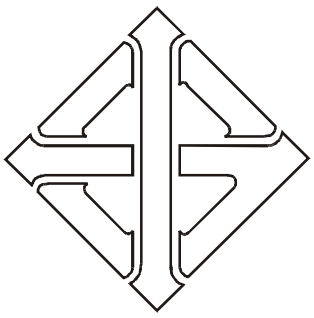

มาตรฐานผลิตภัณฑ์อุตสาหกรรม

THAI INDUSTRIAL STANDARD

มอก. 2260 เล่ม 6 – 2549

ISO 12647 – 6 : 2006

เทคโนโลยีการพิมพ์ - การควบคุมกระบวนการการผลิตในงานแยกสีฮาล์ฟโทน ปรู๊ฟ และพิมพ์

เล่ม 6 : การพิมพ์ระบบเฟล็กโซกราฟี

GRAPHIC TECHNOLOGY-PROCESS CONTROL FOR THE PRODUCTION OF HALF-TONE COLOUR SEPARATIONS, PROOFS AND PRODUCTION PRINTS

PART 6 : FLEXOGRAPHIC PRINTING

สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

กระทรวงอุตสาหกรรม

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มาตรฐานผลิตภัณฑ์อุตสาหกรรม

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สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
กระทรวงอุตสาหกรรม ถนนพระรามที่ 6 กรุงเทพฯ 10400
โทรศัพท์ 0 2202 3300

ประกาศในราชกิจจานุเบกษา ฉบับประกาศและงานทั่วไป เล่ม 124 ตอนพิเศษ 40ง
วันที่ 3 เมษายน พุทธศักราช 2550

ปัจจุบัน สังคมโลกเป็นยุคที่มีการแข่งขันกันทั้งในด้านเศรษฐกิจและอุตสาหกรรม มาตรฐานเทคโนโลยีการพิมพ์จึงเป็นเครื่องมือที่จำเป็นสำหรับการพัฒนากระบวนการพิมพ์เพื่อให้สามารถควบคุมปัจจัยต่าง ๆ ทางการพิมพ์ได้อย่างสม่ำเสมอและครบวงจร และเพื่อให้สามารถผลิตชิ้นงานพิมพ์ที่มีคุณภาพสม่ำเสมอ อันจะเป็นการสร้างความพึงพอใจแก่ลูกค้าและยังเป็นการเพิ่มศักยภาพการแข่งขันในตลาดโลกด้วย

มาตรฐานผลิตภัณฑ์อุตสาหกรรมนี้ กำหนดขึ้นโดยรับ ISO 12647-6 : 2006 Graphic technology - Process control for the production of half-tone colour separations, proofs and production prints - Part 6 : Flexographic printing มาใช้ในระดับเหมือนกันทุกประการ (identical) โดยใช้ ISO ฉบับภาษาอังกฤษเป็นหลัก

มาตรฐานผลิตภัณฑ์อุตสาหกรรมนี้ กำหนดขึ้นเพื่อให้ทันกับความต้องการของผู้ใช้และจักได้แปลเป็นภาษาไทยในโอกาสอันควร หากมีข้อสงสัยโปรดติดต่อสอบถามที่สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

คณะกรรมการมาตรฐานผลิตภัณฑ์อุตสาหกรรมได้พิจารณามาตรฐานนี้แล้ว เห็นสมควรเสนอรัฐมนตรีประกาศตามมาตรา 15 แห่งพระราชบัญญัติมาตรฐานผลิตภัณฑ์อุตสาหกรรม พ.ศ. 2511

ประกาศกระทรวงอุตสาหกรรม

ฉบับที่ 3596 (พ.ศ. 2549)

ออกตามความในพระราชบัญญัติมาตรฐานผลิตภัณฑ์อุตสาหกรรม

พ.ศ. 2511

เรื่อง กำหนดมาตรฐานผลิตภัณฑ์อุตสาหกรรม

เทคโนโลยีการพิมพ์–การควบคุมกระบวนการการผลิตในงานแยกสีฮาล์ฟโทน ปรู๊ฟ และพิมพ์

เล่ม 6 : การพิมพ์ระบบเฟล็กโซกราฟี

อาศัยอำนาจตามความในมาตรา 15 แห่งพระราชบัญญัติมาตรฐานผลิตภัณฑ์อุตสาหกรรม พ.ศ. 2511 รัฐมนตรีว่าการกระทรวงอุตสาหกรรมออกประกาศกำหนดมาตรฐานผลิตภัณฑ์อุตสาหกรรม เทคโนโลยีการพิมพ์–การควบคุมกระบวนการการผลิตในงานแยกสีฮาล์ฟโทน ปรู๊ฟ และพิมพ์ เล่ม 6 : การพิมพ์ระบบเฟล็กโซกราฟี มาตรฐานเลขที่ มอก. 2260 เล่ม 6–2549 ไว้ ดังมีรายละเอียดต่อท้ายประกาศนี้

ประกาศ ณ วันที่ 4 ธันวาคม พ.ศ. 2549

โฆสิต ปั้นเปี่ยมรัษฎ์

รัฐมนตรีว่าการกระทรวงอุตสาหกรรม

มาตรฐานผลิตภัณฑ์อุตสาหกรรม
เทคโนโลยีการพิมพ์ - การควบคุมกระบวนการการผลิตในงานแยกสีฮาล์ฟโทน ปรู๊ฟ และพิมพ์
เล่ม 6 : การพิมพ์ระบบเฟล็กโซกราฟี

บทนำ

มาตรฐานผลิตภัณฑ์อุตสาหกรรมนี้ มีวัตถุประสงค์เพื่อกำหนดค่าพารามิเตอร์ปฐมภูมิและเกณฑ์กำหนดทางเทคนิคที่เกี่ยวข้องกับคุณภาพสิ่งพิมพ์ที่ผลิตโดยการพิมพ์ภาพฮาล์ฟโทนเฟล็กโซกราฟี

ขอบข่าย

มาตรฐานผลิตภัณฑ์อุตสาหกรรมนี้ กำหนดพารามิเตอร์ต่าง ๆ ทางการพิมพ์และค่าเกณฑ์กำหนดเพื่อใช้กับการพิมพ์บรรจุภัณฑ์และงานพิมพ์ทั่วไปด้วยกระบวนการพิมพ์เฟล็กโซกราฟีสี่สี ยกเว้นการพิมพ์หนังสือพิมพ์ ตั้งแต่ขั้นตอนการแยกสี เตรียมฟิล์ม ทำแม่พิมพ์ ปรู๊ฟ พิมพ์ และขั้นตอนหลังพิมพ์
รายละเอียดให้เป็นไปตามมาตรฐาน ISO 12647-6 : 2006 ข้อ 1

เอกสารอ้างอิง

รายละเอียดให้เป็นไปตามมาตรฐาน ISO 12647-6 : 2006 ข้อ 2

บทนิยาม

ความหมายของคำที่ใช้ในมาตรฐานผลิตภัณฑ์อุตสาหกรรมนี้
ให้เป็นไปตามมาตรฐาน ISO 12647-6 : 2006 ข้อ 3

ข้อกำหนด

ไฟล์ข้อมูลนำเข้า-ส่งออก ฟิล์มแยกสี แม่พิมพ์ ปรู๊ฟ วัสดุใช้พิมพ์ หมึกพิมพ์ และการพิมพ์
รายละเอียดให้เป็นไปตามมาตรฐาน ISO 12647-6 : 2006 ข้อ 4

วิธีทดสอบ

การทดสอบหาค่าน้ำหนักสีและการเกิดเม็ดสกรีนบวมบนสิ่งพิมพ์
รายละเอียดให้เป็นไปตามมาตรฐาน ISO 12647-6 : 2006 ข้อ 5

การรายงานสภาวะทางการพิมพ์

การรายงานสภาวะทางการพิมพ์ให้เป็นไปตามมาตรฐาน ISO 12647-6 : 2006 ข้อ 6

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 12647-6 was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

ISO 12647 consists of the following parts, under the general title *Graphic technology — Process control for the production of half-tone colour separations, proofs and production prints*:

— *Part 1: Parameters and measurement methods*

— *Part 2: Offset lithographic processes*

— *Part 3: Coldset offset lithography on newsprint*

— *Part 4: Publication gravure printing*

— *Part 5: Screen printing*

— *Part 6: Flexographic printing*

Introduction

The ISO 12647 series of International Standards establishes the process control parameters and their aim values and tolerances for the most important professional printing processes of the graphic arts industry. The groundwork for the remainder of the series is laid down in ISO 12647-1. The latter should be consulted for information on:

— the minimum set of primary process parameters required to uniquely define the visual characteristics of a half-tone proof or production print;

— definitions of general terms necessary for process control;

— measurement methods and reporting.

This part of ISO 12647 lists values or sets of values of the primary parameters specified in ISO 12647-1 and related technical properties of a half-tone flexographic print. Where deemed useful, secondary parameters are also specified.

The purpose of a proof print is to simulate the visual characteristics of the finished print product as closely as possible. In order to visually match a particular print, off-press proofing processes might require values for solid tone coloration and tone value increase which are different from those of the printing process they are meant to simulate. This is caused by differences in phenomena such as gloss, light scatter (within the print substrate or the colorant), metamerism and transparency. Such differences are likely for those off-press proofing processes in which the print substrate, the colorants and the technology for applying them are significantly different from flexographic printing. In such cases the user or the supplier should ensure that appropriate corrections are specified.

Graphic technology — Process control for the production of half-tone colour separations, proofs and production prints —

Part 6:
Flexographic printing

1 Scope

This part of ISO 12647 specifies a number of process parameters and their values to be applied to four-colour process printing by the flexographic printing process for packaging and publication, excluding newsprinting. The parameters and values are chosen in view of the complete process covering the process stages “colour separation”, “film setting”, “making of the printing forme”, “proof production”, “production printing” and “surface finishing”. This covers printing on printing substrates which are nearly white or on films to which a white coating has been applied.

This part of ISO 12647 is directly applicable to:

— publication flexographic printing including magazines, catalogues and commercial materials, and packaging flexographic printing including labels, boxes and flexible packages;

— half-tone and continuous tone proofing processes that predict the colorimetric results of flexograhic printing.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the reference document (including any amendments) applies.

ISO 5-3, *Photography — Density measurements — Part 3: Spectral conditions*

ISO 2846-5, *Graphic technology — Colour and transparency of printing ink sets for four-colour printing — Part 5: Flexographic printing*

ISO 12642-1, *Graphic technology — Input data for characterization of 4-colour process printing — Part 1: Initial data set*

ISO 12647-1:2004, *Graphic technology — Process control for the production of half-tone colour separations, proof and production prints — Part 1: Parameters and measurement methods*

ISO 13655, *Graphic technology — Spectral measurement and colorimetric computation for graphic arts images*

3 Terms and definitions

For the purposes of this document, the definitions given in ISO 12647-1 apply.

4 Requirements

4.1 General

NOTE Subclauses 4.2 and 4.3 are arranged according to the order set out in ISO 12647-1; they also depend on this order for the general principles, the definition of the data, the measurement conditions and the reporting style.

In all cases, digital data files or colour separation film sets delivered for printing should be accompanied by a proof print unless there is agreement to the contrary amongst all parties concerned. If delivered, the proof print shall simulate the intended printing condition and shall conform to 4.3. This fact shall be verifiable by measuring a well-specified control strip or a similar control device that is printed on the proof print along with the subject.

4.2 Data files, colour separation films and printing formes

4.2.1 Data files

Data delivered for printing shall be in the colour formats CMYK or three-component. The intended printing condition shall be indicated. Where the latter is included in the registry of characterizations maintained by the ICC, and the digital data are CMYK, the name used in the ICC registry may be used for identification in lieu of including an ICC output profile. If the intended printing condition is not included in said registry, an ICC output profile shall be included. If the data are other than CMYK, the data shall be defined colorimetrically using an ICC input profile or another mechanism and an ICC CMYK output profile shall be included; the rendering intent to be used with the output profile shall be communicated.

4.2.2 Colour separation film or printing forme quality

In order to permit the reproduction of at least 100 tone value steps, the resolution of the image setter or plate setter should be set accordingly.

Unless otherwise specified, the matte negative colour separation film shall have a core density of 3,0. The transmission density in the centre of a clear half-tone dot shall not be more than 0,1 above the corresponding value of a large clear area. The transmission density of the clear film shall not be higher than 0,15. Both measurements shall be made with a (UV) transmission densitometer whose spectral products conform to ISO type 1 printing density as defined in ISO 5-3.

The fringe width shall not be greater than one fortieth of the screen width; the half-tone dot shall not be split up into distinct parts.

The clear film density requirement is based on the understanding that the density range of the clear areas of all films that are to be exposed on to the same plate must not exceed 0,10. Experience has proved that 0,05 represents the lowest commonly found value for ISO type 1 printing density. For half-tone films with clear film densities above this range, agreements between the supplier of colour separations and the recipient are required. Contacting or duplicating can also be used to bring half-tone films with dissimilar clear film densities into agreement.

NOTE As a practical guide, a core density of 3 above the clear film density will normally be achieved if the density of large solid areas is more than 4 above the clear film density.

If a user wishes to use a blue filter for transmission density measurements on colour separation films, it is necessary to determine, for the particular film type and processing conditions, the correlation between densities obtained with the blue filter and those obtained with an ISO type 1 printing density instrument; for the measurement of core density an ISO type 2 printing instrument may be used.

Other than for the clear film density requirement, the colour separation film quality may be evaluated according to Annex B of ISO 12647-1:2004.

4.2.3 Screen frequency (film or printing forme)

The screen frequency shall be within the pertinent range specified in Table 1.

Table 1 — Screen frequency ranges

Print substrate type			
1 Corrugated board	2 Uncoated paper	3 Coated paper	4 Film/foil
14 cm^{-1} to 33 cm^{-1}	18 cm^{-1} to 40 cm^{-1}	45 cm^{-1} to 54 cm^{-1}	36 cm^{-1} to 60 cm^{-1}

NOTE 1 Outside the ranges specified in Table 1, the general principles specified in ISO 12647-1 remain valid but specific values are expected to differ.

NOTE 2 With computer-generated screening, the parameters “screen frequency” and “screen angle” are usually varied slightly in conjunction, from one process colour to another, in order to minimize moiré patterns.

4.2.4 Screen angle (film or printing forme)

For half-tone dots without a principal axis, the nominal difference between the screen angles for cyan, magenta and black shall be 30°, with the screen angle for yellow separated by 15° from another colour. No colour should align with engraving on the anilox roller.

4.2.5 Dot shape and its relationship to tone value (film or printing forme)

No specification.

4.2.6 Image size tolerance (film or printing forme)

For a set of colour separation films or printing formes in common environmental equilibrium, the lengths of the diagonals shall not differ by more than 0,02 %.

NOTE This tolerance includes image or plate setter repeatability and material stability.

4.2.7 Tone value sum (digital data file or film)

The following ranges should be observed.

— Corrugated board: 270 % to 300 %

— Coated paper: 280 % to 300 %

— Uncoated paper: 290 % to 320 %

— Film/foil: 270 % to 290 %

NOTE The tone value sum requirements shown above are intended for general guidance only. The actual limitations on tone value sum are a function of the type of ink used (solvent, water-based, UV cured, etc.), the substrate, dryer configurations, and inline converting processes. Press trials provide the appropriate tone value sum for a particular process.

4.2.8 Grey balance (digital data file or film)

A single grey balance condition is usually not sufficient to ensure an achromatic colour for all print substrates, black compositions and printing inks that may be used with a given printing process. The correct grey balance can be determined from the pertinent colour management profile, it usually depends on the black composition.

See Annex A for approximate values that may be used for control purposes.

4.3 Proof or production print

4.3.1 General

Provision of colorimetric characterization data in the format according to ISO 12642-1, basic set, contains the data to be specified according to 4.3.2.1, 4.3.2.3 and 4.3.5.1.

4.3.2 Visual characteristics of image components

4.3.2.1 Print substrate colour

The colour of the print substrates covered by Table 1, namely

— corrugated board (coated or uncoated);

— coated paper;

— uncoated paper;

— film;

— foil

shall be white with the colorimetric properties shown in Table 2. The print substrate used for proofing should be identical to that of the production. If that is not possible the former shall be a close match to that of the production in terms of colour, gloss, type of surface (such as paper, plastic, board) and mass per area.

NOTE If the final product is subjected to surface finishing, this step is expected to severely affect the print substrate colour. See also the note in 4.3.2.2.

Table 2 — Print substrate colour ranges

Values given in the unit 1

L^*	a^*	b^*
$\geqslant 88$	-3 to $+3$	-5 to $+5$

4.3.2.2 Print substrate gloss

The gloss of the print substrate used for proofing should be a close match to that of the production print substrate. If this is not possible, press proofing can be carried out on the closest match selected from the print substrate types listed in 4.3.2.1.

NOTE If the final product is subjected to surface finishing, this will severely affect the gloss. In critical cases, the result of the colour separation stage is best judged by means of a proof that closely matches the gloss of the final surface-finished print product. For processes with off-press finishing, in order to facilitate the matching of the production image to the proof image at the make-ready stage, it is a good plan to provide the press man with two proof prints: a proof print whose gloss matches that of the (unfinished) production print substrate and a proof print that closely matches the gloss of the final surface-finished print product.

4.3.2.3 Ink set colours

Using the process inks as defined in ISO 2846-5, the CIELAB colour co-ordinates L^*, a^*, b^* of the process colour solid tones on the proof shall be as given in Table 3. The colour co-ordinates of the two-colour overprints without black should be as given in Table 3.

The deviation of the process colour solids of the OK print of the production run is restricted by the condition that the colour differences between proof and OK print shall not exceed the deviation tolerances specified in Table 4. If no conforming proof is supplied, the colour values of Table 3 shall provide the aim.

The variability of the process colour solids in production is restricted by the following condition. For at least 68 % of the production prints, the colour differences from the OK sheet shall not exceed one half of the appropriate variation tolerance specified in Table 4.

Table 3 — CIELAB values for the solids of the process colours

Values given in the unit 1

Colour	Printing substrate type								
	1/2 uncoated paper, corrugated board [a]			3 coated paper			4 film/foil		
	L^*[b]	a^*[b]	b^*[b]	L^*[b]	a^*[b]	b^*[b]	L^*[b]	a^*[b]	b^*[b]
Cyan	58	– 25	– 43	54	– 36	– 50	50	– 33	– 36
Magenta	54	58	– 2	50	71	– 2	43	54	– 8
Yellow	86	– 4	75	88	– 9	88	73	– 10	63
Black	31	1	1	26	0	2	26	– 1	– 2
Red[c]	52	55	30	49	64	46	43	48	32
Green[c]	52	– 46	16	50	– 70	28	46	– 53	22
Blue[c]	36	12	– 32	22	21	– 44	25	11	– 36

[a] Coated or uncoated.

[b] Measurement according to ISO 13655, but with a white, matte, opaque backing with $L^* > 92$, $C^* < 3$.

[c] Printed in the sequence yellow-cyan-magenta.

NOTE 1 The distribution of ΔE^*_{ab} values is not gaussian but skewed. For reasons of consistency 68 % was chosen as the limit. This is in analogy with a gaussian distribution where 68 % are within plus or minus one standard deviation of the mean.

NOTE 2 If the final print is subjected to surface finishing, the final colours are expected to deviate appreciably from those of the unfinished print. See also the Notes in 4.3.2.1 and 4.3.2.2.

NOTE 3 The secondary colours red, green, blue depend on conditions that include the printing sequence, the rheological and transparency properties of the inks, mechanics of the press and the surface characteristics of the print substrate. Thus, conformance of the primaries C, M, Y to Table 3 is not sufficient for the conformance of the secondary colours to the same table.

NOTE 4 Density values can be very valuable for process control during a print run, where the instrument, the ink and the print substrate remain the same, see ISO 13656[3]. However, in a general situation, density values do not define a colour to the required degree. Therefore, for the purpose of this part of ISO 12647, reflection density values are only recommended for the determination of tone values. Following ISO 13656[3], the production press person should first achieve the correct colour of the solids on his press, then read the densities with his instrument from the OK print. He or she will then best use these densities as aim values for process control during the production run.

Table 4 — CIELAB ΔE^*_{ab} tolerances for the solids of the process colours

Values given in the unit 1

	Black	Cyan	Magenta	Yellow
Deviation tolerance	8	8	8	8
Variation tolerance	5	5	5	6

4.3.2.4 Ink set gloss

No specification.

NOTE If it is deemed necessary to specify the gloss of solid tone colours then the specular gloss of the ink set single print solid areas should be measured and recorded at an agreed angle of incidence.

4.3.3 Tone value reproduction limits

Half-tone dot patterns within the tone value limits (on the film or in the digital data file) given in Table 5 shall transfer on to the print substrate in a consistent and uniform manner. No significant image parts shall rely on tone values outside these tone value reproduction limits.

Table 5 — Tone value ranges (film or data)

	Printing substrate type			
	1 Corrugated board	2 Uncoated paper	3 Coated paper	4 Film/foil
Tone value range	8 % to 75 %	5 % to 75 %	3 % to 85 %	2 % to 90 %

4.3.4 Tolerance for image positioning

The maximum deviation between the image centres of any two printed colours shall not be more than 0,02 % of the printing forme diagonal.

4.3.5 Tone value increase

4.3.5.1 Aim values

The tone value increase of flexographic printing strongly depends on the particular combination of “ink, printing substrate, press” used, Table 6 gives reference values for tone value increase. In the absence of specific information about the tone value increase associated with the printing condition to be used for production printing, the values of Table 6 shall be used for colour separation and proof printing. If production printing is found to require different tone value increase values, the necessary correction can be applied when preparing the printing formes for production. The test method for the determination of tone values shall be as specified in ISO 12647-1.

NOTE Differences in print substrates might require minor press adjustments to produce identical curves for each substrate.

Table 6 — Percentage tone value increase on print

Tone value of control patch %	Printing substrate type			
	1 Corrugated board	2 Uncoated paper	3 Coated paper	4 Film/foil
10	17	12	15	18
15	21	15	18	28
25	26	20	23	31
40	26	24	25	36
50	24	23	23	34
60	20	20	20	30
75	15	15	15	20
85	10	10	10	12

NOTE Values measured densitometrically according to ISO 12647-1, with ISO status E response according to ISO 5-3 and polarization. For ISO status T response without polarization, the midtone tone values for cyan, magenta and black are approximately equal to those shown in the table; the values for yellow can be expected to be up to 2 % smaller.

4.3.5.2 Tolerances and mid-tone spread

At tone values of 25 %, 50 % and 75 %, the deviation of the tone value of a proof or an OK print from the specified value shall not exceed 5 %.

The statistical standard deviation of the tone values should not exceed 4 % and 68 % of the production should be within 4 % of the OK print. The mid-tone spread (variation of mid-tone tone values between C, M, Y) of proof or production print shall not exceed 5 %.

5 Test methods: tone value and tone value increase of a print

Refer to 5.3 of ISO 12647-1:2004 and note the following additional requirements. Single or groups of control patches shall be distributed over the format and printed with the subject. The screen ruling shall be selected from the range 18 cm^{-1} to 60 cm^{-1}.

In the case of directly generated control patches, dot shapes, screen rulings and screen angles should be the same as for the subject. The tone value limits shall be at least those given in Table 5 and should be the same as the tone value limits used for the subject. The minimum dot size for non-periodic screens should be 50 µm. The control patches should reflect the requirements of this part of ISO 12647. If a film is used its core density shall be no less than 4,0 above the density of the clear film (film base plus fog), the fringe width shall not exceed 2 µm.

NOTE See Note in Table 6.

6 Reporting of printing conditions

Reference to the printing conditions as specified by this part of ISO 12647 in Tables 1 to 6 for the purposes of colour management, such as in colour management characterization tables or colour management profiles based on them, should be made in the following form:

“Printing according to ISO 12647-6, <Flexography>, <printing substrate type>, <screen ruling in reciprocal centimetres>”.

The printing substrate types are listed in Tables 1, 3, 5, 6, in short form “PS1” to “PS4”.

EXAMPLE 1 “Printing according to ISO 12647-6, Flexographic printing, printing substrate type 3, screen ruling 52 cm^{-1}”.

EXAMPLE 2 FL_PS3_F52

Annex A
(informative)

Composition of grey balance patches

The tone value combinations given in Table A.1 pertain to digital data or matte film, They are believed to produce achromatic or nearly achromatic colours in print under the conditions specified in this part of ISO 12647. The values are useful to be used for the design of test formes and control strips. They are not meant to be used as a specification for proof or press printing since this would constitute an overspecification of the print characteristic (tone value) curve.

Figure A.1 — Tone value combinations for grey balance

	Cyan	Magenta	Yellow
Highlight	10 %	7 %	7 %
Quarter tone	25 %	20 %	20 %
Mid-tone	50 %	40 %	40 %
Three-quarter tone	75 %	65 %	65 %

There are two practical definitions for grey:

— “a colour having the same a^* and b^* CIELAB values as the print substrate”;

— “a colour that has the same a^* and b^* CIELAB values as a half-tone tint of similar L^* value printed with black ink”.

The former is more useful for highlight tones, the latter for shadow tones.

Bibliography

[1] ISO 2813:1978, *Paints and varnishes — Measurement of specular gloss of non-metallic paint films at 20 degrees, 60 degrees and 85 degrees*

[2] ISO 8254-1, *Paper and board — Measurement of specular gloss — Part 1: 75 degree gloss with a converging beam, TAPPI method*

[3] ISO 13656, *Graphic technology — Application of reflection densitometry and colorimetry to process control or evaluation of prints and proofs*

[4] ISO 14981, *Graphic technology — Process control — Optical, geometrical and metrological requirements for reflection densitometers for graphic arts use*