SLOVENSKI STANDARD
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Varnostna pravila za konstruiranje in vgradnjo dvigal (liftov) - Pregled in preskusi - 58. del: Preskus odpornosti vrat proti požaru

Safety rules for the construction and installation of lifts - Examination and tests - Part 58: Landing doors fire resistance test

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Überprüfung und Prüfverfahren - Teil 58: Prüfung der Feuerwiderstandsfähigkeit von Fahrschachttüren

Règles de sécurité pour la construction et l'installation des élévateurs - Examens et essais - Partie 58 : Essai de résistance au feu des portes palières

Ta slovenski standard je istoveten z: **prEN 81-58**

ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
91.140.90	Dvigala. Tekoče stopnice	Lifts. Escalators

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Safety rules for the construction and installation of lifts - Examination and tests - Part 58: Landing doors fire resistance test

Règles de sécurité pour la construction et l'installation des élévateurs - Examens et essais - Partie 58 : Essai de résistance au feu des portes palières

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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 10.

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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European foreword

This document (prEN 81-58:2020) has been prepared by Technical Committee CEN/TC 10 “Lifts, escalators and moving walks”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

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 will supersede EN 81-58:2018.

In comparison with the previous edition, the following significant changes have been made:

— The structure of the standard has been reorganized;

— All externally referenced standards have now been dated;

— A new Annex ZA has been developed in order to be aligned with the requirements of the EU Commission Standardization Request “M/549 C(2016) 5884 final”.

No technical changes have been made during this revision.

The content of this document provides the requirements, a method of testing and classification of fire resistance for lift landing doors which can be exposed to a fire from the landing side.

This document is intended to be used in conjunction with the EN 81-20:2020, which gives the basic requirements for passenger and goods passenger lifts.

This document is part of the EN 81 series of standards. The structure of the EN 81 series of standards is described in CEN/TR 81-10:2008.

Introduction

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

The lifts concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

EN 81 series has identified the need for lift doors to act as fire barriers against the transfer of a fire via the lift well. This document specifies a requirements for this purpose. It follows the general principle of EN 1363-1:2020 and where appropriate the procedure of EN 1634-1:2014+A1:2018. Additionally, a tracer gas technique for establishing the integrity of a lift landing door is used.

NOTE Lift landing doors are not included in the scope of EN 1634-1:2014+A1:2018.

1 Scope

This document specifies the fire resistance requirements for lift landing doors which can be exposed to a fire from the landing side. This document applies to all types of lift landing doors used as a means of access to lifts in buildings and which are intended to provide a fire barrier to the spread of fire via the lift well.

It also specifies the method of testing and classification of fire resistance of lift landing doors. The test method is only valid for furnaces where the door is mounted in a vertical position. The test method allows for the measurement of integrity and if required the measurement of radiation and thermal insulation.

This document covers the hazard of fire spreading to the lift well during a defined period of time. The fire resistance requirements are expressed in terms of integrity (E), insulation (EI) and radiation (EW).

This document do not cover other technical requirements in addition to fire resistance requirements. The other technical requirements are specified in relevant product standards referring to this document.

This document refers to CO_2 as means of tracing the propagation of fire. The document does not cover hazards due to emission of gasses.

This document is not applicable to lift landing doors installed in lifts before the date of its publication.

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 81-20:2020, *Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 20: Passenger and goods passenger lifts*

EN 1363-1:2020, *Fire resistance tests - Part 1: General requirements*

EN 1363-2:1999, *Fire resistance tests - Part 2: Alternative and additional procedures*

EN 1634-1:2014+A1:2018, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for door and shutter assemblies and openable windows*

EN ISO 5167-1:2003, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full - Part 1: General principles and requirements (ISO 5167-1:2003)*

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

ISO 9705-1:2016, *Reaction to fire tests - Room corner test for wall and ceiling lining products - Part 1: Test method for a small room configuration*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and EN 1363-1:2020 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
lift landing door
door designed to be installed in the lift well opening at a landing to provide access to the lift

3.2
thermally uninsulated lift landing door
lift landing door which is not intended to satisfy the selected insulation criteria

3.3
thermally insulated lift landing door
lift landing door which is intended to satisfy the selected insulation criteria

3.4
door opening
width of the clear opening allowing free passage through the open lift landing door

3.5
door assembly
complete assembly, including any frame or guide, door panel or panels, which is provided for access to and from the lift and the landing

Note 1 to entry: It includes all panels, hardware, sealing materials and any operating components.

3.6
supporting construction
construction provided in the opening of the test frame or the furnace front in order to accommodate the test specimen

3.7
leakage rate
total flow rate of hot gases passing through openings and gaps of the door assembly, due to overpressure on the landing side

4 Safety requirements and/or protective/risk reduction measures

4.1 Criteria of performance

Lift landing doors shall comply with the safety requirements of this clause. In addition, the lift landing doors shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards which are not dealt with by this document.

The main criteria of integrity performance of lift landing doors is the ability to remain in place as a fire barrier, ability to control the leakage of hot gases from the landing side to the lift well (E) and to satisfy any additional criteria for insulation (I) and radiation (W) which can be specified.

Lift landing door shall withstand fire exposure from the landing side and prevent the entry of a fire into the lift well during a defined period of time.

The fire resistance performance of the lift landing door shall be expressed in minutes, according to 4.2, 4.3 and 4.4, with one or more of the following criteria:

— Integrity (E) : xx minutes;

— Insulation (I) : yy minutes;

— Radiation (W) : zz minutes.

4.2 Integrity (E)

The main requirement for lift door fire resistance is the integrity. The criteria is following:

— no sustained flaming in well side for more than 10 s at any time;

— the leakage rate per meter width of the door opening does not exceed 3,0 $m^3/(min \cdot m)$ after 14 minutes fire.

4.3 Thermal insulation (I)

The average surface temperature rise of the lift door shall not exceed 140 K during a defined period of time.

For door panel, over panel and side panel with a width ≥ 300 mm, the maximum temperature rise on shall not exceed 180 K during a defined period of time.

For side panel width and/or over panel height of greater than 100 mm, but less than 300 mm, then the maximum temperature rise of these members shall not exceed 360 K during a defined period of time.

4.4 Radiation (W)

The radiation shall not exceed the value of 15,0 kW/m^2 during a defined period of time, measured as specified in EN 1363-2:1999.

5 Fire resistance classification

5.1 Fire resistance classification periods

The fire resistance class is expressed as a combination of criteria's given in 4.1 and 5.3 and period of time in minutes. Period of time shall be rounded down to the nearest fire classification period hereafter: 15 min, 20 min, 30 min, 45 min, 60 min, 90 min or 120 min. See Table 1.

5.2 Designatory letters

The following designatory letters shall be used for the fire classification of lift landing doors:

— E for integrity;

— I for insulation;

— W for radiation.

5.3 Combinations of criteria

The fire resistance classes shall be expressed as follows:

— E *tt* : *tt* being the fire classification period during which the criterion integrity is satisfied;

— EI *tt* : *tt* being the fire classification period during which the criteria integrity and insulation are satisfied;

— EW *tt* : *tt* being the fire classification period during which the criteria integrity and radiation are satisfied.

When criteria's are combined, the time declared shall be that of the criterion having the shortest time.

EXAMPLE A lift landing door with E: 47 min., W: 25 min. and I: 18 min. is classified E 45 and/or EW 20 and/or EI 15.

5.4 Fire resistance classes

Only the fire resistance classes given in Table 1 shall be used.

Table 1 — Fire resistance classes

E	15	20	30	45	60	90	120
EI	15	20	30	45	60	90	120
EW		20	30		60		

The fire resistance class of the lift landing door shall be indicated in a data label according to Annex G.

6 Verification

6.1 Test principle

The test consists in exposing the landing side of a lift landing door to the heating conditions specified in EN 1363-1:2020 for the period for which the door shall be assessed for its fire resistance. During the test, positive pressure exists over the whole height of the door on the exposed side, inducing the leakage of furnace gases to the unheated side. A canopy is provided on the unexposed side which collects the leaked gases and a suction fan draws these through a duct provided with a system for measuring the volume flow (see Annex A). The concentration of CO_2, used as a tracer gas, is measured in the furnace and at the airflow measuring point, and by monitoring the gas flow rate and its temperature it is possible to calculate the leakage rate of hot gases through the test door. The method gives a record of the hot gas leakage as a function of time which is corrected for normal conditions. This provides a basis for assessing the ability of the door to act as an effective fire barrier.

NOTE 1 ISO 3008-2 has the same test principle as EN 81-58 based on CO_2 measurement.

NOTE 2 EN 1634-1:2014+A1:2018 contains a procedure for the determination of fire resistance of doors which may be exposed to a fire in a building from either side and are required to prevent the transfer of fire from one side to the other. Lift landing doors represent a special use of doors where the fire exposure is expected to be from a specified direction, i.e. the landing side, and where the hazard exists only subsequent to the entry of a fire into the lift well.

6.2 Test equipment

6.2.1 The test furnace shall be as described in EN 1363-1:2020.

6.2.2 The canopy shall be as specified in Annex A.

6.2.3 The measuring system for leakage rate shall be as specified in Annex A.

6.3 Test conditions

6.3.1 The furnace shall be controlled to follow the temperature/time curve as specified in EN 1363-1:2020.

6.3.2 The furnace shall maintain positive pressure on the exposed side over the whole height of the specimen such that the pressure at the sill level is in the range of $(2 + 8{,}5 \times H_{sill}) \pm 2$ Pa where H_{sill} is the vertical distance (in metres) between the sill level and the intended floor level.

In some applications such as service lifts or dumbwaiters, the sill level may be different than the intended floor level.

6.4 Test specimen

6.4.1 Construction

The test specimen shall be fully representative of the door assembly on which information is required.

6.4.2 Number of specimens

As information is required when the door is exposed to heating from the landing side only, one specimen is tested. A second specimen may be required according to 6.7.2 to verify the door construction.

6.4.3 Size of specimen

The specimen shall be full size or the maximum size that can be accommodated in the furnace. The size of the front opening of the furnace is 3 m × 3 m. In order to expose a required minimum width of 200 mm of supporting construction for a 3 m × 3 m furnace, the opening in the supporting construction is restricted to 2,6 m × 2,8 m (width × height).

6.4.4 Installation of specimen

The specimen shall be mounted in a supporting construction having at least the fire resistance of the target classification. The supporting construction shall be built first within the test frame leaving an aperture of the specified size. The width of the supporting construction on the two vertical sides and the top shall be not less than 200 mm.

The design of the connection between the door and the supporting construction, including any materials used to make the junction, shall be as stated in instructions for use on the type of the supporting construction. The position of the door assembly in relation to the supporting construction shall be as stated in instructions for use.

The clearances at the beginning of test shall correspond to the maximum that is permissible by EN 81-20:2020 when the lift landing doors are put into service, unless designed for another maximum gap size, which shall then apply.

6.5 Supporting construction

In view of the field of direct application of test results, the lift landing doors shall be erected in the standard supporting construction as described in Annex B.

NOTE In special cases, the supporting construction may be of a type with which the door is intended to be used in practice. In such cases, the field of application of the test results is restricted to that construction.

6.6 Conditioning

6.6.1 The test specimen, as well as the supporting construction and any sealing materials used, shall be conditioned in accordance with the requirements of EN 1363-1:2020 and EN 1634-1:2014+A1:2018. No special conditioning procedures are required where the specimen is constructed primarily from non-hygroscopic materials. Full conditioning of the supporting construction may not be required, if there will be no effect on the behaviour of the specimen or the fixing system.

6.6.2 Samples of materials used in the test door shall be provided to determine moisture content when necessary.

6.7 Pre-test examination

6.7.1 General

Before the test, it shall be verified that the constructional details and clearance gap measurements and depth of penetration conform to the production and assembly drawings for the door system. It shall also be verified that the test specimen is representative of the product in practice.

6.7.2 Constructional details

A full detailed specification of the test specimen shall be provided. This specification shall be to a level of detail sufficient to allow a detailed examination of the specimen before the test and to agree the accuracy of the information supplied. The verification of the test specimen shall be carried out in accordance with the guidance given in EN 1363-1:2020, 6.5.

6.7.3 Clearance gap measurements and depth of penetration

The clearances between the moving components and the fixed parts of the door assembly shall be measured prior to the test. Sufficient measurements shall be made to adequately describe the nature of the gaps and there shall be a minimum of three measurements along each side or edge. The gap sizes shall be described to an accuracy of ± 0,5 mm. Figure 1 to Figure 4 shows examples of different types of lift landing doors and indicate the gaps (g) which need to be recorded.