



**SLOVENSKI STANDARD**  
**SIST EN 13035-6:2007/kprA1:2009**  
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**Stroji in obrati za proizvodnjo, obdelavo in predelavo ravnega stekla - Varnostne zahteve - 6. del: Stroji za lomljenje**

Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 6: Machines for break-out

Maschinen und Anlagen für die Herstellung, Be- und Verarbeitung von Flachglas - Sicherheitsanforderungen - Teil 6: Brechmaschinen

Machines et installations pour la production, le façonnage et la transformation du verre plat - Exigences de sécurité - Partie 6: Machines à rompre

**Ta slovenski standard je istoveten z: EN 13035-6:2006/prA1**

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Equipment for the glass and ceramics industries

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**FINAL DRAFT**  
**EN 13035-6:2006**

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English Version

**Machines and plants for the manufacture, treatment and  
processing of flat glass - Safety requirements - Part 6: Machines  
for break-out**

Machines et installations pour la production, le façonnage  
et la transformation du verre plat - Exigences de sécurité -  
Partie 6: Machines à rompre

Maschinen und Anlagen für die Herstellung, Be- und  
Verarbeitung von Flachglas - Sicherheitsanforderungen -  
Teil 6: Brechmaschinen

This draft amendment is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 151.

This draft amendment A1, if approved, will modify the European Standard EN 13035-6:2006. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment 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 Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN 13035-6:2006/prA1:2009) 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 document is currently submitted to the Unique Acceptance Procedure.

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 Annexes ZA and ZB, which are integral parts of this document.

**EN 13035-6:2006/prA1:2009 (E)****1 Modification to the Foreword**

*Replace the 4<sup>th</sup> paragraph with the following:*

“For relationship with EU Directives, see informative Annexes ZA and ZB, which are integral parts of this document.”

**2 Modification to the Scope**

*In 1.2, replace the 1<sup>st</sup> sentence with:*

**1.2** "This European Standard deals with the significant hazards, hazardous situations and events relevant to machines for the break-out of flat glass when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4)."

*In 1.2, replace the 3<sup>rd</sup> sentence with:*

“This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards during commissioning, operation and maintenance.”

**3 Modification to Clause 2, Normative references**

*Delete "EN 294:1992, Safety of machinery — Safety distance to prevent danger zones being reached by the upper limbs" and add "EN ISO 13857:2008, Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)".*

*Delete:*

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

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

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

*Replace EN 60204-1:1997 with “EN 60204-1:2006, Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)”.*

*Delete:*

“prEN 61496-2:2005, Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs) (IEC 61496-2:2005)”

*Add:*

“EN ISO 4871:1996, Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)”

EN ISO 11201:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)*

EN ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Survey method in situ (ISO 11202:1995)*

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

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

EN ISO 13850, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)*"

"CLC/TS 61496-2, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs) (IEC 61496-2:2006)*"

#### 4 Modification to Clause 4, List of significant hazards

Replace Table 1 with the following:

"

Hazards		Danger zone/dangerous item	Preventive measures: see clause
<b>4.1</b>	<b>Static break-out</b>		
4.1.1	Crushing of the fingers	upwards and downwards moving break-out bar/supporting surface, e.g. table	5.2.1
4.1.2	Crushing of hand or fingers	clamping device/supporting surface, e.g. table	5.2.2
4.1.3	Crushing of hand (fingers)	downwards moving plunger/glass to be broken	5.2.2
<b>4.2</b>	<b>Dynamic break-out</b>		
4.2.1	Drawing-in of hand or fingers	top roller/glass surface	5.3.1
<b>4.3</b>	<b>General requirements</b>		
4.3.1	Electrical	direct or indirect contact	5.4.4; 5.4.5; 7.2.7
4.3.2	Burns	naked flames	5.4.1; 7.2.6

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4.3.3	Neglecting ergonomic principles; human behaviour	all dangerous movements and items, fixed guards fixing systems	7.2.4; 5.7
4.3.4	Unexpected overrun by failure of the control system	flat glass falling from the supporting surface by non stopping of conveyors delivering glass to manual unloading stations	5.4.2
4.3.5	Unexpected start-up from disorder of the control system, error of the operator, restoration of energy supply after interruption	all dangerous movements	5.4.4 to 5.4.6; 7.2.7; 7.2.8
4.3.6	Impossibility of stopping in the best possible conditions	all dangerous movements, naked flames	5.4.7; 7.2.9
4.3.7	Falling or ejected objects	collision of sheets of glass and pushing off sheets from supporting surface	5.4.3
4.3.8	Slip	glass bits	7.2.5
<b>4.4</b>	<b>Conveyor</b>		
4.4.1	Crushing	flap/fixed parts of conveyors	5.5.2
4.4.2	Cutting	flat glass e.g. projecting the outline of the conveyor	5.5.1; 7.2.3

## 5 Modification to Clause 5, Safety requirements and/or protective measures

In 5.1, 3<sup>rd</sup> paragraph, replace "EN 418" with "EN ISO 13850" and "EN 954-1" with "EN ISO 13849-1".

Replace 5.2.2.2 and 5.2.2.3 with:

**5.2.2.2** "low-pressure approach so that the closing force of the clamp or plunger does not exceed 150 N until the clamp (bar) or plunger has moved up to 6 mm or less of the surface of the glass so that fingers cannot get under the bar or plunger; the related parts of the control system shall as a minimum comply with performance level c in accordance with EN ISO 13849-1:2008, or

**5.2.2.3** low-pressure approach with a closing force not exceeding 150 N and with a minimum two seconds delay before working pressure is applied; the related parts of the control system shall as a minimum comply with performance level c in accordance with EN ISO 13849-1:2008, or"

Replace 5.2.2.5 to 5.2.2.7 with:

**5.2.2.5** "sensitive protective equipment, for example a sensitive bar or an opto-electronic protective device (light beam) close to the clamping bar or plunger. Sensitive bars shall comply with EN 1760-2:2001 and shall as a minimum comply with performance level c in accordance with EN ISO 13849-1:2008. Opto-electronic protective devices shall be of type 4 in compliance with EN 61496-1:2004 and CLC/TS 61496-2:2006, with a maximum detection capacity of 14 mm, or



**5.2.2.6** at sides where operational access is not intended, a perimeter fence in accordance with EN ISO 13857:2008, Tables 1 and 4, but with a minimum height of 1,40 m and a minimum horizontal distance between the fence and the nearest danger zone of 0,5 m. Provisions shall be made for access to the machinery, while the access openings shall be safeguarded by interlocking doors or guard, or by single beam opto-electronic protective devices.

The interlocking devices for doors or guards shall as a minimum comply with performance level d in accordance with EN ISO 13849-1:2008.

Opto-electronic protective devices shall be of type 4 in compliance with EN 61496-1:2004 and CLC/TS 61496-2:2006. The single beam device shall be mounted at a height of 0,75 m above floor level (see EN 999:1998, 6.1.5) and the positioning shall be determined in accordance with EN 999:1998, formula (5), or

NOTE 1 Perimeter fencing and single light beams allow persons to stay directly at the machinery for servicing work such as fault clearing without mechanical hindrance.

NOTE 2 Operational access of persons to some or all sides is not intended when machinery is used in the automatic or semi-automatic mode.

NOTE 3 formula (5) safety distance  $S = 1\,600 \times T + 1\,200$  in accordance with EN 999:1998, 6.1.5.

**5.2.2.7** a fixed distance guard (see EN 953:1997, 3.2.2) closer to the machine with a height not less than 1,4 m with a movable interlocking guard (see EN 953:1997, 3.3 and 3.5) for access e.g. for fault clearing and with minimum safety distances according to EN ISO 13857:2008, Tables 1 and 4, at sides where operational access of persons is not intended and where there is no free space (room) to use the methods of 5.2.2.6. The interlocking devices shall as a minimum comply with performance level d in accordance with EN ISO 13849-1:2008.

NOTE For requirements for the safety-related control system of the machine see 5.4.8."

*Replace 5.4.2 with:*

**5.4.2** "The electrical equipment to limit the travel of glass sheets at the end of the conveyor at the position for the manual take-off shall be equipped with dual limit switches separately mounted and cross-monitored presenting, in combination with the related parts of the control system, a performance level of at least d in accordance with EN ISO 13849-1:2008."

*Replace 5.4.4 and 5.4.5 with:*

**5.4.4** "All electrical equipment shall conform to the requirements of EN 60204-1 in particular with regard to the protection against electrical shock (see EN 60204-1:2006, Clause 6).

**5.4.5** Machines for break-out shall be equipped with lockable devices for isolation and energy dissipation according to EN 60204-1:2006, 5.3, or to EN 982:1996, 5.1.6, or to EN 983:1996, 5.1.6 as appropriate. Additionally, individual devices for switching off according to EN 60204-1:2006, 5.3. or 5.4, or to EN 982:1996, 5.1.6, or to EN 983:1996, 5.1.6 as appropriate, are required for those parts of extended plants which are designed to be stopped separately while other parts of the machinery are still running."

*Replace 5.4.7 and 5.4.8 with:*

**5.4.7** "Emergency-stop equipment according to EN ISO 13850 shall be provided and shall function as either stop category 0 or 1 according to EN 60204-1:2006, 9.2.2 and comply with EN 60204-1:2006, 9.2.5.4. Control devices with actuators shall be installed at the control panel and within reach of the operator at each working side. The emergency-stop equipment shall both stop the movements of the machine and turn off the gas supply. Provisions shall be made to allow emergency stopping to be applied to other machines that are linked to the operation the machine for break-out if this would otherwise introduce a hazard (see 7.2.8).

**5.4.8** The performance level (defined in accordance with EN ISO 13849-1:2008) for the parts of the control system related to the safety provisions described in 5.2.2.2, 5.2.2.3 and 5.2.2.5 to 5.2.2.7 shall correspond to