

## SLOVENSKI STANDARD SIST EN 13035-2:2008 01-junij-2008

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Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 2: Storage, handling and transportation equipment outside the factory

Maschinen und Anlagen für die Herstellung, Be- und Verarbeitung von Flachglas -Sicherheitsanforderungen Teil 2: Einrichtungen zum Lagern, Handhaben und Transportieren außerhalb des Werks (standards.iteh.ai)

Machines et installations pour la production, le façonnage et la transformation du verre plat - Prescriptions de sécurités Partie 2gs Équipement de stockage, de manutention et de transport a l'extérieur de l'usine bc4b04d4c/sist-en-13035-2-2008

Ta slovenski standard je istoveten z: EN 13035-2:2008

<u>ICS:</u>

81.100

SIST EN 13035-2:2008

en,fr

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# EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

## EN 13035-2

March 2008

ICS 81.100

**English Version** 

## Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 2: Storage, handling and transportation equipment outside the factory

Machines et installations pour la production, le façonnage et la transformation du verre plat - Prescriptions de sécurité - Partie 2: Équipement de stockage, de manutention et de transport à l'extérieur de l'usine Maschinen und Anlagen für die Herstellung, Be- und Verarbeitung von Flachglas - Sicherheitsanforderungen -Teil 2: Einrichtungen zum Lagern, Handhaben und Transportieren außerhalb des Werks

This European Standard was approved by CEN on 5 January 2008.

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EUROPEAN COMMITTEE FOR STANDARDIZATION COMITÉ EUROPÉEN DE NORMALISATION EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN 13035-2:2008) 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of an identical text or by endorsement, at the latest by September 2008, and conflicting national standards shall be withdrawn at the latest by September 2008.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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

For relationship with EU Directive(s), see informative Annex ZA and ZB, which are integral parts 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, 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 the United Kingdom.

## Introduction

This document 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 document.

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 equipment that has been designed and built according to the provisions of this type C standard.

In this European Standard it is assumed that:

- negotiation occurs between the manufacturer and the user/purchaser concerning particular conditions of use not dealt with in this standard;
- stationary storage equipment with or without mobile support, mechanical handling devices (see EN 13035-1) are not intended for use outside the factory;
- mobile racks and in-loader stillages can only be used on virtually horizontal grounds without significant asperities (see Clause 7).

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### 1 Scope

**1.1** This standard contains the requirements for safety for the design and installation of equipment intended for the storage (as defined in 3.2.1), handling (as defined in 3.2.2) and transportation (as defined in 3.2.3) of flat glass outside the factory (as defined in 3.1.1) and including stillages, pallets, frails fixed to vehicles, inloader vehicles, specific glass-securing devices, stanchions and vacuum-lifting devices which are used for road transport and on building sites.

**1.2** Specific hazards due to the use inside the factory are dealt with in EN 13035-1.

**1.3** This standard deals only with the devices which are directly in contact with the glass. This standard does not apply to manual handling equipment such as carrying straps and vacuum pads. Tractors, cranes, hoists and fork lifts are out of the scope as well as parts of other powered vehicles that are not in contact with the glass. This European Standard does not apply to equipment for the transport by other ways than on road e.g. by ship or train, and the transportation of glazed windows/frames.

**1.4** This standard deals with all significant hazards, hazardous situations and events relevant to equipment for the storage, handling and transportation of flat glass, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4). This standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards during commissioning, the operation and maintenance. Noise has not been considered to be a significant hazard for any type of equipment in the scope of this standard.

**1.5** This document is not applicable to storage, handling or transportation equipment for flat glass outside the factory, which is manufactured before the date of its publication as EN.

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### 2 Normative references

#### SIST EN 13035-2:2008

The following referenced documents are indispensable for sthe application of this document. For dated references, only the edition cited applies do the dated references, othe 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 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 981:1996, Safety of machinery — System of auditory and visual danger and information signals

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

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

EN 12195-1:2003, Load restraint assemblies on road vehicles — Safety — Part 1: Calculation of lashing forces

EN 13035-1:2007, Machines and plants for the manufacture, treatment and processing of flat glass — Safety requirements — Part 1: Storage, handling and transportation equipment inside the factory

EN 13155:2003, Cranes — Safety — Non-fixed load lifting attachments

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

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 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 ISO 13850:2006, Safety of machinery - Emergency stop - Principles for design (ISO 13850:2006)

EN ISO 14122-1:2001, Safety of machinery — Permanent means of access to machinery — Part 1: Choice of a fixed means of access between two levels (ISO 14122-1:2001)

EN ISO 14122-2:2001, Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2001) Of the budget of the second standards is the second stan

EN ISO 14122-3:2001, Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2001)

EN ISO 14122-4:2004, Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders (ISO 14122-4:2004)

ISO 3864-1:2002, Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public areas

#### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100-1, EN 13035-1 and the following apply.

#### 3.1 General definitions

#### 3.1.1

#### outside the factory

all areas, such as building sites, in which the glass is stored and moved, with the exception of enclosed buildings and company premises for glass manufacturing and processing

3.1.2 gust sudden wind-speed increase

### 3.2 Definitions concerning equipment

#### 3.2.1

#### storage equipment

stationary, movable or mobile equipment for storing glass packs or single plates. Some of this equipment is also used for transportation

3.2.2

#### handling equipment

devices which are specifically designed to support and retain a single plate or pack of glass during transportation from one position to another

#### 3.2.3

#### transportation equipment

equipment for the movement of glass-laden storage or handling devices

#### 3.2.4

#### frail

device for transportation, in a position close to the vertical, of glass plates, fixed or mounted outside of a vehicle (see Figures A.1, A.2 and A.3)

#### 3.2.5

#### in-loader

transportation device (usually a trailer or semi-trailer) with a self-loading mechanism for stillages with or without glass plates/packs (see Figure A.4)

#### 3.2.6

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thin glass frames (standards.iteh.ai) devices for storing and transporting packs of glass in sizes of 4,5 m to 6,0 m × 3,21 m and thickness less than or equal to 2,5 mm

## 4 List of significant hazards

### 4.1 General

This clause contains the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

#### 4.2 During transportation

Hazards	Dangerous items	Preventive measures
	Tilting of load and/or falling from the transport device because of:	
Crushing of the body	<ul> <li>a) missing or using an insufficient safety device</li> </ul>	5.4; 7.3
	<ul> <li>b) incorrect unloading of movable equipment (e.g. from platforms, forklifts)</li> </ul>	7.3
iTe	c) insufficiently secured in the crane hook	7.3
	d) use of excessive speed	5.2; 7.3
	e) pressure gust of wind/high side wind	5.3; 5.4; 5.6; 7.3
	f) unsecured stillage035-2:2008	5.2; 5.4; 5.6
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	<ul> <li>impact by impulse from outside to the transportation system</li> </ul>	5.6; 7.3
	m) movement of the frail	5.3; 5.4; 7.3
	<ul> <li>break-up of the device by insufficient strength</li> </ul>	5.2
Crushing of the feet	wheels of movable equipment	7.3
	Single plates or glass pieces fall from transport device because of:	
Cutting, severing or	a) glass is not secured	5.3; 5.4; 5.6; 5.7; 7.3
puncturing	b) glass is not correctly placed	7.3
	<ul> <li>d) damage of glass because of impact on fixed parts in the environment</li> </ul>	7.3
	e) damage of glass because of impact with the frail	5.5
Neglected use of personal protective equipment	injury from glass	7.3

Table 1