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Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 9: Washing installations

Maschinen und Anlagen zur Herstellung, Be- und Verarbeitung von Flachglas - Sicherheitsanforderungen - Teil 9: Waschmaschinen

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Machines et installations pour la production, le façonnage et la transformation du verre plat - Exigences de sécurité - Partie 9 : Machines a laver le verre

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ICS:

81.100 U] |^ { æ Á á c ^ \ | æ • \ [Á } \ ^ | æ ã } [Á } á • c Á } Equipment for the glass and ceramics industries

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ICS 81.100

English Version

Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 9: Washing installations

Machines et installations pour la production, le façonnage et la transformation du verre plat - Exigences de sécurité - Partie 9 : Machines à laver le verre

Maschinen und Anlagen zur Herstellung, Be- und Verarbeitung von Flachglas - Sicherheitsanforderungen - Teil 9: Waschmaschinen

This European Standard was approved by CEN on 24 May 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, 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.

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Contents

Page

Foreword.....3

Introduction4

1 Scope5

2 Normative references5

3 Terms and definitions6

4 List of significant hazards7

5 Safety requirements and/or protective measures8

6 Verification of safety requirements and/or protective measures 10

7 Information for use 11

Annex A (informative) Typical constructions 13

Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC 16

Bibliography 17

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Figures

SIST EN 13035-9:2007

<https://standards.iteh.ai/catalog/standards/sist/0a0a1283-6968-4672-8091-94f70b6dc4cf/sist-en-13035-9-2007>

Figure A.1 — Scrubbing unit 13

Figure A.2 — Double face scrubbing unit 14

Figure A.3 — Washing unit 14

Figure A.4 — Double washing unit 15

Figure A.5 — Drying unit..... 15

Tables

Table 1 — List of significant hazards 8

Table 2 — Verification of safety requirements and/or protective measures 11

Foreword

This document (EN 13035-9:2006) 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 2007, and conflicting national standards shall be withdrawn at the latest by January 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 Directives, see informative Annex ZA, which is an integral part of this document.

It is one of a series concerning machinery for the treatment and processing of flat 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, 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.

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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 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.

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1 Scope

1.1 This European Standard contains the safety requirements for the design and installation of stationary glass washing installations as shown as typical in Annex A.

Glass washing installations are designed to perform the following functions: feeding of flat glass to the cleaning and drying unit and transport (delivery) to the estimation equipment and to the take-off position of the flat glass sheet. None of the processing phases requires direct manual intervention.

1.2 This European Standard deals with the significant hazards, hazardous situations and events with the exception of those by interfaces with other machines used in a process line relevant to glass washing installations, 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, the operation and maintenance.

1.3 This European Standard is not applicable to machines for loading and unloading of glass (see EN 13035-5) and to conveyors (see EN 619) and fans. If there are specific risks that arise by their use as an integral part of flat glass washing installations, appropriate measures are specified.

1.4 This European Standard is not applicable to glass washing installations for automotive and bent glass.

1.5 This European Standard is not applicable to water preparation and disposal of waste washing liquid.

1.6 This European Standard is not applicable to machinery manufactured before the date of publication of this European Standard by CEN.

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2 Normative references standards.iteh.ai/catalog/standards/sist/0a0a1283-6968-4672-8091-94f70b6dc4cf/sist-en-13035-9-2007

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

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

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

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

EN 1760-2:2001, *Safety of machinery — Pressure sensitive protective devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars*

EN 13035-9:2006 (E)

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

EN 60529:1991, *Degrees of protection provided by enclosures (IP-Code) (IEC 60529:1989)*

EN 61310-1:1995, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995)*

EN 61496-1:2004, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2004, modified)*

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)*

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)*

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)*

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 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)*

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

installations consist of the following parts:

- inlet site;
- scrubbing unit;
- washing unit;
- drying unit;
- outlet site.

It is pointed out that a washing machine can be composed of more than one scrubbing or washing unit

3.1.1

inlet site and/or outlet site

3.1.1.1

in the case of horizontal washing installations, these sites are composed of rotating rollers or beltings

3.1.1.2

in the case of vertical washing installations, the glass sheets are transported by moving them on their edge with rollers or beltings while leaning stable against a support with rolls

3.1.2**washing****3.1.2.1****scrubbing unit**

machine composed of a horizontal or vertical beam on which brushes are mounted with the rotation axis perpendicular to the surface of the sheet.

NOTE The brushes, integral with the beam, move along vertically with respect to the thickness of the glass sheet. Special clamping rollers lead and hold the glass sheet when being scrubbed (see Annex A, Figures A.1 and A.2)

3.1.2.2**washing unit**

machines that wash and rinse glass.

NOTE 1 These machines are basically composed of rotating brushes with an axis located transversely to the feeding direction of the glass sheet. These brushes can be positioned either on the upper or lower surface of the glass or on both sides. The brush is made of a shaft, preferably of metal, provided with plastic bristles, the location of which varies from one machine to another. The washing operation is performed by the rotating brush. In addition, tubes are also provided with nozzles which spray water with detergents or (pure) water for rinsing on to the glass sheet.

NOTE 2 The height of the brushes is adjustable according to the thickness of the glass. Rollers clamping the glass sheets while being washed are located both downstream and upstream from the brushes (see Annex A, Figures A.3 and A.4)

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3.1.3**drying unit**

machines consisting of one or several pairs of blowers providing air flows which remove water from the surface of the glass sheet.

NOTE Blowers are linked with fans (see Annex A, Figure A.5)

4 List of significant hazards

This clause contains the hazards, hazardous situations and events, as far as they are dealt with in this European Standard identified by risk assessment as significant for washing installations 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.