RAUDTEEALASED RAKENDUSED. BALLASTITA PEALISEHITUS. OSA 2: KONSTRUKTSIOON, ALLSÜSTEEMID JA KOMPONENDID

Railway applications - Ballastless track systems - Part 2: System design, subsystems and components

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NATIONAL FOREWORD

See Eesti standard EVS-EN 16432-2:2017 sisaldab Euroopa standardi EN 16432-2:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 16432-2:2017 consists of the English text of the European standard EN 16432-2:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 09.08.2017.	Date of Availability of the European standard is 09.08.2017.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Bahnanwendungen - Feste Fahrbahn-Systeme - Teil 2: Systementwurf, Untersysteme und Komponenten

This European Standard was approved by CEN on 28 May 2017.

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European foreword

This document (EN 16432-2:2017) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

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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 2008/57/EC.

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

This European Standard is one of the series EN 16432 “*Railway applications — Ballastless track systems*” as listed below:

— *Part 1: General requirements;*

— *Part 2: System design, subsystems and components;*

— *Part 3: Acceptance (in preparation).*

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This part of the series EN 16432 covers the design of the ballastless track system, subsystems and components and is used in conjunction with the following parts:

— Part 1: General requirements;

— Part 3: Acceptance.

A ballastless track system may consist of, but is not limited to, subsystems and components shown in 5.1, Figure 1. Those items are designed in accordance with the requirements defined in this standard, or if applicable, other existing European standards.

NOTE Typical examples are rails defined in EN 13674–1, EN 13674–2 and EN 13674–3 or rail fastenings for ballastless track system defined in EN 13481–5.

1 Scope

This part of EN 16432 specifies system and subsystem design and component configuration for ballastless track system.

The system and subsystem design requirements are assigned from the general requirements of EN 16432-1. Where applicable, existing subsystem or component requirements from other standards are to be referenced.

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.

prEN 197-1:2014, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 206:2013+A1:2016, *Concrete — Specification, performance, production and conformity*

EN 1097-6:2013, *Tests for mechanical and physical properties of aggregates — Part 6: Determination of particle density and water absorption*

EN 1992 series, *Eurocodes*

EN 1992-1-1:2004, *Eurocode 2: Design of concrete structures — Part 1-1: General rules and rules for buildings*

EN 1992-2:2005, *Eurocode 2 — Design of concrete structures — Concrete bridges — Design and detailing rules*

prEN 13043:2015, *Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas*

EN 13108-1:2016, *Bituminous mixtures — Material specifications — Part 1: Asphalt Concrete*

EN 13108-5:2016, *Bituminous mixtures — Material specifications — Part 5: Stone Mastic Asphalt*

EN 13230-1:2016, *Railway applications — Track — Concrete sleepers and bearers — Part 1: General requirements*

EN 13230-2:2016, *Railway applications — Track — Concrete sleepers and bearers — Part 2: Prestressed monoblock sleepers*

EN 13230-3:2016, *Railway applications — Track — Concrete sleepers and bearers — Part 3: Twin-block reinforced sleepers*

EN 13230-4:2016, *Railway applications — Track — Concrete sleepers and bearers — Part 4: Prestressed bearers for switches and crossings*

EN 13230-5:2016, *Railway applications — Track — Concrete sleepers and bearers — Part 5: Special elements*

prEN 13230-6:2015, *Railway applications — Track — Concrete sleepers and bearers — Part 6: Design*

EN 13242:2002+A1:2007, *Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction*

EN 13286-47:2012, *Unbound and hydraulically bound mixtures — Part 47: Test method for the determination of California bearing ratio, immediate bearing index and linear swelling*

EN 13481 (all parts), *Railway applications — Track — Performance requirements for fastening systems*

EN 13674-1:2011+A1:2017, *Railway applications — Track — Rail — Part 1: Vignole railway rails 46 kg/m and above*

EN 13674-2:2006+A1:2010, *Railway applications — Track — Rail — Part 2: Switch and crossing rails used in conjunction with Vignole railway rails 46 kg/m and above*

EN 13674-3:2006+A1:2010, *Railway applications — Track — Rail — Part 3: Check rails*

EN 13877-1:2013, *Concrete pavements — Part 1: Materials*

EN 13877-2:2013, *Concrete pavements — Part 2: Functional requirements for concrete pavements*

EN 13877-3:2004, *Concrete pavements — Part 3: Specifications for dowels to be used in concrete pavements*

EN 14227-1:2013, *Hydraulically bound mixtures — Specifications — Part 1: Cement bound granular mixtures*

EN 16432-1:2017, *Railway applications — Ballastless track systems — Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply as well as terms and definitions according to EN 16432-1.

3.1
filling layer
monolithic structure connecting prefabricated elements or subsystems of a ballastless track system and establishing load transfer to the pavement or any supporting structure

3.2
pavement
continuous, layered structure that forms a hard and durable surface and it is designed to provide bearing capacity

3.3
system design
process of applying a systematic approach to ensure that all elements specified will work together to fulfil the performance requirements

Note 1 to entry: This process involves dealing with the general requirements for ballastless track systems as defined in EN 16432–1 and combining these into a set of scenarios to analyse and resolve in order to provide final dimensioning and a satisfactory specification.

3.4
track stiffness
resistance of the entire track structure to deformation in relation to the applied force