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Machines and plants for the manufacture, treatment and processing of hollow glass - Safety requirements - Part 3: IS machines

Maschinen und Anlagen für die Herstellung, Be- und Verarbeitung von Hohlglas - Sicherheitsanforderungen - Teil 3: IS-Maschinen

Machines et installations pour la production, le façonnage et la transformation du verre creux - Exigences de sécurité - Partie 3: Machines IS

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81.100	Oprema za steklarsko in keramično industrijo	Equipment for the glass and ceramics industries
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Machines and plants for the manufacture, treatment and processing of hollow glass - Safety requirements - Part 3: IS machines

Machines et installations pour la production, le façonnage et la transformation du verre creux - Exigences de sécurité - Partie 3: Machines IS

Maschinen und Anlagen für die Herstellung, Be- und Verarbeitung von Hohlglas - Sicherheitsanforderungen - Teil 3: IS-Maschinen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 151.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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Document Preview

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prEN 13042-3:2024 (E)**European foreword**

This document (prEN 13042-3:2024) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines — Safety”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13042-3:2007+A1:2009.

This document includes the following significant technical changes with respect to EN 13042-3:2007+A1:2009:

- a) updated the list of hazards;
- b) new measures against mechanical and thermal hazards;
- c) additional devices like swabbing robot, lifting elements;
- d) risk by using robots and operator for swabbing in same time;
- e) fire-stop procedure;
- f) safety stop und override function;
- g) instruction for use according to ISO 20607:2019;
- h) recommended working zone around the forming machine;
- i) ergonomic hazards;
- j) behaviour of mechanisms when emergency stop is activated;
- k) servo mechanism regulation;
- l) cyber security (open issue).

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

This document is one of a series concerning machinery for the manufacture, treatment and processing of hollow glass. A list of all parts in a series can be found on the CEN website: www.cencenelec.eu.

Introduction

This document is a type-C standard as stated in EN ISO 12100:2010.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e. g. trade unions, organizations for people with special needs);
- service providers, e. g., for maintenance (small, medium and large enterprises);
- consumers (in the case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

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 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.

An IS machine is a single purpose machine, reasonably foreseeable misuse is not possible. IS glass container manufacturing machines within the meaning of this European Standard are machines with several individual manufacturing sections (Individual Sections = IS) in which the distribution of gobs, the forming process and the removal of the formed glass container take place automatically. Each manufacturing section is controlled individually, synchronously with the feeding of the glass gob, by an electrical linkage. Each section can be isolated individually from the gob distributor and shut down.

The types of processes performed on the IS machine – see also 3.5 –, the operation names of each part of the process and the names of specific parts of a section are shown in Annex B (informative), Figures B.1 and B.2. For readers' convenience, a glossary (dictionary) is provided in Annex A (informative).

When compiling this European Standard, it was assumed that due to the heat of the processed material and the need for the use of auxiliary aids, such as tongs, during work in the danger zone of the closing mould, there is typically no significant risk from the closing movement of the mould parts during the normal shaping process of hot glass.

prEN 13042-3:2024 (E)

1 Scope

This document specifies the appropriate technical measures to eliminate or reduce risks arising from significant hazards during setting, operation, troubleshooting, and maintenance of an IS machine as a glass forming machine.

This document deals with all significant hazards, hazardous situations, or hazardous events, except for commissioning, installation, dismantling, and disposal, when it is used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

It applies to the design and construction of IS machines, including the gob distributor and machine conveyor.

This document does not deal with gob feeders (see EN 13042-1:2007+A1:2009) and handling machines for feeding (see EN 13042-2:2004+A1:2009) which are self-standing machines used for the delivery of portions of melted glass to hollow glass forming machines like glass presses (see EN 13042-5:2003+A1:2009).

This document is not applicable to the machinery or machinery components manufactured before the date of its publication.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 3746:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:2010)*

EN ISO 3747:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering/survey methods for use in situ in a reverberant environment (ISO 3747:2010)*

EN ISO 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)*

EN ISO 7010:2020, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2019, Corrected version 2020-06)*

EN ISO 11204:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a workstation and at other specified positions applying accurate environmental corrections (ISO 11204:2010)*

EN ISO 11688-1:2009, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13849-1:2023, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2023)*

EN ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*

EN ISO 13851:2019, *Safety of machinery — Two-hand control devices — Principles for design and selection (ISO 13851:2019)*

EN ISO 14118:2018, *Safety of machinery — Prevention of unexpected start-up (ISO 14118:2017)*

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

EN ISO 14120:2015, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

EN ISO 14122-1:2016, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means and general requirements of access (ISO 14122-1:2016)*

EN ISO 14122-2:2016, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2016)*

EN ISO 14122-3:2016, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2016)*

ISO 6385:2016, *Ergonomics principles in the design of work systems*

ISO 11201:2010, *Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections*

ISO 20607:2019, *Safety of machinery — Instruction handbook — General drafting principles*

EN 614-1:2006+A1:2009, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 614-2:2000+A1:2008, *Safety of machinery — Ergonomic design principles — Part 2: Interactions between the design of machinery and work tasks*

EN 1837:2020, *Safety of machinery — Integral lighting of machines*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2016, modified)*

EN 12464-1:2021, *Light and lighting — Lighting of work places — Part 1: Indoor work places*

prEN 13042-3:2024 (E)**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/>

3.1**start phase**

transition time between manual activation of the control device to set an equipment into motion and its steady-state operation

3.2**gob**

portion of melted glass delivered by a feeder mechanism

3.3**gob distributor**

device receiving gobs from the gob feeder and delivering them to the appropriate individual sections through the delivery system

3.4**delivery system**

mechanical structure to transport the gobs from the output of the gob distributor to the blank moulds

3.5**Individual Section machine****IS machine**

mechanical structure controlled by automation system comprising independent glass-container-forming units, a delivery system and a gob distributor as well as a conveyor

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Note 1 to entry: The processes performed on the IS machine are shown in Annex B (informative).

3.6**machine conveyor**

mechanism for continuous transport of the finished glass containers away from the IS machine

3.7**moving parts involved in the production process**

mechanisms and devices involved in the forming process of the glass containers from gob distributor to pusher mechanism

3.8**maintenance stop**

function to prevent unexpected start of each of the following equipment: individual section; gob distributor; conveyor; and additional equipment onto the machine by means of an interlocking device

3.9**safe stop condition**

movement to and hold of equipment in a defined position

3.10**manual swabbing cycle**

special function to interrupt the automatic operation of the section for human interaction with a tool to lubricate the mould equipment

Note 1 to entry: See Figure 1.

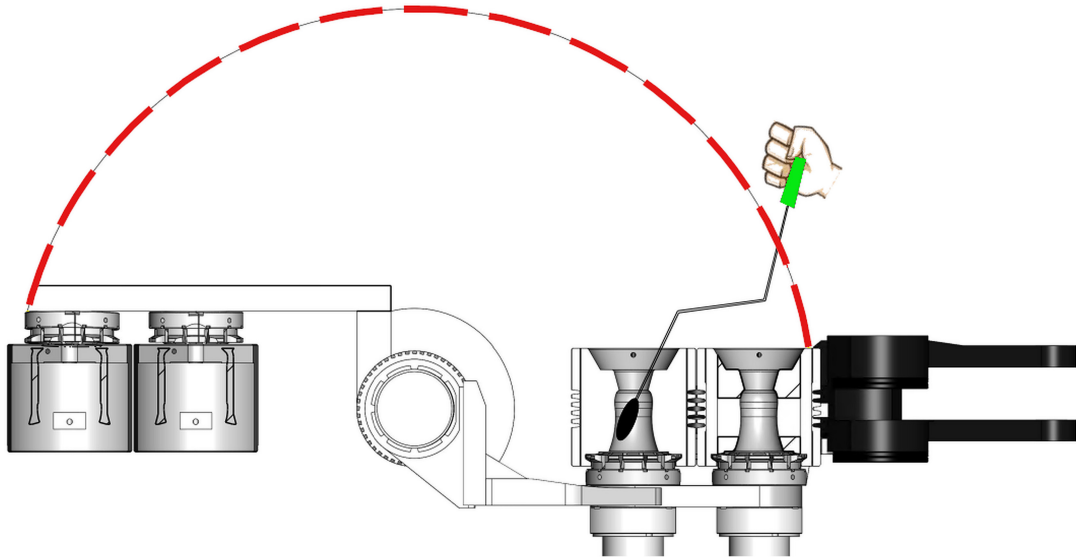


Figure 1 — Blank mould swabbing

3.11**mould equipment**

devices of the forming section in contact with glass

3.12**additional equipment**

all devices (e.g. swabbing robot, temperature measurement, monitoring equipment, manipulators) interacting with the forming equipment (gob distributor, machine, conveyor)

3.13**barrier**

physical element to prevent unintended access to dangerous areas

3.14**working zone**

area including hazard zones with limited access to trained or supervised people only

Note 1 to entry: See also Annex C (informative).

3.15**automatic swabbing cycle**

lubrication of mould equipment without human interaction