

Colour test pages for measurement of office equipment consumable yield

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National foreword

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A list of organizations represented on IST/3 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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INTERNATIONAL STANDARD

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Colour test pages for measurement of office equipment consumable yield

*Pages d'essai en couleur pour le mesurage du rendement des
consommables des équipements de bureau*

Reference number
ISO/IEC 24712:2006(E)



Documents
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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national 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 and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 24712 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

Introduction

The purpose of this international standard is to provide a set of test pages in a common file format that are used in the testing of cartridge yield for colour toner and colour ink. The focus of this test suite is not for printing of photographs, but is intended to be a sampling typical consumer pages. This international standard provides the procedure for using these pages are detailed in ISO/IEC 19798 and ISO/IEC 24711.

Colour test pages for measurement of office equipment consumable yield

1 Scope

The scope of this International Standard is to define colour test pages for the measurement of consumable yield. The test page suite includes four “customer” type documents and one “diagnostic” page that is used to determine end of ink or toner consumable life. These pages can be used for electro-photographic, inkjet printers and multi-function devices that have a digital printing path, i.e. an all-in-one electro-photographic machine that has digital printing capabilities.

This International Standard provides a set of test pages in a common file format that would be used in the testing of consumable yield. The procedure for using these pages is detailed in ISO/IEC 19798 and ISO/IEC 24711.

These pages are intended to represent some of the types of documents that are used in the office and home. They are not intended to represent special applications such as photo 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 referenced document (including any amendments) applies.

ISO/IEC 19798, *Method for the determination of toner cartridge yield for colour printers and multi-function devices that contain printer components*

ISO/IEC 24711, *Method for the determination of ink cartridge yield for colour inkjet printers and multi-function devices that contain printer components*

3 Terms and definitions

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

3.1

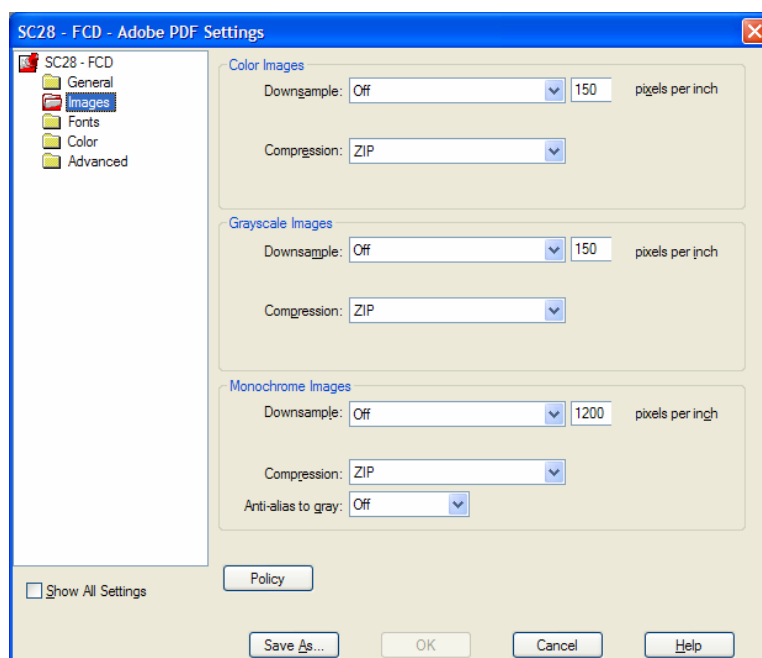
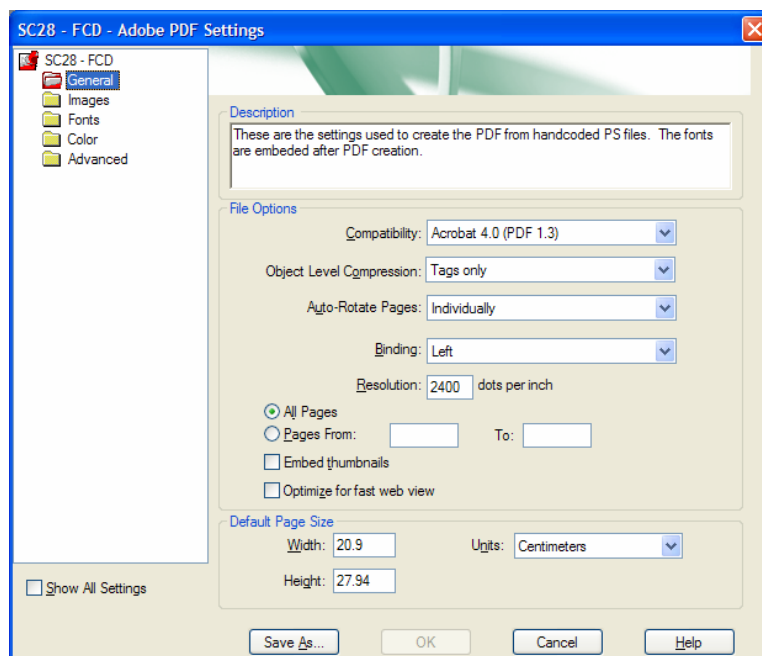
test page suite

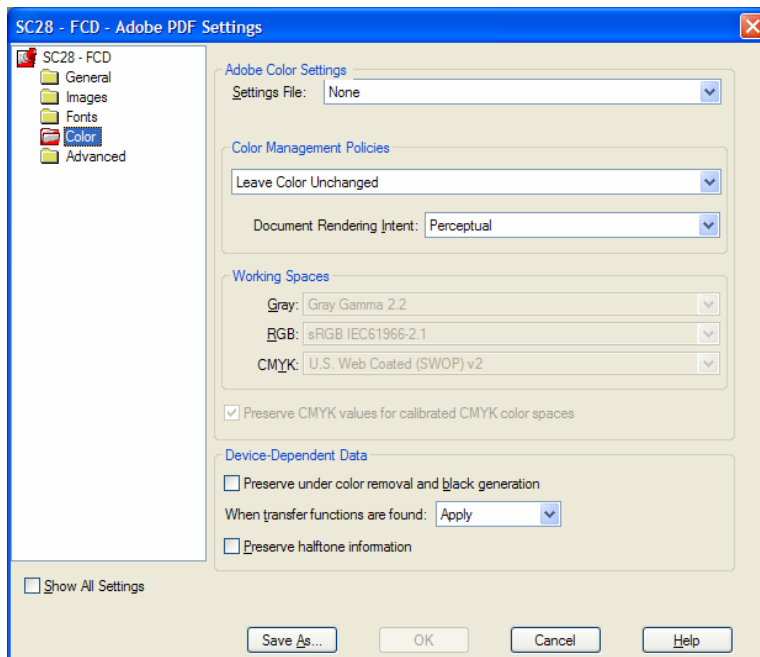
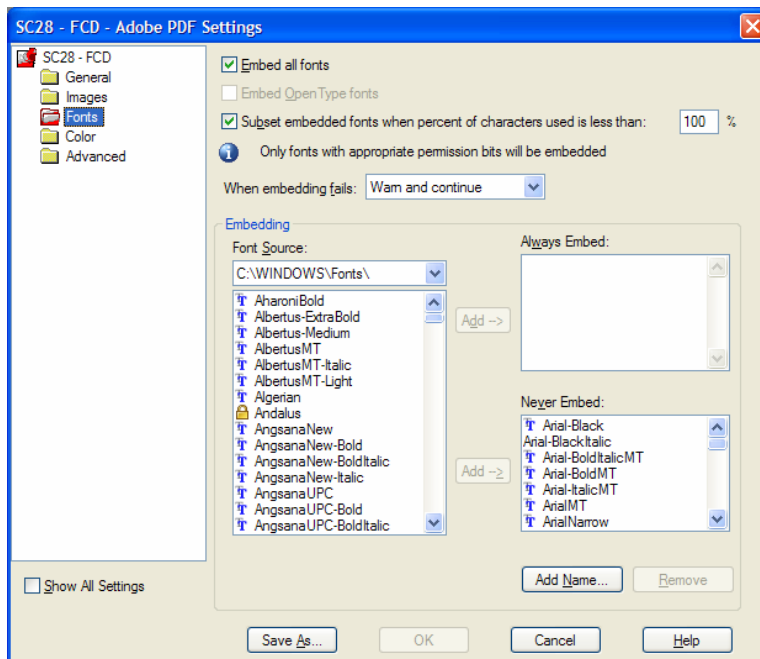
collection of the five documents defined in this international standard

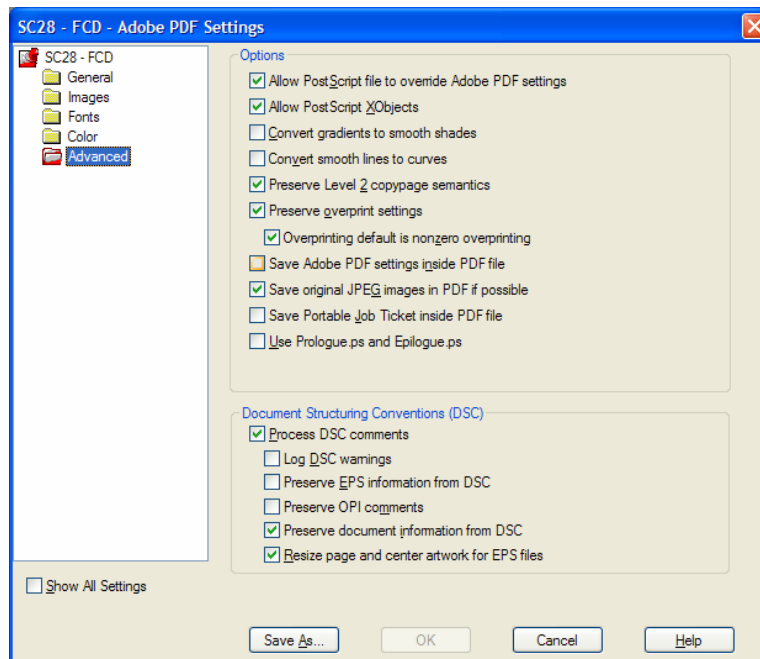
NOTE There are four customer type documents and a diagnostic page to assess ink/toner out. They are meant to be printed as a single five page job.

4 Conversion from PostScript to PDF

The base files for the test pages are created in hand coded PostScript (PS). All five pages are included in a single PS file. This file is then converted to PDF version 1.3 and the fonts are embedded using Acrobat®. The screen shots below show the configuration that is used to generate the final PDFs using Adobe Acrobat® Standard version 7.0.







5 Conversion from CMYK to RGB

All of the colours within the hand coded PS files are defined using setcmyk and a set of CMYK values to simplify colour balancing during test suite development. Most office work flows are RGB and the final PDF files are intended to represent average office environments. To make sure that a well defined conversion from CMYK to RGB occurs, the conversion from CMYK to RGB is defined within the PS file. In some cases the internal conversion from CMYK to RGB can result in black elements being printed in a composite black instead of black colourant only. For this reason a defined method was established to convert from CMYK to RGB and preserve black only elements. There are three cases that are considered:

- Case 1: $C=Y=M=0$; $K > 0 \rightarrow R=G=B=K$ K is the only colour used, set RGB all to an equal value.
- Case 2: $C=Y=M > 0$; $K=0 \rightarrow R=G=B=C$ C, M and Y are equal (composite black) set RGB all to an equal value.
- Case 3: C, Y, M & K are all non-zero and not equal $\rightarrow$ In this case:

$$R = 1.0 - \min(1.0, C + K)$$

$$G = 1.0 - \min(1.0, M + K)$$

$$B = 1.0 - \min(1.0, Y + K)$$

This represents the majority of colour conversions.

NOTE These color conversions are simplified for the purpose of clarity in the context of ISO-IEC 24712. These test pages are NOT recommended for use in color quality evaluations.

6 Page Descriptions

Only the PDF versions of the documents will be used for yield testing. The fonts used in the documents have been uniquely named to try to prevent font substitution from occurring. The font names included in the definitions below are abbreviations of the font names used in the PDF file. This was done to simplify the printed definitions. If font substitution does occur, the LSA logo will not be properly reproduced. The page size for all of the pages is 209 mm x 279 mm. This allows the documents to be printed on either letter or A4 paper. The distance between the "L" shaped marks in the corner of each page are 170 mm for the short edge and 250mm for the long edge. A measurement must be made for short edge feeding paper and the distance be $170.0\text{mm} \pm 1\%$. For long edge feeding paper this measurement shall be $250.0\text{mm} \pm 1\%$. This is done because image stretch can occur in the feeding direction that does not affect the use of toner.