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Machines and plants for the manufacture, treatment and processing of hollow glass - Safety requirements - Part 1: Gob feeder

Maschinen und Anlagen für die Herstellung, Be- und Verarbeitung von Hohlglas - Sicherheitsanforderungen - Teil 1: Tropfenspeiser

Machines et installations pour la production, le façonnage et la transformation du verre creux - Exigences de sécurité - Partie 1: Mécanisme d'alimentation en paraisons

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This European Standard was approved by CEN on 15 December 2006.

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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 13042-1:2007) 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of an identical text or by endorsement, at the latest by August 2007, and conflicting national standards shall be withdrawn at the latest by August 2007.

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).

For relationship with EU Directive(s), 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 (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 compiling this European Standard, it was assumed that the existing ad-hoc standards for components are applied.

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.

1 Scope

1.1 This European Standard applies to the design and installation of gob feeders which provide hollow glass forming machines with gobs.

1.2 This European Standard deals with the significant hazards, hazardous situations and events relevant to gob feeders, when they are used as intended and under the conditions foreseeable by the manufacturer (see Clause 4). This European Standard specifies the appropriate technical measures to eliminate or reduce risks which can arise from these significant hazards during commissioning, operation and maintenance.

1.3 This European Standard does not deal with bowl firing.

1.4 This European Standard is not applicable to gob feeders 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*

EN 418:1992, *Safety of machinery — Emergency stop equipment, functional aspects — Principles for design*

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*

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

EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics*

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

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

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

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)*

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
gob feeder
machine fed by a continuous flow of molten glass through a spout bowl, a flow control, a shape control of the gob and a cutting device, as i.e. a rotating tube, a plunger mechanism with single or multiple plungers and a shearing device situated below the orifices.

NOTE All mechanisms that comprise the gob feeder maintain a synchronised timing relationship with any hollow-glass forming machine

3.2
start-up
beginning of the working cycle of the whole feeder with shearing

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 gob feeders and which require action to eliminate or reduce the risk.

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

Table 1 — List of significant hazards

Clause	Hazards ( ) = Ref. No. from Table A.1 of EN 1050:1996	Dangerous items	Preventive measures: see clause:
4.1	**Mechanical hazards: (1)**		
4.1.1	Crushing (1.1)	moving parts against other moving or stationary parts	5.6
4.1.2	Shearing (1.2)	edge tools (shear blade)	5.7
4.1.3	Cutting or severing (1.3)	broken glass	7.2.4
4.1.4	Entanglement (1.4)	chain and sprocket and belt and pulley drives of various feeder components	5.6
4.1.5	Drawing-in or trapping (1.5)	shear mechanism, plunger mechanism	5.6

Table 1 (*concluded*)

Clause	Hazards ( ) = Ref. No. from table A.1 of EN 1050:1996	Dangerous items	Preventive measures: see clause:
4.1.6	Impact (1.6)	shear mechanism, plunger mechanism	5.6
4.1.7	Stabbing or puncture (1.7)	strands of glass	7.2.4
4.1.8	High pressure fluid ejection (1.9)	all mechanisms that use forced lubrication systems or hydraulically operated mechanism with pressure above 50 bar	5.8; 5.10; 7.2.8
4.2	**Electrical (2.1; 2.2)**	direct or indirect contact	5.9; 5.10; 7.2.8
4.3	**Thermal resulting in: (3)**		
4.3.1	Burns (3.1)	hot glass, hot machine parts	5.11 to 5.16; 7.2.3; 7.2.4
4.3.2	Damage to health (3.2)	feeder area in general	5.12; 5.13; 7.2.3; 7.2.4
4.4	**Generated by materials and substances processed or used by the machinery: (7)**		
4.4.1	Fire or explosion (7.2)	flammable fluids	5.8
4.5	**Generated by neglecting ergonomic principles in machinery design, e.g. hazards from: (8)**		
4.5.1	Unhealthy postures or excessive efforts (8.1)	exchange of expendables	5.12; 5.13, 7.2.2
4.5.2	Neglected use of personal protection equipment (8.3)	all feeder area, hot glass and exchangeables	7.2.4
4.5.3	Human error, human behaviour (8.6)	adjustment of feeder mechanisms by unqualified personnel	7.2.3
4.5.4	Inadequate design of manual controls (8.7)	manual controls (actuators)	5.5
4.6	**Unexpected start-up, unexpected overrun from: (10)**		
4.6.1	Failure/disorder of the control system (10.1)	all motion control	5.2.2; 5.3; 5.7; 5.10; 5.11; 7.2.7; 7.2.8
4.6.2	Human errors (10.6)	all dangerous movements	5.2.2; 5.7; 5.10; 7.2.7, 7.2.8
4.7	**Impossibility of stopping the machine in the best possible conditions (11)**	all moving mechanisms, glass flow, gob loading	5.2.1; 5.3; 5.10; 5.11; 5.15
4.8	**Loss of stability (18)**	whole mechanism or part during installation	7.2.2; 7.2.4
4.9	**Slip, trip and fall (19)**	oil, steps, platforms	5.4; 7.2.6

5 Safety requirements and/or protective measures

5.1 General

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