SVENSK STANDARD
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Del 1: Smidda och valsade hjul

Railway applications – Wheelsets and bogies – Monobloc wheels – Technical approval procedure –
Part 1: Forged and rolled wheels

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Denna standard ersätter SS-EN 13979-1:2004+A1:2009, utgåva 1.

The European Standard EN 13979-1:2003+A2:2011 has the status of a Swedish Standard. This document contains the official English version of EN 13979-1:2003+A2:2011.

This standard supersedes the Swedish Standard SS-EN 13979-1:2004+A1:2009, edition 1.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

Standarden är framtagen av kommittén för Järnvägar, SIS/TK 254.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13979-1:2003+A2

March 2011

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Supersedes EN 13979-1:2003+A1:2009

English Version

Railway applications - Wheelsets and bogies - Monobloc wheels - Technical approval procedure - Part 1: Forged and rolled wheels

Applications ferroviaires - Essieux montés et bogies - Roues monobloc - Procédure d'homologation technique - Partie 1: Roues forgées et laminées

Bahnanwendungen - Radsätze und Drehgestelle - Vollräder - Technische Zulassungsverfahren - Teil 1: Geschmiedete und gewalzte Räder

This European Standard was approved by CEN on 3 November 2003 and includes Amendment 1 approved by CEN on 24 February 2009 and Amendment 2 approved by CEN on 24 January 2011.

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Foreword

This document (EN 13979-1:2003+A1:2009) 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 30 September 2011, and conflicting national standards shall be withdrawn at the latest by 30 September 2011.

This document includes Amendment 1, approved by CEN on 2009-02-24.

This document supersedes EN 13979-1:2003.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1⟩ ⟨A1].

Annexes A and B are normative.

[A1⟩ Annexes C, D, E and F are informative. ⟨A1]

This document contains a bibliography.

This European Standard is part of a series of two EN 13979 standards, Part 2 of which is:

[A1⟩ Part 2: Cast wheels. ⟨A1]

[A2⟩ This document has been created under a mandate granted to CEN/CENELEC/ETSI by the European Commission and the European Free Trade Association and supports the essential requirements of Directive 2008/57/EC. ⟨A2]

[A2⟩ For the relationship with Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document. ⟨A2]

Introduction

To date, UIC regulations specified that for a wheel to be used in Europe:

— its design had to be standardized;

— it had to conform to the quality requirements of UIC leaflet 812-3.

In order to be able to adapt to new railway working conditions, on the one hand, and to facilitate the introduction of new technical solutions, on the other, it has been necessary to replace the concept of standardization with the definition of specifications that a wheel design shall meet to be accepted on a European network.

The standard covers these specifications and describes precisely how to assess the wheel design.

To be able to apply these specifications, it is essential to define the use of the wheel; this standard also states how to define this use.

At least four aspects are described with different purposes:

— a geometrical aspect: to allow interchangeability of different solutions for the same application;

— a thermomechanical aspect: to manage wheel deformations and to ensure that braking will not cause wheels to break;

— a mechanical aspect: to ensure that no fatigue cracks occur in the web;

— an acoustical aspect: to ensure that the solution chosen is as good as the reference wheel, for the use in question.

For each of these three latter aspects, the rules proposed tend to limit the procedure, the easier the objectives are to attain by the wheel under study.

This standard does not cover assessment of the hub nor of the static mechanical dimensioning of the wheel.

1 Scope

The aim of this European Standard is to define the requirements that a monobloc wheel of a freight of passenger railway vehicle non-powered axle shall meet in order to be able to be used on a European network.

For wheels of powered axles or wheels with noise dampers, the requirements may be amended or supplemented.

For light vehicles and tramways, other standards or documents accepted by the customer and supplier may be used.

This European Standard only applies to wheels of new design.

These requirements are intended to assess the validity of the design choice for the proposed use.

The assessment of these requirements is the technical approval procedure.

This European Standard is applicable to forged and rolled wheels for which the quality requirements are defined in ⟦A1⟩ EN 13262 ⟨A1⟧.

2 Normative references

⟦A1⟩ 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. ⟨A1⟧

EN 12668-3, *Non-destructive testing – Characterization and verification of ultrasonic examination equipment – Part 3: Combined equipment*

EN 13103, *Railway applications – Wheelsets and bogies – Non-powered axles – Design* ⟦A1⟩ *guide* ⟨A1⟧

⟦A1⟩ EN 13262 ⟨A1⟧, *Railway applications – Wheelsets and bogies – Wheels – Product requirements*

3 Parameters for the definition of the application covered

The application for which the wheel is to be approved shall be defined by the following parameters.

If the application parameters are changed for an approved wheel, the customer and supplier shall review the assessments.

3.1 Parameters for geometrical interchangeability

The application shall be defined by geometrical interchangeabliity parameters divided into three categories according to whether they are linked to functional, assembly or maintenance requirements.

3.1.1 Functional requirements

— the nominal tread diameter that influences the buffer height and the loading gauge;

— the maximum rim width linked to the points and crossing and the track brakes;

— the tread profile outside the conical part of the tread;

— the position of the rim internal surface relative to the corresponding surface of the hub;

— the conicity of the hub bore;

— the space required for disc brakes mounted on the wheel;

— the space needed on the bogie frame, braking equipment and suspension equipment.

3.1.2 Assembly requirements

— the bore diameter;

— the hub length to ensure overhanging of the hub on the wheelseat.

3.1.3 Maintenance requirements

— the wear limit diameter or the last reprofiling diameter;

— the wear groove shape;

— the geometry of the area for wheel clamping on reprofiling machines;

— the position and shape of the hole and groove for displacement under oil pressure;

— the general rim shape to allow ultrasonic measurement of residual stresses in wheels braked by shoes.

3.2 Parameters for thermomechanical assessment

The application shall be defined by:

— the maximum braking energy created by the friction of the brake shoes on the rail surface. This energy may be defined by a power P_a, a time t_a and a train speed V_a during drag braking. If it is defined by other parameters (for braking to a stop, for example), these parameters are defined by agreement between the customer and the supplier;

— the type of brake shoes applied to the wheel (nature, dimensions and number).

〚A1〛 NOTE For interoperable freight rolling stock, the thermomechanical behavior does not need to be verified when braking to a stop, but only drag braking, because of the lower energy in stop braking. 〚A1〛

3.3 Parameters for mechanical assessment

The application shall be defined by:

— the maximum vertical static force per wheelset;

— the type of service to be provided by the vehicles that will be fitted with the wheels to be approved:

  — description of the lines: geometric quality of the tracks, curve parameters, maximum speeds ... ;

  — running times on these lines;

— the calculated service life of the wheel, in kilometres.