

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

ICS 37.100.99

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, pages ii to iv, pages 1 to 20, an inside back cover and a back cover.

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INTERNATIONAL STANDARD

**ISO
12642**

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

*Technologie graphique — Échange de données numériques de
préimpression — Données d'entrée pour caractérisation d'impression en
quadrichromie*



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Descriptors: Graphic technology, printing, colour printing, prepress, digital technics, data exchange, data, input.

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

Annex A and Annex B of this International Standard are for information only.

Introduction

General background

The technical content of this International Standard is identical to the American National Standard IT8.7/3-1993. The ANSI document resulted from the joint efforts of an international industry group that included participants representing a broad range of prepress vendors, film manufacturers, and users. This group, initially identified as the DDES (Digital Data Exchange Standards) Committee, later became the founders of the ANSI IT8 (Image Technology) accredited standards committee which is responsible for electronic data exchange standards in graphic arts prepress.

In an environment in which colour information is passed between electronic publishing systems, it is essential for colour to be defined in an unambiguous manner. Substantial experimental evidence enables us to conclude that, for foveal vision, this can be achieved by specifying the mixture of three linearly independent stimuli required to match that colour. In 1931 a complete system of colour definition was developed by the CIE (Commission Internationale de l'Eclairage) based on experimental evidence published in the previous decade. This evidence confirmed the similarity between observers in making such a match. That system and its derivatives are now universally accepted for colour specification.

Many half-tone colour printing processes, however, require more than three colourants. There are two reasons for this. Generally the gamut of colours achievable with three printing inks is rather limited, and printing additional inks can extend the gamut significantly. Furthermore, the provision of extra inks can reduce the magnitude of the visual change caused by the variability in colour and register which arises in print production. By far the most common additional ink used is black, and four-colour process printing is accepted as the norm for most forms of printing.

The addition of an extra ink means that the production of a colour cannot, in general, be defined uniquely. As a result, different parts of a printed sheet may use varying ink combinations to achieve the same colour. For many practical purposes it is desirable to specify this combination directly, rather than encode it by rules, and this leads to the requirement to transfer data in a four-colour, device-specific mode. If the same data is to be used for other applications, or even if it needs to be modified for a different set of printing characteristics, some additional information is necessary to enable the receiver of the data to interpret it. This International Standard has been developed to achieve this objective. It provides a data set which can be transmitted with an image to enable the receiver, if required, either to transform the data into a device-independent state or correct it for a different printing characteristic. An alternative application of the tools provided by this International Standard is to enable the characterization of output systems and in this context work has been undertaken by the committee to generate data for the major types of half-tone printing processes which have been specified internationally. This procedure is described in the application notes (Annex A) and the data will be published in future annexes.

The body of this International Standard defines the ink values to be used for characterizing any four-colour (cyan, magenta, yellow, and black) half-tone printing process (including gravure). These ink values are defined as either digital data in a computer or half-tone tone values on film. This requires that particular care be taken in the preparation of film to ensure that the output device is properly "linearized" and the half-tone film values match the numerical data in the computer file. For some applications the film values used for linearization may be one or more generations removed from the film produced by the film writer. The measurement procedures and the data format to be used in determining and reporting tristimulus values (X , Y , Z) are also included.

While the technique employed in this International Standard applies to all output processes, the data has been optimized for four-colour half-tone printing. For non-half-tone processes, or those which use colourants that are significantly different from typical printing inks, the reference data file should be determined in such a way that it provides reasonably uniform colour differences when the data file is rendered. For a system which does not meet the criterion, the user-optional data set could be utilized. Suggestions for this are made in the application notes; however, they are not part of this International Standard.