SLOVENSKI STANDARD
oSIST prEN ISO 12643-1:2014

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Grafična tehnologija - Varnostne zahteve za grafično tehnološko opremo in sisteme - 1. del: Splošne zahteve (ISO/DIS 12643-1:2014)

Graphic technology - Safety requirements for graphic technology equipment and systems - Part 1: General requirements (ISO/DIS 12643-1:2014)

Technologie graphique - Exigences de sécurité pour les systèmes et l'équipement de technologie graphique - Partie 1: Exigences générales (ISO/DIS 12643-1:2014)

Ta slovenski standard je istoveten z: prEN ISO 12643-1

ICS:

37.100.10 Reprodukcijska oprema Reproduction equipment

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DRAFT INTERNATIONAL STANDARD

ISO/DIS 12643-1

ISO/TC **130**

Secretariat: **SAC**

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Graphic technology — Safety requirements for graphic technology equipment and systems —

Part 1:
General requirements

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

Partie 1: Exigences générales

ICS: 37.100.10

ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Reference number
ISO/DIS 12643-1:2014(E)

Contents

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 12643-1 was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

This third edition of ISO 12643-1 cancels and replaces the second edition (ISO 12643-1:2009). Significant changes incorporated into this third edition include, but are not limited to the following:

— clarification of requirements for "remote control" versus "remote access";

— addition of Clause 6, Verification of safety requirements and/or protective measures;

— addition of Annex B listing significant hazards and hazard zones; and

— reorganization of clauses to align with requirements in ISO Guide 78, *Safety of machinery – Rules for drafting and presentation of safety standards*.

It is the intent of ISO/TC 130 that there be a transition period between the second and third editions of ISO 12643-1. The user of this part of ISO 12643-1 is referred to Clause 4 of this standard for guidance in this area.

As from 2014-01-01, ISO 12643-1:2011 will cancel and replace ISO 12643-1:2009. Accordingly, as from 2014-01-01, only ISO 12643-1:2011 will be applicable to new equipment manufactured.

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

Requirements specific to printing prepress and press equipment and systems, binding and finishing equipment and systems, converting equipment and systems and stand-alone platen presses that are not included in this part of ISO 12643, are given in subsequent parts of ISO 12643 that contain additional requirements specific to that type of equipment.

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 of this document.

When requirements of this type-C standard are different from those which are stated in type-A or 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 take into consideration the requirements of many 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 U.S. 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*;

— ANSI B65-3, *Graphic technology — Safety requirements for graphic technology equipment and systems – Part 3: Binding and finishing equipment and systems*;

— ANSI B65-5, *Safety requirements for graphic technology equipment and systems — Part 5: Stand-alone platen presses*

— 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*;

— EN 1010-3, *Safety of machinery — Safety requirements for the design and construction of printing and paper converting machines — Part 3: Cutting machines*;

— EN 1010-4, *Safety of machinery — Safety requirements for the design and construction of printing and paper converting machines — Part 4: Bookbinding, paper converting and finishing machines*.

Graphic technology — Safety requirements for graphic technology equipment and systems — Part 1: General requirements

1 Scope

This part of ISO 12643 provides safety specifications for the design and construction of new equipment used in prepress systems, printing press systems, binding and finishing systems, converting systems and stand-alone platen presses. It is applicable to equipment used in stand-alone mode, or in combination with other machines, including ancillary equipment, in which all the machine actuators (e.g. drives) of the equipment are controlled by the same control system.

The requirements given in this part of ISO 12643 are applicable to the equipment covered by all parts of ISO 12643, unless otherwise noted. This part of ISO 12643 is intended to be used in conjunction with the applicable part of ISO 12643 that contains additional requirements specific to a particular type of equipment.

This part of ISO 12643 addresses recognized significant hazards specific to equipment and systems in the following areas:

— mechanical;

— electrical;

— slipping, tripping, falling;

— ergonomics;

— noise;

— UV and laser radiation;

— fire and explosion;

— thermal;

— substances and material used for processing;

— failure, malfunction of control system

— other types of emissions [e.g. ozone, ink mist, volatile organic compounds (VOCs), etc.].

This standard is not applicable to:

— winder-slitters and sheeters in paper finishing (sheeters with unwinders);

— office-type collating machines equipped with friction feeders;

— mail processing machines;

— machines used for filling packages (such as machines for shaping, filling, and closing the package); and

— textile printing presses.

The safety principles established in this part of ISO 12643 can also be applicable to the design of equipment within areas of technology that are not specified in ISO 12643.

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/FDIS 3691-4, Industrial trucks — Safety requirements and verification — Part 4: Driverless industrial trucks and their systems

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 3864-2, *Graphical symbols — Safety colours and safety signs — Part 2: Design principles for product safety labels*

ISO 3864-3, Graphical symbols — Safety colours and safety signs — Part 3: Design principles for graphical symbols for use in safety signsISO 7010, *Graphical symbols — Safety colours and safety signs — Registered safety signs*

ISO 4413, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

ISO 4414, *Pneumatic fluid power — General rules and safety requirements for systems and their components*

ISO 8031, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance and conductivity*

ISO 11553-1, *Safety of machinery — Laser processing machines — Part 1: General safety requirements*

ISO/TR 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning*

ISO 11689, *Acoustics — Procedure for the comparison of noise-emission data for machinery and equipment*

ISO 12100, Safety of machinery – General principles for design – Risk assessment and risk reduction

ISO 12643-2, *Graphic technology — Safety requirements for graphic technology equipment and systems — Part 2: Prepress and press equipment and systems*

ISO 12643-3, *Graphic technology — Safety requirements for graphic technology equipment and systems — Part 3: Binding and finishing equipment and systems*

ISO 12643-4, *Graphic technology — Safety requirements for graphic technology equipment and systems — Part 4: Converting equipment and systems*

ISO 12643-5, *Graphic technology — Safety requirements for graphic technology equipment and systems — Part 5: Stand-alone platen presses*

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 13850, *Safety of machinery — Emergency stop — Principles for design*

ISO 13851, *Safety of machinery — Two-hand control devices — Functional aspects and design principles*

ISO 13854, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

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

ISO 13856-1, *Safety of machinery — Pressure-sensitive protective devices — Part 1: General principles for design and testing of pressure-sensitive mats and pressure-sensitive floors*

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

ISO/DIS 14119, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

ISO 14120, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

ISO 14122-1, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means of access between two levels*

ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways*

ISO 14122-3, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails*

ISO/TR 15847, *Graphic technology — Graphical symbols for printing press systems and finishing systems, including related auxiliary equipment*

IEC 60079-0, *Explosive atmospheres — Part 0: Equipment — General requirements*

IEC 60079-1, *Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures “d”*

IEC 60079-2, *Explosive atmospheres — Part 2: Equipment protection by pressurized enclosures “p”*

IEC 60079-5, *Explosive atmospheres — Part 5: Equipment protection by powder filling “q”*

IEC 60079-6, *Explosive atmospheres — Part 6: Equipment protection by oil immersion “o”*

IEC 60079-7, *Explosive atmospheres — Part 7: Equipment protection by increased safety “e”*

IEC 60079-10-1, *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres*

IEC 60079-10-2, *Explosive atmospheres — Part 10-2: Classification of areas — Combustible dust atmospheres*

IEC 60079-11, *Explosive atmospheres — Part 11: Equipment protection by intrinsic safety “i”*

IEC 60079-14, *Explosive atmospheres — Part 14: Electrical installations design, selection and erection*

IEC 60079-18, *Explosive atmospheres — Part 18: Equipment protection by encapsulation “m”*

IEC/TS 60079-32-1, *Explosive atmospheres - Part 32-1: Electrostatic hazards, guidance*

IEC 60204-1, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

IEC 60825-1, *Safety of laser products — Part 1: Equipment classification and requirements*

IEC 60947-2, *Low-voltage switchgear and controlgear — Part 2: Circuit-breakers*

IEC 60947-3, *Low-voltage switchgear and controlgear — Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*

IEC 60947-5-1, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices*

IEC 61010-1, *Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements*

IEC 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals*

IEC 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking*

IEC 61310-3, *Safety of machinery — Indication, marking and actuation — Part 3: Requirements for the location and operation of actuators*

IEC 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests*

IEC 61496-2, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)*

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

EN 1127-1, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 1760-2, *Safety of machinery — Pressure sensitive protective devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars*

EN 12198-1:2000+A1:2008, *Safety of machinery — Assessment and reduction of risks arising from radiation emitted by machinery — Part 1: General principles*

EN 13023, *Noise measurement methods for printing, paper converting, paper making machines and auxiliary equipment — Accuracy grades 2 and 3*

EN 14986, *Design of fans working in potentially explosive atmospheres*

EN/ISO 4871 *Acoustics — Declaration and verification of noise emission values of machinery and equipment*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13849-1, ISO 12100 and the following apply.

3.1
actuator
part of the actuating system to which an external actuating force is applied

[IEV 441-15-22][22]

NOTE 1 to entry The actuator can take the form of a handle, knob, pushbutton, roller, plunger, trip wire, pressure-sensitive mat, etc.

NOTE 2 to entry There are some actuating means that do not require an external actuating force, but only an action; e.g. light beams. Such actuating means are not considered to be actuators.

3.2
armed condition
machine status in which machine motion can be automatically initiated

NOTE 1 to entry **Zero speed** (3.69) is considered to be an armed condition.

3.3
audible alarm
horn, bell or other distinctive audible warning device that sounds to indicate impending machine motion

3.4
authorized person
person identified by management as having special training or designated to act in specified situations

NOTE 1 to entry Examples of “specified situations” include:

— special tasks to be performed;

— the function of the adjustments in the work zone;

— proper operation of adjustments and controls;

— all types of hazards in the area where the task is to be performed;

— the application of equivalent, alternative protection to perform the task;

— improper actions that can cause injury and the consequences of those improper actions.

3.5
auxiliary device
mechanism or machine, either built-in or attached, used for the production process

3.6
barrier guard
guard (3.22) that reduces or prevents physical access to a hazard zone by closing off access to an area containing one or more hazards

EXAMPLE A perimeter fence or tunnel guard.

3.7
binding and finishing system
combination of machines functioning in an integrated configuration to turn an incomplete printed product into a finished product by means of one or more processes, such as cutting, folding, binding, stitching, gluing, wrapping, etc.

3.8
cableless control
means of transmitting commands and signals between various components of the machine control system without the use of direct cabling/wiring

NOTE 1 to entry Examples include radio, infra-red, etc.

NOTE 2 to entry This is not the same as **portable control station** (3.48).

3.9
Category 0 stop
uncontrolled stop
stopping by immediate removal of power to the **machine actuators** (3.30)

[IEC 60204-1:2009, 9.2.2]

3.10
Category 1 stop
controlled stop with power available to the **machine actuators** (3.30) to achieve the stop and then removal of power when the stop is achieved

[IEC 60204-1:2009, 9.2.2]

3.11
Category 2 stop
controlled stop with power left available to the **machine actuators** (3.30)

[IEC 60204-1:2009, 9.2.2]

3.12
continuous run
machine motion at a steady speed initiated by a momentary-contact control

3.13
control station
defined location containing one or more controls

3.14
control zone
control configuration of single or multiple machine motions using the same control devices

NOTE 1 to entry See 5.6.

3.15
drive
mechanism, divided into the following two general categories, which causes a machine or any of its elements to move:

— drives with no stored energy, which include, but are not limited to, direct-motor drives;

— drives having stored energy, which include, but are not limited to, motor-flywheel-clutch drives and hydraulic-pneumatic drives

3.16
electrical hazard
source of potential injury or death from electric shock or burn

NOTE 1 to entry Adapted from ISO 12100:2010.

3.17
electro-sensitive protective device
ESPD
apparatus that detects the presence of a person or part of a person or object in a defined area, using any detection means, including, but not limited to, photoelectric, light screen, ultrasonic, etc.

3.18
emergency stop command
change of signal state, the direct result of actuation of an emergency stop device

3.19
emergency stop device
manually actuated control used to initiate an **emergency stop function** (3.20)

NOTE 1 to entry Adapted from ISO 13850.

3.20
emergency stop function
initiated by a mechanism actuated by a single human motion and intended to halt machine activity in order to avoid injury to persons, damage to machinery or damage to work in progress

3.21
emergency stop pushbutton
type of **emergency stop device** (3.19) comprised of an extended mushroom-head or palm-type actuator, positive opening contact element(s) and an engagement or latching-in feature

3.22
exposing device
machinery used for creating images by exposing photo-sensitive material such as printing plates or printing formes

3.23
fixed guard
guard (3.22) that is securely affixed by fasteners that require a tool(s) to remove in order to gain access to an area with a significant hazard

3.24
guard
physical barrier that restricts access to a significant hazard

3.25
hazard point
location of a hazard on a machine where a person can be injured

3.26
hazard zone
any area within and/or around machinery in which a person is exposed to risk of injury or damage to health

NOTE 1 to entry Adapted from ISO 12100:2010.

3.27
hold-to-run control
control that starts and maintains machine motion only as long as the control is activated

3.28
inch
jog
⟨operation of machinery⟩ machine motion requiring maintained activation engagement of a hold-to-run control and which will continue until the control is released or until a pre-determined displacement (limited inch) has been reached

3.29
infrequently used workplace
area in which an activity is carried out, such as observation, make-ready, jam clearing, minor servicing, crossing inserting hoppers or conveyer belts, etc., that is routine, repetitive, integral to (but not necessarily during) production, and is done only on an occasional basis