SLOVENSKI STANDARD
SIST EN 13042-2:2004

01-november-2004

Stroji in obrati za proizvodnjo, obdelavo in predelavo votlega stekla – Varnostne zahteve – 2. del: Upravljalni stroji za podajanje

Machines and plants for the manufacture, treatment and processing of hollow glass - Safety requirements - Part 2: Handling machines for feeding

Maschinen und Anlagen zur Herstellung, Be- und Verarbeitung von Hohlglas - Sicherheitsanforderungen - Teil 2: Handhabungsmaschinen zum Speisen

Machines et installations pour la production, le façonnage et la transformation de verre creux - Exigences de sécurité - Partie 2: Machines de chargement

Ta slovenski standard je istoveten z: **EN 13042-2:2004**

ICS:

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

SIST EN 13042-2:2004 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13042-2

September 2004

ICS 81.100

English version

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This European Standard was approved by CEN on 1 July 2004.

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Ref. No. EN 13042-2:2004: E

Contents

Foreword

This document (EN 13042-2:2004) 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of an identical text or by endorsement, at the latest by March 2005, and conflicting national standards shall be withdrawn at the latest by March 2005.

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 EC Directive(s).

It is one of a series concerning machinery for the treatment and processing of hollow glass.

For relationship with EC Directive(s), see informative Annex ZA, which is an integral part of this document.

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

0 Introduction

This document is a type C document as stated in EN 1070.

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

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

Handling machines for the feeding of melted glass are independent mechanical devices working in one or more axes to pick up melted glass from the (working) bowl of (melting) furnaces, e. g. by winding up the high-viscous melt on ball-shaped receivers (ball-feeders) or by sucking up into gathering containers (suction feeders). The handling machines transport the gathered post off melted glass to the forming machine or to the glass blower's place and deposit it there.

Noise is not a significant hazard. Noise emitted by air-cooling devices of machinery linked to the handling machine for feeding may be so high that there is a need for the operator of the handling machine to wear ear protection.

When compiling this document, it was assumed that:

— state of the art requires an interference in the motion path of the handling machine by the operator especially during the first cycles of the forming machine to be supplied;

— adequate lighting is provided.

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1 Scope

1.1 This document contains the requirements for safety for the design and installation of stationary handling machines for feeding from the taking up of a post of melted glass out of the working bowl of a glass melting furnace through transport to delivery to a glass blower or to a forming machine for hollow glass.

1.2 This document deals with all significant hazards, hazardous situations and events relevant to machines for feeding, when they are used as intended and under the conditions foreseeable by the manufacturer (see Clause 4). This document specifies the appropriate technical measures to eliminate or reduce risks which can arise from these significant hazards.

1.3 This does not deal with the exclusive feeding with shearers (shears) alone with the transport of the melted glass post by its own weight in free fall or by trueing (gob feeder, see prEN 13042-1).

1.4 This document is not applicable to handling machines for feeding which are manufactured before the date of publication of this document 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 distance to prevent danger zones being reached by the upper limbs*

EN 954-1:1996, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

EN 999, *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*

EN 1050:1996, *Safety of machinery — Principles for risk assessment*

EN 1070:1998, *Safety of machinery — Terminology*

EN 1760-1:1997, *Safety of machinery — Pressure sensitive protective devices — Part 1: General principles for the design and testing of pressure sensitive mats and pressure sensitive floors*

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997)*

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

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

CLC/prTS 61496-2:2003, *Safety of machinery - Electro-sensitive protective equipment - Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPD) (IEC 61496-2:1997)*

3 Terms and definitions – Symbols and abbreviated terms

For the purposes of this document, the terms and definitions given in EN 1070:1998 and the following apply.

3.1
handling machines for feeding
mechanical device to pick up melted glass (glass post) from melts and for the transport and delivery of the glass to the shaping process

3.2
post of melted glass
dosed lot of melted glass

3.3
ball feeder
handling machines for feeding (see 3.1) winding up a dosed lot of high-viscous melt on a bowl-shaped receiver

3.4
suction gatherer
handling machine for feeding (see 3.1) which picks up an exact amount of very viscous melt by means of an adequately dimensioned vessel using a vacuum

3.5
start-up delay
time between the first given start signal for the start of the machine in the automatic mode and the first movement of the machine in the automatic mode

3.6
start phase
time to stabilise conditions of the plant for production e. g. after change of product, a longer standstill

3.7
automatic (control) mode
operating method where working cycles are repeated automatically after a given manual start till the movements are stopped by a manually given stop signal

3.8
manual (control) mode
operating method permitting (individual) movements only by controls (control devices) requiring sustained action, e. g. for setting

4 List of significant hazards

This Clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this document, identified by risk assessment as significant for handling machines for feeding and which require action to eliminate or reduce the risk.

Before using this document, it is important to carry out a general risk assessment of the machine in question.

NOTE Application of B-level documents see Clause 5.

Clause ( ) Ref. No. EN 1050: 1996, Annex A, Table A1	Hazards	Danger zone/ item	Preventive measures (see Clause)
4.1	**Mechanical**		
4.1.1 (1.1)	Crushing	Moving parts mutually and against fixed parts of the handling machine or the surroundings	5.2; 5.3-5.3.3; 5.9.15
4.1.2 (1.2)	Shearing	Shears	5.4; 7.3.5
4.1.3 (1.4)	Entanglement	Shaft of the bowl-shaped receiver	5.2
4.1.4 (1.6)	Impact	Pick-up equipment for glass and related moving device, e. g. support arm	5.3-5.3.3; 5.9.15
4.2 (2.1; 2.2)	**Electrical**	Direct or indirect contact	5.9
4.3 (3.1)	**Thermal**	Pick-up equipment; hot glass; heated cooling water	5.6; 5.7; 5.9.13; 7.2; 7.3.2; 7.3.3
4.4 (7.2 (17))	**Fire**	Ignition of inflammable hydraulic fluid	5.8
4.5 (8.6; 8.8)	**Human error; inadequate design of display unit**	Erroneous start; unqualified adjustment of movement parameters; identifiability of switching mode	5.9.3; 5.9.5; 5.9.9; 7.3.4; 7.3.6; 7.3.9
4.6 (10)	**Unexpected start-up, mal-function from:**		
4.6.1 (10.1) (10.6)	Unexpected start-up or overrun by failures, disorder of the control system or error of the operator	All dangerous movements; abrupt braking at limit stops	5.4; 5.9.4; 5.9.5; 5.9.7; 5.9.8; 5.9.10; 5.9.12; 5.9.13; 7.3.5; 7.3.8
4.6.2 (10.2)	Restoration of energy supply	All dangerous movements	5.9.11
4.6.3 (10.3)	External influences on electrical equipment	All dangerous movements	5.9.1; 5.9.2
4.6.4 (10.4)	Gravity	Risen machine parts	5.5
4.6.5 (10.5)	Errors in the software	Collision of machine parts	5.9.4
4.6.6 (10.6)	Unexpected delayed start-up	All dangerous movements	5.9.14
4.7 (11)	**Impossibility of stopping the machine in the best possible conditions**	All dangerous movements	5.9.5; 5.9.6; 7.3.6

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 12100-1 and EN ISO 12100-2 for hazards relevant but not significant which are not dealt with by this document (e. g. sharp edges).