SVENSK STANDARD
SS-EN 13674-4:2019

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Järnvägar – Spår – Räler –
Del 4: Vignolräler från 27 kg/m och upp till, men ej inkluderat, 46 kg/m

Railway applications – Track – Rail –
Part 4: Vignole railway rails from 27 kg/m to, but excluding 46 kg/m

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Standards make the world go round

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Europastandarden EN 13674-4:2019 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 13674-4:2019.

Denna standard ersätter SS-EN 13674-4:2006+A1:2009, utgåva 1.

The European Standard EN 13674-4:2019 has the status of a Swedish Standard. This document contains the official version of EN 13674-4:2019.

This standard supersedes the SS-EN 13674-4:2006+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 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, who can also provide general information about Swedish and foreign standards.

Denna standard 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 13674-4

April 2019

ICS 93.100

Supersedes EN 13674-4:2006+A1:2009

English Version

Railway applications - Track - Rail - Part 4: Vignole railway rails from 27 kg/m to, but excluding 46 kg/m

Applications ferroviaires - Voie - Rails - Partie 4 : Rails Vignole de masse comprise entre 27 kg/m et 46 kg/m, 46 kg/m non compris

Bahnanwendungen - Oberbau - Schienen - Teil 4: Vignolschienen mit einer längenbezogenen Masse zwischen 27 kg/m und unter 46 kg/m

This European Standard was approved by CEN on 14 December 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

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

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European foreword

This document (EN 13674-4:2019) 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 October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13674-4:2006+A1:2009.

This part of EN 13674 is the fourth one of the series EN 13674, *Railway applications — Track — Rail*, which consists of the following parts:

— *Part 1: Vignole railway rails 46 kg/m and above*;

— *Part 2: Switch and crossing rails used in conjunction with Vignole railway rails 46 kg/m and above*;

— *Part 3: Check rails*;

— *Part 4: Vignole railway rails from 27 kg/m to, but excluding 46 kg/m*.

Other published standards include the following:

— EN 14587-1, *Railway applications – Infrastructure – Flash butt welding of new rails – Part 1: R220, R260, R260Mn, R320Cr, R350HT, R350LHT, R370CrHT and R400HT grade rails in a fixed plant*;

— EN 14587-2, *Railway applications – Track - Flash butt welding of rails – Part 2: New R220, R260, R260Mn and R350HT grade rails by mobile welding machines at sites other than a fixed plant*;

— EN 14587-3, *Railway applications – Track - Flash butt welding of rails – Part 3: Welding in association with crossing construction*;

— EN 14730-1, *Railway applications – Track - Aluminothermic welding of rails – Part 1: Approval of welding processes*;

— EN 14730-2, *Railway applications – Track - Aluminothermic welding of rails – Part 2: Qualification of aluminothermic welders, approval of contractors and acceptance of welds*;

— EN 14811, *Railway applications – Track - Special purpose rail - Grooved rails and associated construction profiles*;

— EN 15594, *Railway applications – Track - Restoration of rails by electric arc welding*;

— EN 16273, *Railway applications – Track - Forged rail transitions*.

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 Introduction provides an explanation of the concepts and reasoning used in the drafting of this document. Its inclusion also ensures that during future revisions, restrictions are removed where technology progresses and held where it does not, thus ensuring continued safety as new manufacturers, products and technologies are introduced.

The most commonly used standards of the world for the supply of railway rails have been reviewed during the preparation of this document. However, modern rail production technology within the European Union has demanded a completely new look at the philosophy and content of this part of EN 13674.

Whenever possible this part of EN 13674 is performance based, recognizes the European Quality System standard EN ISO 9001 and requires manufacturers to offer the latest proven technology to consistently satisfy the demanding quality of the required product.

Rail grading is based on hardness rather than tensile strength.

The acceptance tests have been designed to control those characteristics of the rail steel and rail that are of relevance to the production of high quality rails and the demands of the railway.

The steel grades covered by this part of EN 13674 reflect trends in railway usage and heat-treated rails are included. This document includes rail profiles for Vignole rails having a linear mass from 27 kg/m to, but excluding 46 kg/m.

To ensure the supply of high quality rails, some restrictions on production processes have been imposed.

This document supersedes national standards covered by the Scope. In addition CEN required, where possible, a performance based standard, taking into account safety implications and at the same time addressing modern production technology. It was recognized that there would be few opportunities (and these would have to be for transparent safety considerations) for derogation from this document to operate between the user and the manufacturer.

This document reflects this change in philosophy from the traditional content of rail standards. A review was undertaken of the most commonly used rail standards of the world. All relevant aspects important to both user and manufacturer were considered with the aim of ensuring that all of the content had specific usefulness and relevance. For example rail grading and much of this document has been based on hardness rather than tensile strength. While the two are directly related, hardness is very quick and cheap to carry out and provides more relevant guidance to the user particularly where properties vary in different parts of the profile.

Since many rail manufacturers would not have previously carried out proving trials, this document includes a prerequisite for all manufacturers to prove conformity against a set of qualifying test criteria at the time of tendering. The qualifying tests include all “normal” acceptance test results plus new ‘type-casting’ features such as fracture toughness, fatigue and residual stress (see EN 13674-1). To provide users with the necessary confidence, acceptance limits have been based on results from rail known to have performed well in demanding track installations.

One aspect of this document, which is a complete break from tradition, is the inclusion of quality assurance and inspection clause as part of product integrity.

So that quality management systems are consistent across all manufacturers and that users have the best assurance for the consistency of required product quality on this safety critical component of the track, the rail standard requires that the manufacturers' quality assurance systems are at least equivalent to the requirements of a quality management standard such as EN ISO 9001. The inclusion of this requirement also reduces the need to incorporate detailed method and calibration descriptions on items such as normal chemical composition determination and the need to define more extensive testing.

Ideally, manufacturing techniques should not be referenced in a product standard. However, some rail attributes are either not known in an exact manner or are not measurable with satisfactory statistical significance. In such cases best practice manufacturing techniques have been included as a last resort. The equipment specified is that which gives the best probability of achieving the required product for use in track. In the future new technology can add to, but preferably will reduce or delete such items.

Examples of areas where the technological state of the art renders the standard less than complete include:

— oxide/oxygen relationships;

— hydrogen test techniques;

— roller straightening effects on residual stresses;

— roller straightening effects on contact scrub;

— measurement and effect of residual stresses throughout the rail.