for offset printing. While not all present plate dimensions will conform to this International Standard, the specifications for dimensions serve as an effort to reduce the multitude of possible formats to a reasonable level that simplifies manufacture and communications between plate, platesetter and press manufacturers, and the printer.

In this revision, the requirements for perforations and designations have been deleted. According to recent developments in dimensions of printing plates, especially within the thickness dimension, new thickness categories have been implemented. Due to the increasing adoption of CtP, additional attributes have been introduced to be applied to plates with these new devices.

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Graphic technology — Plates for offset printing — Dimensions

1 Scope

This International Standard specifies the width, length and thickness of metal lithographic printing plates (referred to hereafter as “plates”). For plates to be used in computer to plate (CtP) applications, flatness, edge straightness and burr requirements are also included. These requirements are applicable to unprocessed plates.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
cutting burr
ridge along the edge of a plate produced by cutting, especially with a blunt knife

2.2
plate width
W
dimension of a printing plate parallel to the cylinder axis (clamping edge)

2.3
plate length
L
dimension of a printing plate in the direction perpendicular to the cylinder axis (clamping edge)

2.4
plate thickness
s
caliper of a coated plate

2.5
edge waviness
degree to which a plate edge conforms to a measurement plane

2.6
plate edge straightness
maximum deviation of the plate edge parallel to the cylinder axis (clamping edge) from a straight line, drawn from the corners of the plate

2.7
unprocessed plates
plates as received from the manufacturer

3 Requirements

3.1 Measurement conditions

Measurements shall be conducted when both measurement equipment and plates have reached a stabilized temperature of 21 °C ± 1 °C.

3.2 Plate dimensions

Plates for sheet-fed lithographic use may be of any length, L, or width, W, but shall be specified in increments of 5 mm where the last whole number digit is 0 or 5. Plates for web lithographic use may be of any length or width but shall have their width specified in increments of 5 mm where the last whole number digit is 0 or 5 and their length specified in increments of 2 mm where the last whole number digit is 0, 2, 4, 6 or 8. These requirements are summarized in Table 1.

The tolerances for length and width shall be as shown in Table 1, the measurement conditions of 3.1 shall apply.

The preferred thicknesses and their tolerances shall be as shown in Table 2.

Table 1 — Plate widths, lengths and their tolerances

Dimensions in millimetres

Process	Width W	Width tolerance	Length L	Length tolerance
Sheet-fed offset	Last digit 0 or 5	$W < 1\,500$: ± 1,0 $W \geqslant 1\,500$: ± 1,5	Last digit 0 or 5	$L < 1\,500$: ± 1,0 $L \geqslant 1\,500$: ± 1,5
Web offset	Last digit 0 or 5	$W < 1\,500$: ± 0,8 $W \geqslant 1\,500$: ± 1,5	Last digit 0, 2, 4, 6, or 8	$L < 1\,500$: ± 0,8 $L \geqslant 1\,500$: ± 1,5

NOTE Except where otherwise specified by the plate manufacturer, plates for web offset printing have the machine direction parallel to the length.

Table 2 — Plate thickness

Dimensions in millimetres

Preferred thickness	Tolerance
0,100 0,120 0,145 0,190 0,230 [a] 0,270 [b] 0,280 [c]	± 0,010
0,375 0,480	± 0,015

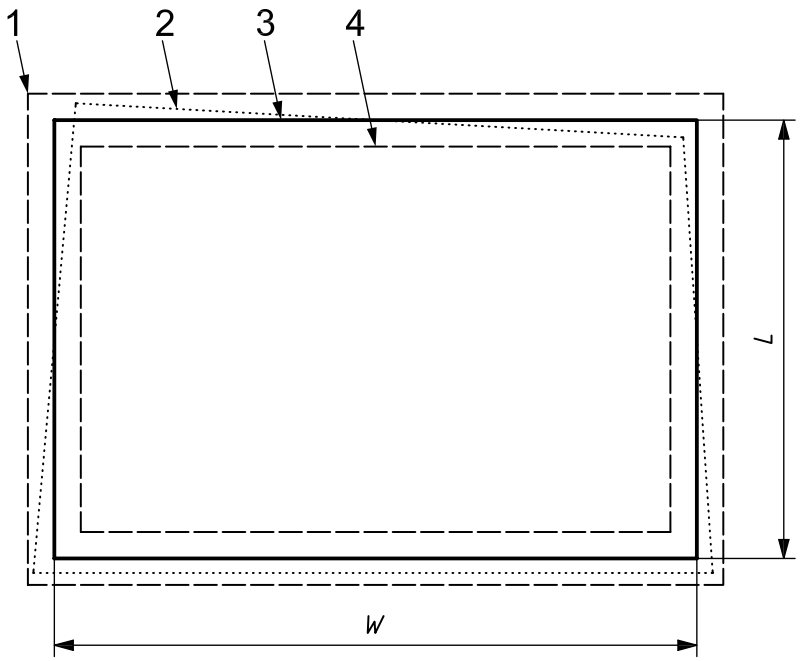
[a] Plates of this thickness are commonly referred to as “class 0,24 mm plates” in Japan.

[b] Plates of this thickness are commonly used in China.

[c] Plates of this thickness are commonly referred to as “class 0,3 mm plates”.

3.3 Rectangularity

The length and width tolerances shown in Table 1 are based on a perfectly rectangular plate. Figure 1 shows the nominal dimensions of a plate (solid line) together with rectangles corresponding to the maximum and minimum allowed size (dashed lines) based on the tolerances of Table 1. The actual contour of the plate including deviations from rectangularity shall cover the smaller rectangle at all points but shall not extend beyond the larger rectangle of Figure 1.



Key

1 outer tolerance contour, dashed
2 actual plate contour, dotted
3 nominal plate contour, solid
4 inner tolerance contour, dashed
L length
W width

Figure 1 — Plate contour with tolerance rectangles

3.4 Edge waviness for CtP plates

The plate is placed coated side up on a measurement table, e.g. a polished stone plate, whose upper surface conforms to a horizontal plane to within ± 0,5 mm. Plate edges with a length of less than 1 200 mm shall have a maximum wave height of 3,0 mm and should have a maximum wave height of 1,5 mm and plate edges with a length of more than 1 200 mm shall have a maximum wave height of 3,0 mm and should have a maximum wave height of 2,5 mm.

NOTE 1 Measurement procedures are given in Annex A.

NOTE 2 The edge waviness of non-CTP plates should also meet the requirements of 3.4.

3.5 Cutting burrs for CtP plates

Cutting burrs shall not protrude more than 45 µm and should not protrude more than 30 µm on each side. Burrs shall be measured on each side and edge of the plate.

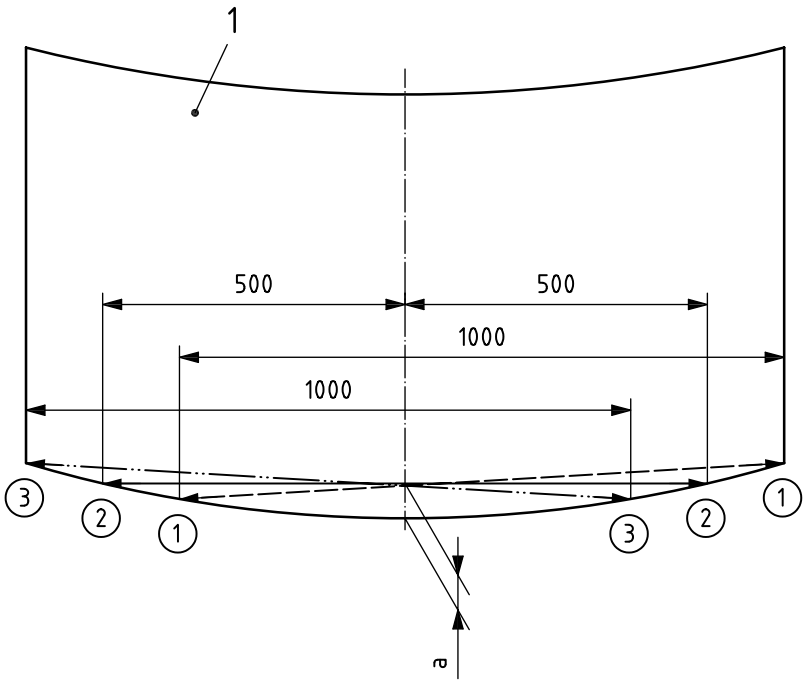
NOTE 1 Measurement procedures are given in Annex B.

NOTE 2 Non-CtP plates should also meet the requirements of 3.5.

3.6 Plate edge straightness for CtP plates

The plate edge parallel to the cylinder axis (clamping edge) should not deviate from a straight line by more than 200 µm in an interval of 1 000 mm. Three measurements are taken, one from the left corner of the plate, one from the right corner and one ± 500 mm around the centre of the edge. In case of plate widths of less than 1 000 mm only one measurement is taken between the plate corners.

Dimensions in millimetres



Key

1 plate

[a] Maximum deviation of 200 µm.

Figure 2 — Plate edge straightness

The plate edge shall not be damaged in any way.

NOTE Measurement procedures are given in Annex C.

Annex A
(informative)

Test method for edge waviness

A.1 Apparatus

A.1.1 Rectangular metal or stone table, with less than 0,5 mm planarity deviation of size that exceeds that of the largest plate to be evaluated.

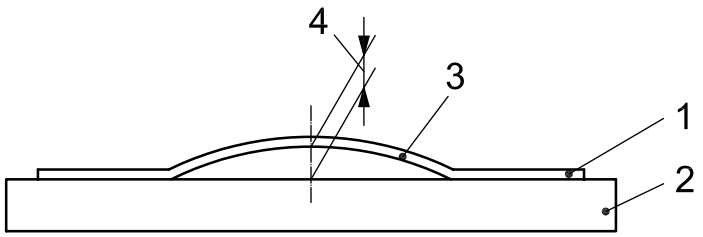
A.1.2 Taper gauge, with a thickness range from 0,5 mm to 3,5 mm or height measurement apparatus according to B.1 or B.2.

A.2 Procedure

A.2.1 Place the entire plate on the table (A.1.1), coated side up.

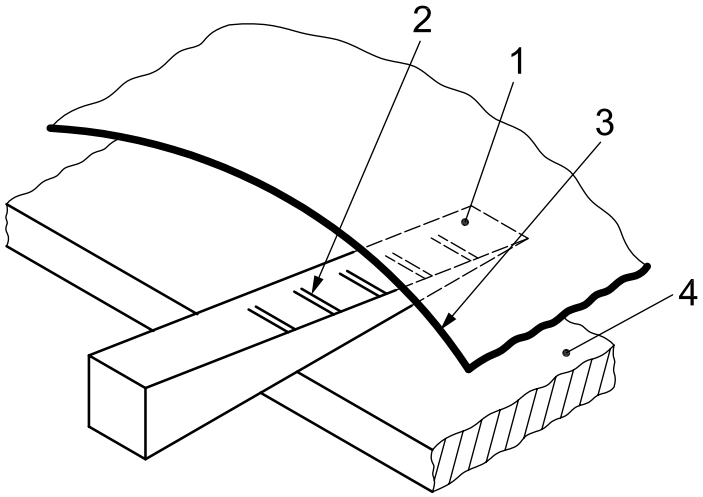
A.2.2 Determine the height of the lowest parts of the plate surface above the table surface at points where the plate is in close contact with the table surface.

A.2.3 Determine the difference of the heights of the most prominent bulges or waves (see Figure A.1) and the height determined in A.2.2. Alternatively, for the most prominent bulges or waves, use a taper gauge (A.1.2) to determine the width of the gap between the table and the lower plate surfaces, see Figure A.2.



Key
1 plate
2 measurement table
3 bulge or wave
4 height of bulge or wave

Figure A.1 — Illustration of a bulge or wave



Key

1 taper gauge, hidden below plate bulge
2 caliper marks on taper gauge
3 plate edge
4 measurement table

Figure A.2 — Use of a taper gauge

Annex B
(informative)

Test methods for the height of cutting burrs

B.1 Primary test method

B.1.1 Apparatus

B.1.1.1 **Aluminium-plate sample cutter**.

B.1.1.2 **Metal table base, with a steel mill table** (moveable in x, y directions), firmly mounted on the table.

B.1.1.3 **Test stand**, with gauge clamp, vertically adjustable, firmly resting on the table.

B.1.1.4 **Distance gauge head**, with roller anvil, secured in test stand clamp.

B.1.1.5 **Magnets**, for firmly clamping a plate specimen to the mill table.

B.1.1.6 **Gauge amplifier unit**, with meter.

B.1.1.7 **Shim strip**, with 0,05 mm thickness for calibration.

B.1.2 Procedure

B.1.2.1 Identify leading and trailing edges, and sides of sample plate and mark them accordingly using a felt-tipped pen.

B.1.2.2 Use sample cutter (B.1.1.1) to cut strips, approximately 50 mm wide, off each identified edge.

B.1.2.3 Set amplifier unit (B.1.1.6) to 0,1 mm.

B.1.2.4 Place sample strip on mill table (B.1.1.2) with worst burr facing up and towards the gauge stand. Secure strip with magnets (B.1.1.5) on either side of burr area.

B.1.2.5 Carefully lower the roller anvil on to the plate surface, a few centimetres away from burr edge.

B.1.2.6 Mechanically and electronically zero the displacement indication on the meter of the gauge amplifier unit (B.1.1.6).

B.1.2.7 Move the mill table slowly so that the roller anvil moves towards the burr area. Observe the meter until the roller anvil drops off the edge of the strip.

B.1.2.8 Record and report the highest reading.

B.1.2.9 Recalibrate the meter on the gauge amplifier unit using the 0,05 mm shim strip (B.1.1.7) whenever the unit has been moved, the gauge head has been replaced or adjusted, readings seem abnormal, or 24 months have elapsed since the last calibration.

B.2 Derived test method

B.2.1 Apparatus

B.2.1.1 **Aluminium-plate sample cutter**.

B.2.1.2 **Rectangular metal or stone table**, with less than 0,5 mm planarity deviation.

B.2.1.3 **Light source**, producing rays that are essentially contained in a plane, in the following named light plane.

B.2.1.4 **Camera**, for observing the reflections of the rays from a plate on the table, i.e., the intersection between the light plane and the plate surface.

B.2.1.5 **Means of measuring the height of the light trace in the image captured by the camera**.

B.2.2 Procedure

B.2.2.1 Direct the light beam at the table surface such that it creates an illuminated track (light trace) that runs parallel to the table edge. Select a suitable small angle that the light plane makes with the table plane.

B.2.2.2 Position camera (B.2.1.4) opposite to light source (B.2.1.3) using suitable magnification for the imaging. Select a suitable small angle that the optical axis of the camera makes with the table plane.

B.2.2.3 If desired, use sample cutter (B.2.1.1) to cut approximately 50 mm wide strips off each identified edge of plate.

B.2.2.4 Place plate or rectangular plate sample on the table so that the light beam scans over the worst burr area. Orientate the plate edges to be parallel to table edges.

B.2.2.5 In the image produced by the camera, observe and measure the height of the light trace in the burr area as compared to its value for the unperturbed plate surface.

B.2.2.6 Calibrate the height determination using the primary test method, B.1.

Annex C
(informative)

Test method for plate straightness

C.1 Apparatus

C.1.1 **Flat table**, of size that exceeds that of the largest plate to be evaluated.

C.1.2 **Glass ruler**, with a length that exceeds the width of the plate to be evaluated.

C.1.3 **Pen or stand microscope**, with a magnification of 50 × or more and an in-built scale of 20 µm per division or better.

C.2 Procedure

C.2.1 Place the entire plate on the table (C.1.1), coated side up.

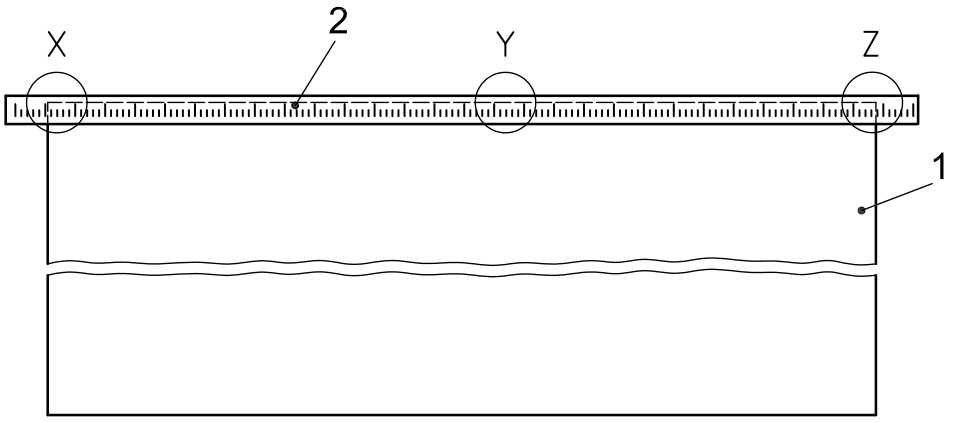
C.2.2 Put the glass ruler (C.1.2) on the plate edge you want to measure as shown in Figure C.1.

C.2.3 Align the glass ruler scale to the edges of the plate as shown in Figure C.2, details X and Z.

C.2.4 Between start and end points, measure the vertical distance of the scale bar and the plate edge with a pen or stand microscope (C.1.3) as shown in Figure C.2, detail Y.

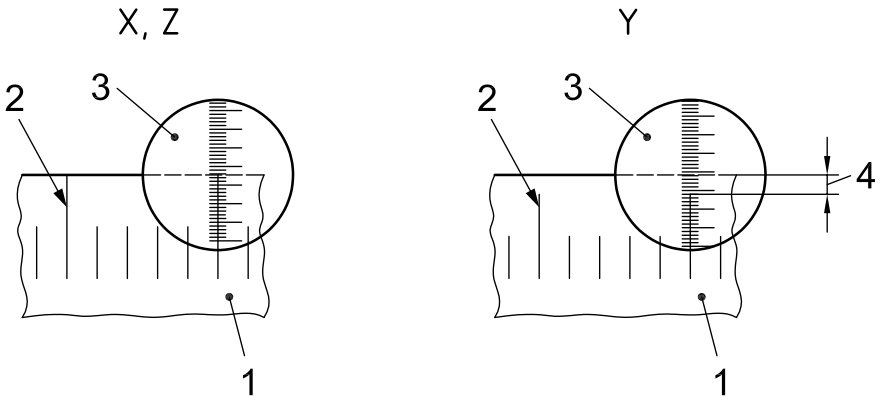
C.2.5 Measuring intervals should be 100 mm.

C.2.6 None of the measured deviations may be greater than 200 µm.



Key
1 printing plates
2 glass ruler

Figure C.1



Key
1 plate
2 scale on the glass ruler
3 microscope image
4 deviation of straightness

Figure C.2

Bibliography

[1] ISO 12218:1997, *Graphic technology — Process control — Offset platemaking*

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