

Mänguväljakute ja lõbustusparkide masinad ja struktuur - Ohutus

Fairground and amusement park machinery and
structures - Safety

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13814:2005 sisaldab Euroopa standardi EN 13814:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 25.01.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13814:2005 consists of the English text of the European standard EN 13814:2004.</p> <p>This document is endorsed on 25.01.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This European Standard specifies the minimum requirements necessary to ensure the safe design, calculation, manufacture, installation, maintenance, operation, examination and testing of the following: mobile, temporary or permanently installed machinery and structures e. g. roundabouts, swings, boats, ferris wheels, roller coasters, chutes, grandstands, membrane or textile structures, booths, stages, side shows, and structures for artistic aerial displays.</p>	<p>Scope: This European Standard specifies the minimum requirements necessary to ensure the safe design, calculation, manufacture, installation, maintenance, operation, examination and testing of the following: mobile, temporary or permanently installed machinery and structures e. g. roundabouts, swings, boats, ferris wheels, roller coasters, chutes, grandstands, membrane or textile structures, booths, stages, side shows, and structures for artistic aerial displays.</p>
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Fairground and amusement park machinery and structures - Safety

Machines et structures pour fêtes foraines et parcs
d'attraction - Sécurité

Fliegende Bauten und Anlagen für Veranstaltungsplätze
und Vergnügungsparks - Sicherheit

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Foreword

This document (EN 13814:2004) has been prepared by Technical Committee CEN/TC 152, "Fairground and amusement park machinery and structures - Safety", the secretariat of which is held by UNI.

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 June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

This European standard has been prepared under the mandate M/233 given to CEN by the European Commission and the European Free Trade Association. A European Directive concerning fairground and amusement machinery does not exist.

This European standard forms part of a series of two documents prepared by CEN/TC 152 for fairground and amusement park machinery and structures. The other document is prEN 13782, "Temporary structures – Tents – Safety"

In its present state this European Standard may require, where mentioned in the different clauses, the application of national standards since some of the basic EN-standards to be used in applying this European Standard are not yet available. The content of this European Standard brings together the different existing national regulations and guidelines as far as possible.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The object of this document is to define safety rules related to structures and machines, which are either an integral part of, or constitute the amusement device itself. The safety rules are intended to safeguard persons against the risk of accidents caused by deficiencies in design, manufacture and operation of such structures and machinery. This document is based upon past experience and risk analyses.

Annex A is an informative part of this document providing guidance on the calculation of structural steel parts.

Annexes B and C are normative parts of this document giving detailed and necessary calculation or safety rules.

Annex D (normative) deals with electrical installations and control systems.

Annex E (informative) deals with guidance on passenger containment.

Annex F (informative) shows a typical layout of a log book for an amusement device.

Annex G (informative) Acceleration effects on passengers.

Annex H (informative) Provisions prior to use.

Annex I (informative) List of Hazards for amusement rides.

1 Scope

This document specifies the minimum requirements necessary to ensure the safe design, calculation, manufacture, installation, maintenance, operation, examination and testing of the following: mobile, temporary or permanently installed machinery and structures e.g. roundabouts, swings, boats, ferris wheels, roller coasters, chutes, grandstands, membrane or textile structures, booths, stages, side shows, and structures for artistic aerial displays. The above items are hereafter called amusement devices, which are intended to be installed both repeatedly without degradation or loss of integrity, and temporarily or permanently in fairgrounds and amusement parks or any other locations. Fixed grandstands, construction site installations, scaffolding, removable agricultural structures and simple coin operated children's amusement devices, carrying not more than two children, are not covered by this document.

Nevertheless this document may be used in the design of any similar structural or passenger carrying device not explicitly mentioned herein.

Existing national rules on workers' safety are not concerned by this document.

This document is not applicable to amusement devices which are manufactured before the date of publication of this document by CEN.

2 Normative references

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 2, *Classification of fires.*

EN 3 (all parts), *Portable fire extinguishers.*

EN 286-1, *Simple unfired pressure vessels designed to contain air or nitrogen — Part 1: Pressure vessels for general purposes.*

EN 287 (all parts), *Approval testing of welders — Fusion welding.*

EN 288 (all parts), *Specification and qualification of welding procedures for metallic materials.*

EN 294:1992, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs.*

EN 418, *Safety of machinery — Emergency stop equipment, functional aspects — Principles for design.*

EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition.*

EN 696, *Fibre ropes for general service — Polyamide.*

EN 697, *Fibre ropes for general service — Polyester.*

EN 698, *Fibre ropes for general service — Manila and sisal.*

EN 699, *Fibre ropes for general service — Polypropylene.*

EN 700, *Fibre ropes for general service — Polyethylene.*

EN 701, *Fibre ropes for general service — General specification.*

EN 719, *Welding coordination — Tasks and responsibilities.*

EN 729-2, *Quality requirements for welding — Fusion welding of metallic materials — Part 2: Comprehensive quality requirements.*

EN 729-3, *Quality requirements for welding — Fusion welding of metallic materials — Part 3: Standard quality requirements.*

EN 818 (all parts), *Short link chain for lifting purposes — Safety.*

EN 919, *Fibre ropes for general service — Determination of certain physical and mechanical properties.*

EN 954-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design.*

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

EN 1176 (all parts), *Playground equipment.*

EN 1261, *Fibre ropes for general service — Hemp.*

EN 1418, *Welding personnel — Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

EN 1677 (all parts), *Components for slings — Safety.*

EN 10025, *Hot rolled products of non-alloy structural steels — Technical delivery conditions.*

EN 10027 (all parts), *Designation systems for steels.*

EN 10083-1+A1, *Quenched and tempered steels — Part 1: Technical delivery conditions for special steels.*

EN 10084, *Case hardening steels — Technical delivery conditions.*

EN 10160, *Ultrasonic testing of steel flat product of thickness equal to or greater than 6 mm (reflection method).*

EN 10164, *Steel products with improved deformation properties perpendicular to the surface of the product — Technical delivery conditions.*

EN 10204, *Metallic products — Types of inspection documents.*

EN 12385 (all parts), *Steel wire ropes — Safety.*

EN 13411 (all parts), *Terminations for steel wire ropes — Safety.*

EN 13889, *Forged steel shackles for general lifting purposes — Dee shackles and bow shackles — Grade 6; Safety.*

prEN 14399 (all parts), *High-strength structural bolting for preloading.*

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs (ISO 898-1:1999).*

EN ISO 4014, *Hexagon head bolts — Product grades A and B (ISO 4014:1999).*

EN ISO 4016, *Hexagon head bolts — Product grade C (ISO 4016:1999).*

EN ISO 4017, *Hexagon head screws — Product grades A and B (ISO 4017:1999).*

EN ISO 4018, *Hexagon head screws — Product grade C (ISO 4018:1999).*

EN ISO 4032, *Hexagon nuts, style 1 — Product grades A and B (ISO 4032:1999).*

EN ISO 4034, *Hexagon nuts — Product grade C (ISO 4034:1999).*

EN 13814:2004 (E)

EN ISO 5817, *Welding - Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) - Quality levels for imperfections (ISO 5817:2003)*

EN ISO 7090, *Plain washers, chamfered — Normal series — Product grade A (ISO 7090:2000)*.

EN ISO 12100-1, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*.

EN ISO 12100-2, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*.

EN 30042, *Arc-welded joints in aluminium and its weldable alloys — Guidance on quality levels for imperfections (ISO 10042:1992)*.

EN 45004, *General criteria for the operation of various types of bodies performing inspection*.

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

EN 60204-32, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines (IEC 60204-32:1998)*.

EN 60947 (all parts), *Low-voltage switchgear and controlgear*.

EN 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1 : General requirements and tests (IEC 61496-1:1997)*.

prEN 61496-2, *Safety of machinery — Electrosensitive protective equipment — Part 2 : Particular requirements for equipment using active optoelectronic protective devices (IEC 61496-2:-)*.

EN 61558-1, *Safety of power transformers, power supply units and similar — Part 1: General requirements and tests (IEC 61558-1:1997, modified)*.

ENV 1991-2-3, *Eurocode 1: Basis of design and actions on structures — Part 2-3: Actions on structures — Snow loads*.

ENV 1991-2-4:1995, *Eurocode 1: Basis of design and actions on structures — Part 2-4: Actions on structures — Wind actions*.

ENV 1992 (all parts), *Eurocode 2: Design of concrete structures*.

ENV 1993 (all parts), *Eurocode 3: Design of steel structures*.

ENV 1995-1-1, *Eurocode 5: Design of timber structures — Part 1-1: General rules and rules for buildings*.

ENV 1997-1, *Eurocode 7: Geotechnical design — Part 1: General rules*.

ISO 3755, *Cast carbon steels for general engineering purposes*.

ISO 6309, *Fire protection — Safety signs*.

ISO 7413, *Hexagon nuts for structural bolting, style 1, hot-dip galvanized (oversized tapped) — Product grades A and B — Property classes 5, 6 and 8*.

IEC 60364-4-41, *Electrical installations of buildings — Part 4-41: Protection for safety — Protection against electric shock*.

IEC 60364-5-54, *Electrical Installation of buildings — Part 5-54: Selection and erection of electrical equipment — Chapter 54: Earthing arrangements, protective conductors and protective bonding conductors*.

IEC 61508 (all parts), *Functional safety of electrical/electronic/programmable electronic safety related systems*.