



SLOVENSKI STANDARD

oSIST prEN 12978:2021

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Vrata v industrijske in javne prostore, garažna vrata in vrata za pešce - Zaščitne naprave za vrata s samodejnim delovanjem - Zahteve in preskusne metode

Industrial, commercial and garage doors and gates and pedestrian doorsets - Protective devices for power operated doors and gates - Requirements and test methods

Türen und Tore - Schutzeinrichtungen für kraftbetätigte Türen und Tore - Anforderungen und Prüfverfahren

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Portes et portails industriels, commerciaux et de garage et blocs-portes pour piétons - Dispositifs de protection pour portes et portails motorisés - Exigences et méthodes d'essai

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ICS:

91.060.50	Vrata in okna	Doors and windows
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EUROPEAN STANDARD
NORME EUROPÉENNE
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Industrial, commercial and garage doors and gates and pedestrian doorsets - Protective devices for power operated doors and gates - Requirements and test methods

Portes et portails industriels, commerciaux et de garage et blocs-portes pour piétons - Dispositifs de protection pour portes et portails motorisés - Exigences et méthodes d'essai

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 33.

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If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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prEN 12978:2021 (E)**European foreword**

This document (prEN 12978:2021) has been prepared by Technical Committee CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12978:2003+A1:2009.

Compared with EN 12978:2003+A1:2009, the following changes have been made:

- a) revision according to the requirements of EN ISO 12100:2010 (safety of machines);
- b) deletion of requirements which are covered by EN 12453 for the safe function of the combination of protective device and industrial, commercial and garage doors, so that only basic requirements of protective devices are covered by this document;
- c) modification of the definition of test pieces and test procedures.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

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

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Introduction

This document is a type C document as stated in EN ISO 12100:2010.

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 protective devices that have been designed and built according to the provisions of this type C document.

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1 Scope

This document specifies requirements and test methods for sensitive protective equipment put separately on the market as safety components to be used with entrance equipment such as power operated industrial, commercial and garage doors, gates and barriers, power operated pedestrian doors and power operated pedestrian entrance control equipment, when any safety standard covering such entrance equipment references this standard.

This document deals with all significant hazards, hazardous situations and events relevant to the power operation of doors, and gates when they are used as intended and under conditions of misuse which are reasonably foreseeable as identified in Clause 4.

All lifetime phases of the machinery including transportation, assembly, dismantling, disabling and scrapping are considered by this document.

Whenever the term „door” is used in this document, it is deemed to cover the full scope of types and variances of doors, gates and barriers defined and entrance control equipment by the scope of EN 12453:2017+A1:2021, EN 16005:2012 and FprEN 17352:2021.

This document does not deal with sensitive protective equipment using ultrasonic, radar, capacitive, inductive, passive infrared and vision based technologies. For these types of equipment this document can be used as a guide.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 12433-1:1999, *Industrial, commercial and garage doors and gates - Terminology - Part 1: Types of doors*

EN 12433-2:1999, *Industrial, commercial and garage doors and gates - Terminology - Part 2: Parts of doors*

EN 12453:2017+A1:2021, *Industrial, commercial and garage doors and gates — Safety in use of power operated doors — Requirements¹⁾*

EN 16005:2012, *Power operated pedestrian doorsets - Safety in use - Requirements and test methods*

FprEN 17352:2021, *Power operated pedestrian entrance control equipment — Safety in use — Requirements and test methods*

EN 60068-2-6:2008, *Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)*

EN 60068-2-14:2009, *Environmental testing - Part 2-14: Tests - Test N: Change of temperature*

EN 60068-2-27:2009, *Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock*

EN 60068-2-78:2013, *Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)²⁾*.

¹⁾ This standard is blocked and pending to be published.

EN 60664-1:2007, *Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests*

EN 60825-1:2014, *Safety of laser products - Part 1: Equipment classification and requirements*

EN IEC 61000-6-1:2019, *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments*

EN IEC 61000-6-2:2019, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments*

EN 61000-6-3:2007, *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:2006)³⁾*

EN IEC 61000-6-4:2019, *Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments*

EN 61496-2:2013, *Safety of machinery - Electro-sensitive protective equipment - Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)*

EN 62368-1:2014, *Audio/video, information and communication technology equipment - Part 1: Safety requirements (IEC 62368-1:2014, modified)⁴⁾*

EN 62471:2008, *Photobiological safety of lamps and lamp systems*

EN ISO 4413:2010, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414:2010, *Pneumatic fluid power - General rules and safety requirements for systems and their components (ISO 4414:2010)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13849-1:2015, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13849-2:2012, *Safety of machinery - Safety-related parts of control systems - Part 2: Validation (ISO 13849-2:2012)*

EN ISO 13856-1:2013, *Safety of machinery - Pressure-sensitive protective devices - Part 1: General principles for design and testing of pressure-sensitive mats and pressure-sensitive floors (ISO 13856-1:2013)*

EN ISO 13856-2:2013, *Safety of machinery - Pressure-sensitive protective devices - Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars (ISO 13856-2:2013)*

²⁾ As impacted by EN 60529:1991/AC:1993-05, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/A2:2013/AC:2019-02 and EN 60529:1991/AC:2016-12.

³⁾ ²⁾ As impacted by EN 61000-6-3:2007/A1:2011 and EN 61000-6-3:2007/A1:2011/AC:2012.

⁴⁾ As impacted by EN 62368-1:2014/AC:2015-02, EN 62368-1:2014/AC:2015-05, EN 62368-1:2014/AC:2015-11, EN 62368-1:2014/AC:2017-03 and EN 62368-1:2014/A11:2017

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EN ISO 13856-3:2013, *Safety of machinery - Pressure-sensitive protective devices - Part 3: General principles for design and testing of pressure-sensitive bumpers, plates, wires and similar devices (ISO 13856-3:2013)*

EN IEC 61496-3:2019, *Safety of machinery - Electro-sensitive protective equipment - Part 3: Particular requirements for active opto-electronic protective devices responsive to diffuse Reflection (AOPDDR) (IEC 61496-3:2018)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12433-1:1999, EN 12433-2:1999, EN 12453:2017+A1:2021, EN ISO 12100:2010 and the following apply.

**3.1
electro-sensitive protective equipment****ESPE**

SPE consisting of a non-mechanically actuated assembly of devices and/or components working together for presence sensing purposes and comprising as a minimum

- a non-mechanical sensing device and
- controlling/monitoring devices and
- output signal switching devices and/or a safety-related data interface

[SOURCE: EN 61496-1:2013, modified] (standards.iteh.ai)

**3.2
active opto-electronic protective device****AOPD**

device whose sensing function is performed by opto-electronic emitting and receiving elements detecting the interruption of optical radiations generated within the device, by an opaque object present in the specified detection zone

[SOURCE: EN ISO 12100:2010]

**3.3
active opto-electronic protective device responsive to diffuse reflection****AOPDDR**

device, whose sensing function is performed by opto-electronic emitting and receiving elements, that detects the diffuse reflection of optical radiations generated within the device by an object present in a detection zone specified in two or three dimensions

[SOURCE: EN IEC 61496-3:2019]

**3.4
light barrier**

AOPD comprising an integrated assembly of one or two emitting element(s) and one or two receiving element(s) forming a detection zone with a specified detection capability

**3.5
light curtain**

AOPD comprising an integrated assembly of three or more emitting element(s) and three or more receiving element(s) forming a detection zone with a specified detection capability

[SOURCE: EN 61496-2:2013, modified]

3.6

output signal switching device

OSSD

component of the SPE connected to the machine control system which, when the sensing device is actuated during normal operation, responds by going to the OFF-state

[SOURCE: EN 61496-1:2013, modified]

3.7

pressure-sensitive protective equipment

PSPE

sensitive protective equipment of the „mechanically activated trip” type intended to detect the touch of a person or body part of a person and comprising as a minimum

- a sensing device and
- controlling/monitoring devices and
- output signal switching devices and/or a safety-related data interface

Note 1 to entry: PSPE can be mats and floors (see EN ISO 13856-1:2013) or pressure sensitive edges or pressure sensitive bars (see EN ISO 13856-2:2013) or pressure-sensitive bumpers, plates, wires and similar devices (see EN ISO 13856-2:2013)

[SOURCE: EN ISO 13856-3:2013, modified]

3.8

OFF-state

state of the output(s) of the SPE in which the machine under control is caused to switch into a safe-state

[SOURCE: EN 61496-1:2013, modified]

4 List of hazards

4.1 General

Relevant hazards are listed in 4.2 to 4.12 and in Annex C.

4.2 Hazards caused by fixing

Inadequate fixing of the protective equipment or parts of it can impair the protective function or cause hazards because of falling objects.

4.3 Hazards caused by the shape

Shape of the protective equipment or parts of it can cause cutting hazards.

4.4 Hazards caused by use of energy

Use of energy for the powered operation of the protective equipment can lead to hazards. This includes electrical, hydraulic and pneumatic energy.

prEN 12978:2021 (E)**4.5 Hazards generated by optical radiation**

Photobiological hazards can arise from the radiation intensity of light waves (e.g. laser beams, LED).

4.6 Hazards caused by out of range wavelength

Hazardous operation can arise from use of a wavelength outside the specified range

4.7 Hazard caused by the loss of the safety function**4.7.1 Loss of the sensing function because of temperature and humidity**

Temperature and humidity can impair the proper functioning of the protective equipment.

4.7.2 Loss of the sensing function because of vibration and bump

Vibration and bump can impair the proper functioning of the protective equipment.

4.7.3 Loss of the sensing function because of light interference

External light can impair the proper function of the protective equipment.

4.7.4 Loss of the sensing function because of environmental pollution

Environmental pollution (e.g. dust) can impair the proper function of the protective equipment.

4.8 Hazard caused by lack of detection capability

Lack of detection capability can lead to hazards.

4.9 Hazard caused by inadequate setting

Inadequate setting can lead to hazards.

4.10 Hazard caused by permanent deformation and/or mechanical damage of PSPE sensing element

Permanent deformation and/or mechanical damage of the sensing element of PSPE can lead to hazards.

4.11 Hazard caused by loss of safety integrity

Inappropriate performance level can lead to hazards.

4.12 Hazard caused by electro-magnetic disturbances**4.12.1 Immunity**

Electro-magnetic disturbances can impair the sensing function of the protective equipment.

4.12.2 Emission

Electro-magnetic disturbances from protective equipment can impair the function of neighbouring equipment.

5 Safety requirements and/or protective measures**5.1 General**

Safety requirements and/or protective measures are defined in 5.2 to 5.12.