

**Liftide valmistamise ja paigaldamise ohutuseeskirjad.  
Erinõuded reisijate ja kauba liftidele. Osa 77: Liftid  
seismilistes tingimustes**

**Safety rules for the construction and installations of lifts  
- Particular applications for passenger and goods  
passenger lifts - Part 77: Lifts subject to seismic  
conditions**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 81-77:2013 sisaldab Euroopa standardi EN 81-77:2013 inglisekeelset teksti.	This Estonian standard EVS-EN 81-77:2013 consists of the English text of the European standard EN 81-77:2013.
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Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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ICS 91.120.25; 91.140.90

English Version

Safety rules for the construction and installations of lifts -  
Particular applications for passenger and goods passenger lifts -  
Part 77: Lifts subject to seismic conditions

Règles de sécurité pour la construction et l'installation des  
élévateurs - Applications particulières pour les ascenseurs  
et les ascenseurs de charge - Partie 77: Ascenseurs  
soumis à des conditions sismiques

Sicherheitsregeln für Konstruktion und Einbau von  
Aufzügen - Besondere Anwendungen für Personen- und  
Lastenaufzüge - Teil 77: Aufzüge unter  
Erdbebenbedingungen

This European Standard was approved by CEN on 21 September 2013.

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## Foreword

This document (EN 81-77:2013) 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of an identical text or by endorsement, at the latest by May 2014, and conflicting national standards shall be withdrawn at the latest by May 2014.

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).

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

This document is part of the EN 81 series of standards: “*Safety rules for the construction and installation of lifts*”. This is the first edition of this European Standard.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

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

This document is a Type C Standard as stated in EN ISO 12100.

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

The objective of this standard is to define additional safety rules related to passenger and goods/passenger-lifts with a view to safeguarding persons and objects against the risks described below associated with the use, maintenance, inspection and emergency operation of lifts subject to seismic conditions.

The aim of this European Standard is to:

- avoid loss of life and reduce the extent of injuries;
- avoid people trapped in the lift;
- avoid damage;
- avoid environmental problems related to oil leakage;
- reduce the number of lifts out of service.

It is assumed that negotiations have been made for each contract between the customer and the supplier/installer about the design acceleration ( $a_d$ ) to be considered and the most effective position of the seismic detection system, if any, and of the primary wave detection system, if any. The building designer or the lift owner should provide the design acceleration ( $a_d$ ) which will be documented in the information for the owner provided by the installer.

This European Standard covers only the effects of earthquakes and not the nature of them.

## 1 Scope

This European Standard specifies the special provisions and safety rules for passenger and goods passenger lifts where these lifts are permanently installed in buildings that are in compliance with EN 1998-1 (Eurocode 8).

This standard defines additional requirements to EN 81-1 and EN 81-2.

It applies to new passenger lifts and goods passenger lifts. However, it may be used as a basis to improve the safety of existing passenger and goods passenger lifts.

It does not apply to seismic lift category 0 as defined in Table A.1.

This European Standard does not address other risks due to seismic events (for example fire, flood, explosion).

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 81-1:1998+A3:2009, *Safety rules for the construction and installation of lifts — Part 1: Electric lifts*

EN 81-2:1998+A3:2009, *Safety rules for the construction and installation of lifts — Part 2: Hydraulic lifts*

EN 81-72:2003, *Safety rules for the construction and installation of lifts — Part 72: Firefighters lifts*

EN 1998-1:2004, *Eurocode 8: Design of structures for earthquake resistance — Part 1: General rules, seismic actions and rules for buildings*

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

ISO 7465:2007, *Passenger lifts and service lifts — Guide rails for lift cars and counterweights — T-type*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 81-1:1998+A3:2009 and EN 81-2:1998+A3:2009 and the following apply.

### 3.1

#### **snag point**

point of interference between flexible elements (for example ropes, chains, travelling cable, etc.) and fixed elements (for example by guide rail brackets, guide rail clip bolts, fishplates, vanes, and similar devices)

### 3.2

#### **design acceleration ( $a_d$ )**

horizontal acceleration to be used for calculation of forces – moments acting on lift systems and arising from seismic events (see Annex B)