SLOVENSKI STANDARD
SIST ISO 12642-2:2008

01-junij-2008

Grafična tehnologija - Vhodni podatki za opis 4-barvnega tiska s procesnimi barvami - 2. del: Razširjeni podatki (za profiliranje in certificiranje)

Graphic technology - Input data for characterization of 4-colour process printing - Part 2: Expanded data set

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **ISO 12642-2:2006**

ICS:

35.240.30	Uporabniške rešitve IT v informatiki, dokumentiranju in založništvu	IT applications in information, documentation and publishing
37.100.99	Drugi standardi v zvezi z grafično tehnologijo	Other standards related to graphic technology

SIST ISO 12642-2:2008   **en**

iTeh STANDARD PREVIEW

(standards.iteh.ai)

INTERNATIONAL STANDARD

ISO
12642-2

First edition
2006-12-15

Corrected version
2007-08-15

Graphic technology — Input data for characterization of 4-colour process printing —

Part 2:
Expanded data set

Technologie graphique — Données d'entrée pour caractérisation d'impression en quadrichromie —

Partie 2: Ensemble de données élargies

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Reference number
ISO 12642-2:2006(E)

© ISO 2006

ISO 12642-2:2006(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

---

iTeh STANDARD PREVIEW
(standards.iteh.ai)

COPYRIGHT PROTECTED DOCUMENT

Contents

Page

iTeh STANDARD PREVIEW

(standards.iteh.ai)

ISO 12642-2:2006(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.

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.

ISO 12642-2 was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

ISO 12642 consists of the following parts, under the general title *Graphic technology — Input data for characterization of 4-colour process printing*:

— *Part 1: Initial data set*

— *Part 2: Expanded data set*

This corrected version incorporates corrections to the manner in which the data is designated in 4.4.

Introduction

The existing characterization data set defined in ISO 12642-1 has proven very effective for use in characterizing various printing processes. Two concerns have been raised with respect to the ISO 12642-1 data set. First, many of those developing characterization data for colour management systems feel that additional data points are needed to provide better sampling of the data space. The second concern comes from the packaging industry which would like to see both more data points in general but also more data at the highlight end of the scale and in particular more 4-colour data with low levels of black.

Several drafts of a data set optimized for package printing (referred to as IT8.7/4) have been prepared by ANSI Committee for Graphic Arts Technologies Standards (CGATS). In addition, the European Colour Initiative (ECI) took an early draft and combined parts of it with the ISO 12642-1 data set and developed a data set known as ECI 2002 that has 1 485 data set elements. ECI 2002 has since been approved as DIN 16614:2004. The data set contained in this part of ISO 12642 adds a series of 4-colour overprints at the 10 % black level to the data set elements in the current ECI 2002 data set. It is believed that this combined data set can fill the general colour characterization needs of all segments of the industry.

During development of this part of ISO 12642, concerns were raised by the Japanese delegates concerning adequate representation of flesh tones. While additional flesh tones were not included in the standard data set, a 112-element flesh tone data set has been included in Annex B.

It is important to note that there will always be special applications where additional or special data will be needed because of the peculiarities of a process or critical colour needs in certain parts of the tone scale or colour space.

There is no required layout or patch size defined for the data set defined in this part of ISO 12642. Users are free to randomize the layout and/or "fit" it to the space available. However, the members of TC 130/WG 2 strongly believe that default layouts need to be defined so that electronic versions of the target can be made readily available. This will facilitate the use of this new data set by both users and colour management vendors. Accordingly, two default layouts are described in Annex A, i.e. one optimized for visual inspection, and the other randomized with the goal of uniform ink loading in each colour across the target area to minimize interaction between patch areas.

In addition, the reference files that are included in this part of ISO 12642 clearly identify the elements that represent the data set defined as ISO 12642-1:1996 (often referred to as IT8.7/3) and the data set defined in ECI 2002. These can both be easily extracted from and/or related to the larger data set where appropriate.

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent (Japanese Patent No. 2554366) held by Konica Minolta.

ISO takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured ISO that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO. Information may be obtained from:

Mr. Kazuo Kato
Industrial Standard Group
Intellectual Property Center
Konica Minolta Technology Center, Inc.
Tel. +81-42-589-8135
Fax +81-42-589-8088
e-mail: kazuo.kato.kk@konicaminolta.jp

ISO 12642-2:2006(E)

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

INTERNATIONAL STANDARD

ISO 12642-2:2006(E)

Graphic technology — Input data for characterization of 4-colour process printing —

Part 2:
Expanded data set

1 Scope

This part of ISO 12642 defines a data set of ink value combinations that are intended to be used to characterize 4-colour process printing. This data set is not optimized for any printing process or application area but is robust enough for all general applications. The needs of publication, commercial, and package printing with offset, gravure, flexography, and other printing processes have been considered. While it is primarily aimed at process colour printing with CMYK inks, it can also be used with any combination of three chromatic coloured inks and a dark ink. It is an alternate to the ISO 12642-1 data set where more robust data is required.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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 referenced document (including any amendments) applies.

ISO 12642-1:1996, *Graphic technology — Input data for characterization of 4-colour process printing — Part 1: Initial data set*

3 Terms and definitions

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

3.1
data set
total collection of independently identified ink value sets that are defined by this part of ISO 12642

NOTE   The terms patch and target are deliberately avoided because they imply a physical object or layout. This part of ISO 12642 only defines the data values which the user is free to arrange in any target layout that meets their needs using patches of any size compatible with their measuring equipment.

3.2
ink values
digital value that represents the amount of a colourant required in a rendering process

NOTE   For the half-tone printing process this is equivalent to the tone value/dot area of the half-tone film expressed as a percentage.

3.3
ink value set
set of four ink values representing the amount of the four colours to be used in a process colour area

ISO 12642-2:2006(E)

4 Technical requirements

4.1 Data set characteristics

In order to meet the colour characterization needs of both the printing industry in general and the package printing industry, this data set needs to contain ink value sets that will provide sufficient detail in the highlight and shadow areas when printed using gravure, offset, flexographic and metal-decorating printing processes. In addition, this data set should be suitable for use with both traditional process colours as well as with three chromatic colours and a dark colour.

During the various development steps that led to the target defined in this standard, several groups of ink value sets (e.g. tone scales, grey balance, etc.) were identified. Those that are contained within the data set of this part of ISO 12642 are summarized in Table 1.

During evaluation of the requirements for this data set, a number of additional elements were considered. One group of these elements involved a regular array of flesh tone data. While these flesh tone data were not selected for inclusion in the defined data set, they were felt to be important enough to be documented as Annex B.

4.2 Data set definition

The groups of ink value sets of Table 1 have many individual sets of ink values that appear multiple times. Eliminating all duplicated sets would result in a composite data set of 1 588 ink value combinations. However, for any layouts that attempt to provide ease of visual inspection it is important to have symmetry within tone scales and within systematic 3-colour overprint arrays. This requires the presence of 29 duplicate ink value sets. These are the C, M, and Y single-colour data sets with tone values of 10 %, 20 %, 30 %, 40 %, 70 %, 85 %, and 100 % and the black single-colour data sets with tone values of 10 %, 20 %, 40 %, 60 %, 80 % and 100 %. In addition, there are two additional data set combinations assigned to paper to allow some flexibility in that area, particularly when the printing substrate is not traditional paper. This results in a total of 1 617 combinations.

Table 1 — Required groups of ink value sets

Group	Description
1	All combinations of 0 %, 10 %, 20 %, 30 %, 40 %, 55 %, 70 %, 85 %, 100 % in C, M and Y
2	All combinations of 0 %, 10 %, 20 %, 40 %, 70 % in C, M and Y with 10 % black All single-colour and 2-colour overprints at 100 % in C, M and Y with 10 % black
3	All combinations of 0 %, 10 %, 20 %, 40 %, 70 %, 100 % in C, M and Y with 20 % black
4	All combinations of 0 %, 20 %, 40 %, 70 %, 100 % in C, M and Y with 40 % black
5	All combinations of 0 %, 20 %, 40 %, 70 %, 100 % in C, M and Y with 60 % black
6	All 2-colour overprints at 40 % in C, M and Y with 70 % black All single colour and 2-colour overprints at 100 % in C, M and Y with 70 % black
7	All combinations of 0 %, 40 %, 70 %, 100 % in C, M and Y with 80 % black
8	All combinations of 0 %, 40 %, 100 % in C, M and Y with 100 % black
9	Near neutral combinations of C, M, Y as follows: 5 %, 3 %, 3 % with a black level of 0 % 10 %, 6 %, 6 % with black levels of 0 %, 10 %, 20 %, 40 %, 60 %, 80 %, 100 % 20 %, 12 %, 12 % with black levels of 0 %, 10 %, 20 %, 40 %, 60 %, 80 %, 100 % 40 %, 27 %, 27 % with black levels of 0 %, 10 %, 20 %, 40 %, 60 %, 80 %, 100 % 50 %, 40 %, 40 % with a black level of 0 % 60 %, 45 %, 45 % with black levels of 0 %, 20 %, 40 %, 60 %, 80 %, 100 % 80 %, 65 %, 65 % with black levels of 0 %, 40 %, 60 %, 80 %, 100 % 100 %, 85 %, 85 % with black levels of 0 %, 60 %, 80 %, 100 %
10	All combinations of 0 %, and 3 % in C, M, Y and K
11	All combinations of 0 %, and 7 % in C, M, Y and K
12	All combinations of 0 %, 3 %, and 40 % in C, M, Y and K
13	Single-colour scales in C, M, Y, and K with values of 100 %, 98 %, 95 %, 90 %, 85 %, 80 %, 75 %, 70 %, 60 %, 50 %, 40 %, 30 %, 25 %, 20 %, 15 %, 10 %, 7 %, 5 %, 3 %, 2 %, 0 %

Table 2, and the data file 12642-2_summary.csv accompanying this part of ISO 12642, lists the ID numbers and their associated CMYK ink values that shall constitute this characterization data set. Within this listing ink value data sets numbers 1 to 1485 are taken directly from the ECI 2002 specification [1].

NOTE 1   For convenience, separate ID numbers were assigned to the duplicated ink value sets noted above.

Users are cautioned that, while the data in Table 2 may be included in application software and reproduced as part of reports generated by such applications, reproduction of these data separate from accompanying measurement or layout data is a violation of ISO copyright.

NOTE 2   The 1 617 ink value data sets include all ink value combinations of the ECI data set (see Introduction) as well as all ink value combinations included in the original ISO 12642-1 data set, but not the duplicate ink value sets of the ISO 12642-1 data set.

NOTE 3   DIN 16614:2004 (ECI 2002) does not contain all of the ink value sets of Group 2 and it does not contain the near neutral combinations of 50 %, 40 %, 40 % with black.

Table 3, and the data file 12642-1_vs_12642-2.csv, tabulates the relationship between the ink value sets used in ISO 12642-1 and those defined in this part of ISO 12642. Patch IDs 1 to 1485 of this data set have the same ink value combinations as the comparable patch IDs of the ECI 2002 (DIN 16614:2004) data set.

4.3   Layouts for printing

The 1 617 ink value sets may be printed in any arrangement desired. For any specific arrangement, a table defining the relationship between row-column position and ID number shall be provided.

Although there is no requirement that any particular arrangement of these data be used for printing characterization targets, it was felt that default layouts were desirable to facilitate use of the target in many applications. Accordingly, two default layouts are defined in Annex A. One is for "visual" use where the patches are arranged in logical groups. In a second layout, the patches are randomized to minimize the influence of the target arrangement itself on the final results. Figures A.1 and A.2 illustrate the appearance of the default visual and random layouts.

NOTE   The data file 12642-2_default.csv provides the relationship between row-column position and ID number for the two default layouts included in Annex A.

4.4   Data set identification

It is recommended that where data derived from this target is exchanged, that data representing:

— the full 1 617 data values of ISO 12642-2 be designated by: **ISO12642-2**

— the first 1 485 data values of ISO 12642-2 be designated by: **ECI2002**

— the ISO 12642-1 data created from ISO 12642-2 be designated by: **ISO12642-1**

— the flesh tone data of Annex B be designated by: **ISO12642-2AnnexB**

ISO 12642-2:2006(E)

Table 2 — Ink value combinations versus identification number (ID No.)

ID No.	% C	% M	% Y	% K	ID No.	% C	% M	% Y	% K	ID No.	% C	% M	% Y	% K
1	0	0	0	0	45	40	100	0	0	89	0	85	10	0
2	0	10	0	0	46	55	0	0	0	90	0	100	10	0
3	0	20	0	0	47	55	10	0	0	91	10	0	10	0
4	0	30	0	0	48	55	20	0	0	92	10	10	10	0
5	0	40	0	0	49	55	30	0	0	93	10	20	10	0
6	0	55	0	0	50	55	40	0	0	94	10	30	10	0
7	0	70	0	0	51	55	55	0	0	95	10	40	10	0
8	0	85	0	0	52	55	70	0	0	96	10	55	10	0
9	0	100	0	0	53	55	85	0	0	97	10	70	10	0
10	10	0	0	0	54	55	100	0	0	98	10	85	10	0
11	10	10	0	0	55	70	0	0	0	99	10	100	10	0
12	10	20	0	0	56	70	10	0	0	100	20	0	10	0
13	10	30	0	0	57	70	20	0	0	101	20	10	10	0
14	10	40	0	0	58	70	30	0	0	102	20	20	10	0
15	10	55	0	0	59	70	40	0	0	103	20	30	10	0
16	10	70	0	0	60	70	55	0	0	104	20	40	10	0
17	10	85	0	0	61	70	70	0	0	105	20	55	10	0
18	10	100	0	0	62	70	85	0	0	106	20	70	10	0
19	20	0	0	0	63	70	100	0	0	107	20	85	10	0
20	20	10	0	0	64	85	0	0	0	108	20	100	10	0
21	20	20	0	0	65	85	10	0	0	109	30	0	10	0
22	20	30	0	0	66	85	20	0	0	110	30	10	10	0
23	20	40	0	0	67	85	30	0	0	111	30	20	10	0
24	20	55	0	0	68	85	40	0	0	112	30	30	10	0
25	20	70	0	0	69	85	55	0	0	113	30	40	10	0
26	20	85	0	0	70	85	70	0	0	114	30	55	10	0
27	20	100	0	0	71	85	85	0	0	115	30	70	10	0
28	30	0	0	0	72	85	100	0	0	116	30	85	10	0
29	30	10	0	0	73	100	0	0	0	117	30	100	10	0
30	30	20	0	0	74	100	10	0	0	118	40	0	10	0
31	30	30	0	0	75	100	20	0	0	119	40	10	10	0
32	30	40	0	0	76	100	30	0	0	120	40	20	10	0
33	30	55	0	0	77	100	40	0	0	121	40	30	10	0
34	30	70	0	0	78	100	55	0	0	122	40	40	10	0
35	30	85	0	0	79	100	70	0	0	123	40	55	10	0
36	30	100	0	0	80	100	85	0	0	124	40	70	10	0
37	40	0	0	0	81	100	100	0	0	125	40	85	10	0
38	40	10	0	0	82	0	0	10	0	126	40	100	10	0
39	40	20	0	0	83	0	10	10	0	127	55	0	10	0
40	40	30	0	0	84	0	20	10	0	128	55	10	10	0
41	40	40	0	0	85	0	30	10	0	129	55	20	10	0
42	40	55	0	0	86	0	40	10	0	130	55	30	10	0
43	40	70	0	0	87	0	55	10	0	131	55	40	10	0
44	40	85	0	0	88	0	70	10	0	132	55	55	10	0

4