



# SLOVENSKI STANDARD

SIST EN 81-58:2004

01-april-2004

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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

Regles de sécurité pour la construction et l'installation des élévateurs - Examen et essais - Partie 58: Essais de résistance au feu des portes palieres

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### ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
91.140.90	Öçä ääÉV^\ [ ^Áq ] } &^	Lifts. Escalators

**SIST EN 81-58:2004**

**en**

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English version

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

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Aufzügen - Überprüfung und Prüfverfahren - Teil 58:  
Prüfung der Feuerwiderstandsfähigkeit von  
Fahrschachttüren

This European Standard was approved by CEN on 18 March 2003.

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

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## Foreword

This document EN 81-58:2003 has been prepared by Technical Committee CEN/TC 10 “Lifts, escalators and moving walks”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by **January 2004**, and conflicting national standards shall be withdrawn at the latest by **January 2004**.

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.

Annexes A to D are normative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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## Introduction

This document is a type C standard as stated in EN 1070.

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 lift landing doors that have been designed and built according to the provisions of this type C standard.

EN 81 has identified the need for certain lift doors to act as fire barriers against the transfer of a fire via the lift well. This European Standard specifies a procedure for this purpose. It follows the general principle of EN 1363-1, Fire resistance tests – Part 1: General requirements, and where appropriate the procedure of EN 1634-1, Fire resistance tests for door and shutter assemblies – Part 1: Fire doors and shutters. Additionally a tracer gas technique for establishing the integrity of a lift landing door is used.

Lift landing doors are not included in the scope of EN 1634-1.

Lift landing doors, with additional applications, that may already have been tested for other than passenger lift landing door use to EN 1634-1, are considered to satisfy the corresponding classification according to this European standard.

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## 1 Scope

This European Standard specifies the method of test for determining the fire resistance of lift landing doors which may be exposed to a fire from the landing side. The procedure 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.

The procedure allows for the measurement of integrity and if required the measurement of radiation and thermal insulation.

No requirements other than the verification that the specimen is operational, are included for mechanical conditioning before the test as these are included in the relevant product standard.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 81-1, *Safety rules for the construction and installation of lifts – Part 1: Electric lifts.*

EN 81-2, *Safety rules for the construction and installation of lifts – Part 2: Hydraulic lifts.*

EN 1070:1998, *Safety of machinery - Terminology*

EN 1363-1:1999, *Fire resistance tests – Part 1: General requirements.*

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

EN 1634-1, *Fire resistance tests for door and shutter assemblies – Part 1: Fire doors and shutters.*

EN ISO 5167-1, *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)*

ISO 5221, *Air distribution and air diffusion – Rules to methods of measuring air flow rates in an air handling duct.*

ISO 9705, *Fire tests – Full scale room test for surface products.*

## 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1070:1998 and in EN 1363-1:1999 apply.

Additional definitions specifically needed for this document are added below:

### 3.1 lift landing door

door designed to be installed in the lift well opening on 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 insulation criteria of EN 1363-1 and 15.2 of this standard.

NOTE Most lift landing doors fall in this category



**3.3****thermally insulated lift landing door**

lift landing door which is intended to satisfy the insulation criteria of EN 1363-1 and 15.2 of this standard

**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 leaf or leaves, which is provided for access to and from the lift and the landing. 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 Test principle**

**4.1** EN 1634-1 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. Such a door is generally not designed to possess the same resistance to the passage of hot gases as a door separating adjacent spaces on the same floor.

**4.2** The test consists of exposing the landing side of a lift landing door to the heating conditions specified in EN 1363-1 for the period for which the door has to 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<sub>2</sub>, 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.

**5 Test equipment**

- 5.1** The test furnace shall be as described in EN 1363-1.
- 5.2** The canopy shall be as specified in annex A.
- 5.3** The measuring system for leakage rate shall be as specified in annex A.

**6 Test conditions**

- 6.1** The furnace shall be controlled to follow the temperature/time curve as specified in EN 1363-1.
- 6.2** The furnace shall maintain positive pressure on the exposed side over the whole height of the specimen such that the pressure at sill level is in the range of  $(2 \pm 2)$  Pa.

NOTE It is found that the pressure gradient over the height of the specimen is around 8,5 pascals per meter height.

## 7 Test specimen

### 7.1 Construction

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

### 7.2 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 10.2 to verify the door construction.

### 7.3 Size of specimen

The specimen shall be full size or the maximum size that can be accommodated in the furnace. The typical 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 typical 3 m × 3 m furnace, the opening in the supporting construction is restricted to 2,6 m × 2,8 m (width x height).

### 7.4 Installation of specimen

The specimen shall be mounted in a supporting construction having adequate fire resistance. 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 used in practice with the type of the supporting construction. The position of the door assembly in relation to the supporting construction shall be as in practice.

The clearances shall correspond to the maximum that is permissible by EN 81-1 and EN 81-2 when the lift landing doors are put into service, unless designed for another maximum gap size, which shall then apply.

## 8 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.

## 9 Conditioning

9.1 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 and EN 1634-1. 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 it is known that there will be no effect on the behaviour of the specimen or the fixing system.

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

## 10 Pre-test examination

### 10.1 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 operational.

## 10.2 Constructional details

A full detailed specification of the test specimen shall be provided by the test sponsor prior to its installation at the laboratory. This specification shall be to a level of detail sufficient to allow the laboratory to conduct 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.

When the method of construction precludes a detailed survey of the specimen, without having to permanently damage it or if it is considered that it will subsequently be impossible to evaluate construction details from post test examination, then one of two options shall be exercised by the laboratory, either:

- a) the laboratory shall request to oversee the manufacturing of the door or shutter assembly(ies) which is to be the subject of the test; or
- b) the sponsor shall be requested to supply an additional assembly or part of the assembly (e.g. a door leaf) to the number required for test. The laboratory shall then choose freely which of these shall be submitted to the test and which shall be used to verify the construction.

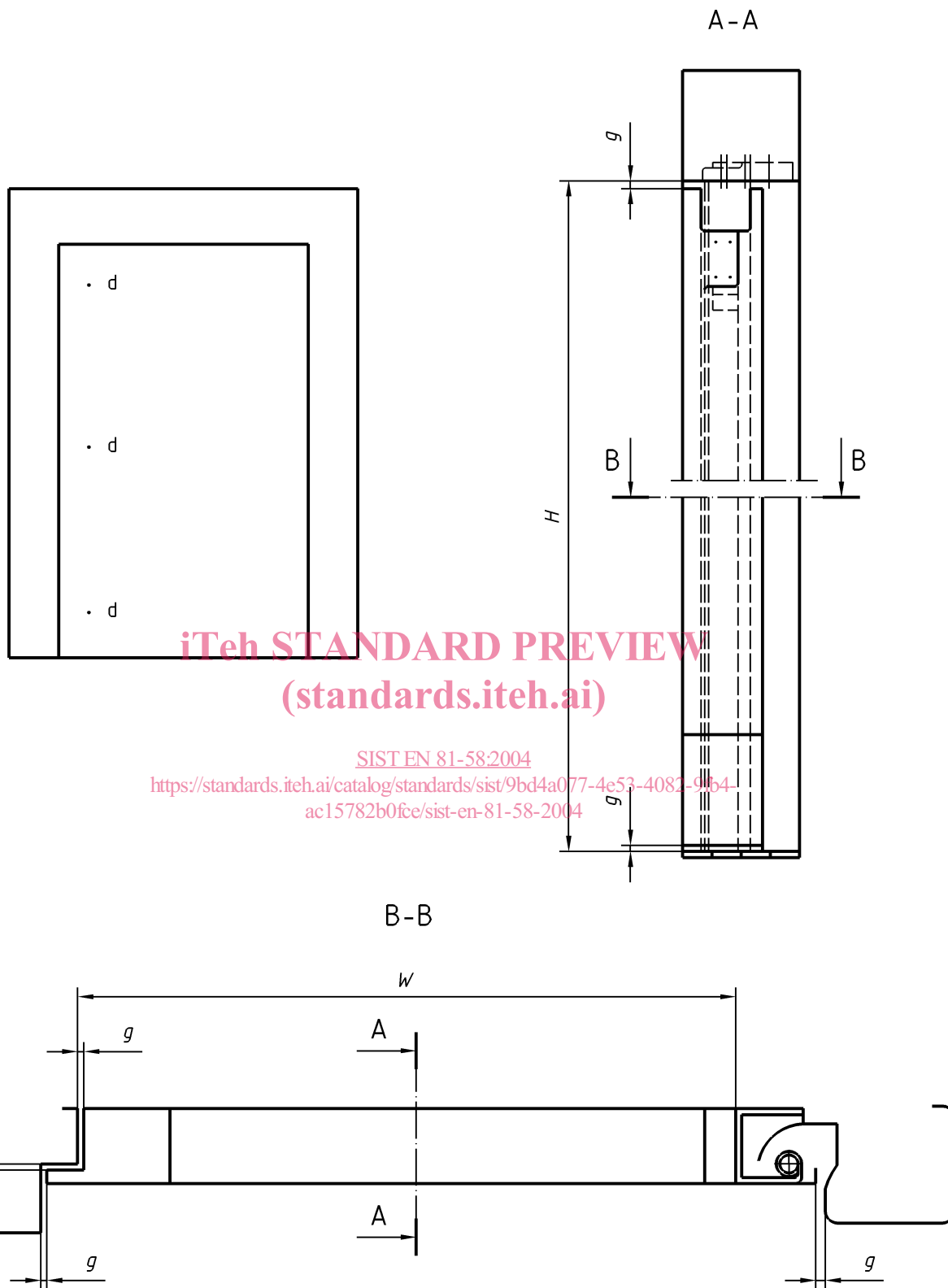
## 10.3 Clearance gap measurements and depth of penetration

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  $\pm 0,5$  mm. Figure 1 to Figure 4 show different types of lift landing doors and indicate the gaps (g) which need to be recorded. The depth of penetration and safety guides (if any) shall be measured and recorded.

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**Key**

- |   |                                  |   |              |
|---|----------------------------------|---|--------------|
| g | Gap measurement location         | H | Clear height |
| d | Deformation measurement location | W | Clear width  |

**Figure 1 — Clearance gaps (g) and deformation measurements (d) – Single panel swing door**