SLOVENSKI STANDARD
SIST EN 13042-3:2007+A1:2009

01-oktober-2009

Stroji in obrati za proizvodnjo, obdelavo in predelavo votlega stekla - Varnostne zahteve - 3. del: Stroji IS

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

Ta slovenski standard je istoveten z: **EN 13042-3:2007+A1:2009**

ICS:

81.100	Oprema za steklarsko in keramiļno industrijo	Equipment for the glass and ceramics industries

SIST EN 13042-3:2007+A1:2009 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13042-3:2007+A1

July 2009

ICS 81.100

Supersedes EN 13042-3:2007

English Version

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

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This European Standard was approved by CEN on 15 December 2006 and includes Amendment 1 approved by CEN on 19 June 2009.

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This European Standard exists 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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 13042-3:2007+A1:2009) 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 European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

This document includes Amendment 1, approved by CEN on 2009-06-19.

This document supersedes EN 13042-3:2007.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟨A1⟩ ⟨A1⟩.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive(s).

⟨A1⟩ For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. ⟨A1⟩

This document is one of a series concerning machinery for the manufacture, treatment and processing of hollow glass (see Bibliography).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This European Standard is a type C standard as stated in EN ISO 12100-1.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this European Standard.

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

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 3.3 –, the operation names of each part of the process and the names of specific parts of a section are shown in Annex B (informative) and Annex C (informative).

〈A1〉 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. 〈A1〉

1 Scope

1.1 This European Standard applies to the design and installation of IS machines including the gob distributor and machine conveyor.

1.2 [A1] This European Standard deals with the significant hazards, hazardous situations and events relevant to IS machines, when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4). This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from significant hazards during commissioning, operation and maintenance. [A1]

1.3 This European Standard does not deal with gob feeders (see EN 13042-1) and handling machines for feeding (see EN 13042-2) which are self-standing machines used for the delivery of portions of melted glass to hollow-glass-forming machines such as glass presses (see EN 13042-5).

1.4 This European Standard is not applicable to IS machines which are manufactured before the date of publication of this European Standard by CEN.

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.

EN 294:1992, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs*

〚A1〛 *deleted text* 〚A1〛

EN 894-3:2000, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 953:1997, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

〚A1〛 *deleted text* 〚A1〛

EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics*

EN 999:1998, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body*

EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up*

〚A1〛 *deleted text* 〚A1〛

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

〚A1〛 EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)* 〚A1〛

EN ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995)*

〚A1〛 EN ISO 3747:2000, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Comparison method for use in situ (ISO 3747:2000)* 〚A1〛

EN ISO 11204:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at the work station and at other specified positions — Method requiring environmental corrections (ISO 11204:1995)*

EN ISO 11688-1:1998, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

〚A1〛 EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)* 〚A1〛

〚A1〛 EN ISO 13850:2008, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)* 〚A1〛

EN ISO 14122-2:2001, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2001)*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements — (IEC 60204-1:2005)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003 and the following apply.

3.1
start phase
time between initiation of the manual controls to set an individual section into motion and the beginning of the automatic working cycle

NOTE The time includes the necessary movements into the ground position and the synchronisation with the IS machine

3.2
gob
portion of melted glass delivered by a feeder mechanism

3.3
IS machine
connected series of individual glass-container-forming units (individual sections) using either press and blow or blow and blow processes and fed with gobs from a central feeder mechanism combined with a gob distributor and including a machine conveyor.

NOTE The types of processes performed on the IS machine, the operation names of each part of the process and the names of specific parts of a section are shown in Annex B (informative) and Annex C (informative)

3.4
gob distributor
device receiving gobs from the gob feeder and delivering them to the appropriate individual sections

3.5
machine conveyor
mechanism for continuous transport of the finished containers from the IS machine

4 List of significant hazards

This clause contains the significant hazards, hazardous situations and events, as far as they are dealt with in this European Standard, identified by risk assessment as significant for IS glass-forming machines with gob distributor and machine conveyor and which require action to eliminate or reduce the risk.

A1 Table 1 — List of significant hazards

Clause	Hazards	Dangerous items	Preventive measures: see clause
4 1	**Mechanical hazards**		
4.1.1	Crushing	1. moulds opening and closing 2. funnel seating 3. baffle seating 4. invert/revert 5. blow head 6. pusher 7. take-out 8. neck ring 9. interceptor 10. scoop 11. gob distributor	5.2; 5.4; 5.9; 7.2.4
4.1.2	Cutting or severing	1. broken glass	5.7
4.1.3	Entanglement	1. baffle 2. funnel 3. invert/revert 4. take-out 5. machine conveyor 6. scoop 7. gob distributor	5.2; 5.4; 5.9; 7.2.4

Table 1 (*concluded*)

Clause	Hazards	Dangerous items	Preventive measures: see clause
4.1.4	Drawing-in or trapping	1. take-out 2. invert/revert 3. blow head	5.2; 5.4; 5.9; 7.2.3; 7.2.4
4.1.5	Impact	1. falling gob 2. invert/revert 3. take-out 4. baffle 5. funnel 6. blow head 7. gob distributor 8. scoop	5.2; 5.4; 5.9.2; 5.11; 5.12; 7.2.3; 7.2.4
4.1.6	Stabbing or puncture	1. broken glass 2. glass strands	5.7, 5.9; 7.2.3
4.2	**Electrical**	1. direct or indirect contact	5.14; 5.16; 7.2.5
4.3	**Thermal, resulting in burns**	1. hot glass 2. hot machine parts	5.10; 5.11; 5.12; 7.2.3
4.4	**Generated by noise, may result in hearing damage, tinnitus, stress, in accidents due to interference with speech communication and with the perception of acoustic signals**	1. machine noise	5.8.1; 7.2.1; 7.2.3
4.6	**Generated by neglecting ergonomic principles: inadequate design of manual controls**	1. actuators	5.2; 5.6
4.7	**Unexpected start-up, unexpected overrun from:**		
4.7.1	Failure/disorder of the control system	1. all dangerous movements	5.2.2; 5.4; 5.16; 7.2.4; 7.2.5
4.7.2	Errors made by the operator	1. all dangerous movements	5.2.2; 5.4; 5.16; 7.2.2; 7.2.4; 7.2.5
4.8	**Impossibility of stopping in the best possible conditions**	1. all dangerous movements	5.3; 5.2.1; 5.13; 5.16
4.9	**Falling objects, (dripping) fluids**	1. hot glass 2. oil	5.10; 5.11; 5.12; 7.2.3
4.10	**Slip, trip and fall**	1. steps/platforms	5.5

5 Safety requirements and/or protective measures

5.1 General

Machinery shall comply with the safety requirements and/or protective measures of this clause.

In addition, the machine shall be designed according to the principles of EN ISO 12100 for hazards relevant but not significant which are not dealt with by this European Standard (e.g. sharp edges).