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Grafična tehnologija - Varnostne zahteve za grafično tehnološko opremo in sisteme - 2. del: Grafična priprava in tiskarska oprema ter sistemi (ISO/DIS 12643-2:2018)

Graphic technology - Safety requirements for graphic technology equipment and systems - Part 2: Prepress and press equipment and systems (ISO/DIS 12643-2:2018)

Graphische Technik - Sicherheitstechnische Anforderungen an Ausrüstungen und Systeme der graphischen Technik - Teil 2: Ausrüstungen und Systeme in der Druckvorstufe und im Druckbereich (ISO/DIS 12643-2:2018)

Technologie graphique - Exigences de sécurité pour les systèmes et l'équipement de technologie graphique - Partie 2: Systèmes et équipement pour la préimpression et la presse (ISO/DIS 12643-2:2018)

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37.100.10 Reprodukcijska oprema Reproduction equipment

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Part 2: Prepress and press equipment and systems

Technologie graphique — Exigences de sécurité pour les systèmes et l'équipement de technologie graphique —

Partie 2: Systèmes et équipement pour la préimpression et la presse

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is Technical Committee ISO/TC 130, Graphic technology.

This third edition cancels and replaces second edition (ISO-12643-2:2010). Significant changes incorporated into this third edition include, but are not limited to, the following:

- addition of Clause 8.12 Large-format inkjet digital printing machines (wide-format inkjet digital printing machines)
- addition of Clause 9.2 Emergency stop device and ink, dampening, metering, coating or fountain rollers
- addition of Clause 14, Verification of safety requirements and/or protective measures
- addition of Clause 15.11 Information for use in the instruction handbook
- reorganization of clauses to align with requirements in ISO Guide 78, *Safety of machinery – Rules for drafting and presentation of safety standards*.

ISO 12643 consists of the following parts, under the general title *Graphic technology — Safety requirements for graphic technology equipment and systems*:

Part 1: General requirements

Part 2: Prepress and press equipment and systems

Part 3: Binding and finishing equipment and systems

Part 4: Converting equipment and systems

Part 5: Stand-alone platen presses

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Introduction

This part of ISO 12643 is a type-C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope and Clause 5 of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

During the development of this part of ISO 12643, existing relevant standards of other countries were taken into consideration. An effort has been made to harmonize the requirements of all countries, recognizing that national standards or laws may dictate national requirements. In cases where it was known that there is a national requirement that differs from this part of ISO 12643, that has been noted.

This part of ISO 12643 was developed to harmonize the requirements of the following US and European safety standards:

- ANSI B65-1, *Graphic technology — Safety requirements for graphic technology equipment and systems — Part 1: General requirements*
- ANSI B65-2, *Graphic technology — Safety requirements for graphic technology equipment and systems — Part 2: Prepress and press equipment and systems*
- EN 1010-1, *Safety of machinery — Safety requirements for the design and construction of printing and paper converting machines — Part 1: Common requirements*
- EN 1010-2, *Safety of machinery — Safety requirements for the design and construction of printing and paper converting machines — Part 2: Printing and varnishing machines including pre-press machinery*

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Graphic technology — Safety requirements for graphic technology equipment and systems — Part 2: Prepress and press equipment and systems

1 Scope

This part of ISO 12643 provides safety requirements specific to prepress and press equipment and systems. This part of ISO 12643 shall be used in conjunction with ISO 12643-1.

This part of ISO 12643 provides additional safety requirements for the design and construction of new prepress and press equipment, and the auxiliary equipment integrated into the press control system.

This document is not applicable to prepress and press equipment and systems manufactured before the date of its publication.

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 12100:2010, *Safety of Machinery - General Principles for Design - Risk Assessment and Risk Reduction*

ISO 12643-1, *Graphic technology — Safety requirements for graphic technology equipment and systems — Part 1: General requirements*

ISO 13732-1, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces*

ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 13849-2, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation*

ISO 13855, *Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body*

ISO 13857, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

PD CLC/TR 60079-32-1, *Explosive atmospheres — Part 32-1: Electrostatic hazards— guidance*

IEC 62061, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems*

EN 378-1, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 1: Basic requirements, definitions, classification and selection criteria*

EN 1539, *Dryers and ovens in which flammable substances are released — Safety requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12643-1, ISO 13849-1 and the following apply.

3.1

access height

(sheet-fed press delivery zone) dimension of the maximum opening into the area below the sheet gripper, measured between the access level (floor, fixed platform or footboard) and the lower edge of fixed machine parts (e.g. fixed guard, fixed cover, fixed parts such as a sheet stop)

Note 1 to entry: See Figure 3.

3.2

alcohol dosing device

mechanism used to regulate the amount of alcohol in the dampening water of offset printing presses

3.3

automatic plate-clamping device

mechanism used to secure a printing plate during the automatic or semi-automatic changing of the plates

3.4

coating unit

coater

machine that applies a predetermined thickness of a liquid substance (e.g. glue, varnish, ink, etc.) on substrates made of paper or a similar material

3.5

continuous-flow drying device

mechanism built into printing presses to dry and cure inks and coatings that have been applied to substrates

EXAMPLE Hot air, IR or UV radiation.

3.6

crawl speed

continuous movement at a steady slow speed, and initiated by a momentary contact control

3.7

cylinder screen printing press

sheet-fed machine in which the substrate (sheet) to be printed is pressed against the screen by an impression cylinder

3.8

digital printing machine

machine used in commercial/industrial applications where the printing image is produced in the machine from data stored in digital form and transferred to the substrate without the use of a printing plate

Note 1 to entry: This includes digital printing presses and wide-format inkjet printing machines.

3.9

draw roller

power-driven roller that pulls a substrate

3.10**enabling device**

mechanism that needs to be in a specified state or condition in order for a second actuator or device to start a machine under hold-to-run control, and which will stop machine movement as soon as one of the hold-to-run controls is released or the status of the mechanism changes

3.11**forms printing press****leporello printing press**

machine for the production of continuous forms where paper webs printed with one or more colours are accordion-folded or wound onto a reel

Note 1 to entry: In addition to the printing section, the machine consists of devices for punching, remaliners (sprocket punching), cross-perforation, longitudinal perforation and leporello (zig-zag) folding.

3.12**gravure printing machine**

machine consisting of a printing cylinder; an inking system, in which ink is applied to the printing cylinder by an ink roll or spray and the excess is removed by a doctor blade ; and an impression cylinder covered with a rubber composition, which presses the substrate into contact with the ink in the cells of the printing cylinder

3.13**large-format inkjet digital printing machines (wide format inkjet digital printing machines)**

digital printing machine for the production of large-format print products of different materials, such as paper, plastic films/foils, fabrics and flat structures in which an inkjet printing head arranged across the transport of the product produces print on the printing substrate line by line. The substrate to be printed on may be sheets or webs.

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Note 1 to entry: Generally these machines have an image area wider than 600 mm

3.14**pile turner**

device attached to sheet-fed printing presses and used to turn piles of printed paper for further processing, such as back-printing on a second run

3.15**powder-spraying device**

equipment used to spray powder onto the printed material on the delivery side of sheet-fed printing presses

3.16**prepress equipment**

machines used in the first stage of the graphic technology workflow, prior to printing, that include all the operations necessary for the preparation of images and image carriers

Note 1 to entry: Adapted from ISO 12637-1.

3.17**press system**

printing press and a series of machines that supply substrate into and through the printing press and guide or direct the substrate to a cutting, folding or delivery device that delivers the product to the last working station integrated with the printing press control system

3.18**printing plate**

base material that stores the image to be printed (pictures and/or text) and transfers ink onto a substrate, thus printing the image

3.19**printing table**

supportive surface to hold the substrate to be printed during the printing process (as on certain types of screen printing presses)

3.20**proofing press**

machine with manual feeding and delivery used for printing a small number of copies, and generally used for assessing print quality before the printing plate is mounted in the production machine

3.21**reel turner**

device used to turn reels (webs) of substrate for easier handling, e.g. for correct positioning of the reel when feeding webs to printing presses

3.22**screen frame**

device for taking up the printing screen

3.23**screen printing press**

machine using printing plates with woven material (sieve-like screens) that partially allow ink to penetrate through the material

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3.24**sheet-fed press**

machine for printing sheet-size substrates, including proofing presses, in which sheets may be fed by feeders (automatic or manual), or from sheeters attached to unwinding units

3.25**washing device**

equipment integrated into the printing press for washing cylinders and rollers such as ink rollers, blanket cylinders, printing cylinders, plate cylinders, etc.

3.26**washing equipment for printing plates**

machines for washing printing plates outside the printing press

EXAMPLE Screen washing equipment.

3.27**web-fed press**

press in which a substrate passes through the printing couple(s) in a continuous form, as fed from a roll

3.28**web material**

web of paper, board, foil or similar material that is to be handled or processed

4 Significant hazards

For the list of significant hazards covered by this document see Annex A.

5 Equipment subject to requirements

5.1 General

This part of ISO 12643 is applicable to the equipment listed in 5.2 to 5.4. This equipment may be used in a stand-alone configuration or in combination with other machines affected by an integrated control system. This may include combinations of the machines noted below.

NOTE This part of ISO 12643 is intended to include the wide range of equipment used in the printing process. The equipment listed in 5.2 to 5.4 provides examples of the more typical equipment covered by this part of ISO 12643, but is not all-inclusive.

5.2 Prepress equipment

The following prepress equipment is covered by this part of ISO 12643:

- exposure equipment for the production of films and printing formes;
- equipment for developing films and printing formes;
- washing machines for printing formes;
- machines for bending printing formes;
- punching machines for film and printing plates;
- cutting machines for film and printing formes;
- machines for the production of gravure printing formes;
- scanners;
- proofing presses.

5.3 Printing presses and coating/varnishing machines

The following are machines used for printing by various processes and are covered by this part of ISO 12643:

- relief (letterpress, flexographic);
- offset (lithographic);
- sheet-fed printing presses, including coating/varnishing machines;
- web-fed rotary presses, including coating/varnishing machines and similar machinery;
- gravure (rotogravure, intaglio);
- screen printing;