SLOVENSKI STANDARD
SIST EN 15085-6:2022

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Železniške naprave - Varjenje železniških vozil in komponent - 6. del: Zahteve za vzdrževalno varjenje

Railway applications - Welding of railway vehicles and components - Part 6: Maintenance welding requirements

Bahnanwendungen - Schweißen von Schienenfahrzeugen und -fahrzeugteilen - Teil 6: Anforderungen für die schweißtechnische Instandsetzung

Applications ferroviaires - Soudage des véhicules et des composants ferroviaires - Partie 6 : Exigences pour le soudage en maintenance

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ICS:

25.160.10	Varilni postopki in varjenje	Welding processes
45.060.01	Železniška vozila na splošno	Railway rolling stock in general

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English Version

Railway applications - Welding of railway vehicles and components - Part 6: Maintenance welding requirements

Applications ferroviaires - Soudage des véhicules ferroviaires et des pièces - Partie 6 : Exigences de soudage en maintenance

Bahnanwendungen - Schweißen von Schienenfahrzeugen und -fahrzeugteilen - Teil 6: Anforderungen für die schweißtechnische Instandsetzung

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

European foreword

This document (EN 15085-6:2022) 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of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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 series of European Standards EN 15085 “*Railway applications — Welding of railway vehicles and components*” consists of the following parts:

— *Part 1: General;*

— *Part 2: Requirements for welding manufacturers;*

— *Part 3: Design requirements;*

— *Part 4: Production requirements;*

— *Part 5: Inspection, testing and documentation;*

— *Part 6: Maintenance welding requirements.*

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

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

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

Welding is a special process in the manufacture of railway vehicles and their parts. The required provisions for this process are laid down in the standards series EN ISO 3834. The basis of these provisions is the basic technical welding standards with respect to the special requirements for the construction of railway vehicles.

This series of standards applies to welding of metallic materials in the manufacture and maintenance of railway vehicles and their parts.

It describes the control for the welding process for railway vehicles and their components for new manufacture and maintenance.

With respect to the railway environment, this series of standards defines the quality requirements for the welding manufacturer to undertake new building and repair work.

Components, parts and subassemblies are assigned a classification level, based on their safety relevance. According to these levels, qualifications for welding personnel of the manufacturer are specified.

This series provides an essential link between the weld performance class defined during design, the quality of the weld, and the demonstration of the required quality by inspection.

This series of standards does not deal with product qualification.

NOTE This series standard can also be used by internal and external parties, including certification bodies, to assess the organization's ability to meet customer, regulatory and the organization's own requirements.

1 Scope

This document defines the quality requirements as well as the design and production requirements for welding to be followed by manufacturers during maintenance or maintenance activities on railway vehicles and components.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 13306:2017, *Maintenance — Maintenance terminology*

EN 15085-1: -[1], *Railway applications — Welding of railway vehicles and components — Part 1: General*

EN 15085-2:2020, *Railway applications — Welding of railway vehicles and components — Part 2: Requirements for welding manufacturer*

EN 15085-3:-[2], *Railway applications — Welding of railway vehicles and components —Part 3: Design requirements*

EN 15085-4:-[3], *Railway applications — Welding of railway vehicles and components — Part 4: Production requirements*

EN 15085-5:-[4], *Railway applications — Welding of railway vehicles and components — Part 5: Inspection, testing and documentation*

EN 17018:2019, *Railway applications — Rolling stock maintenance — Terms and definitions*

EN ISO 3834-1:2021, *Quality requirements for fusion welding of metallic materials — Part 1: Criteria for the selection of the appropriate level of quality requirements (ISO 3834-1:2021)*

EN ISO 3834-2:2021, *Quality requirements for fusion welding of metallic materials — Part 2: Comprehensive quality requirements (ISO 3834-2:2021)*

EN ISO 3834-3:2021, *Quality requirements for fusion welding of metallic materials — Part 3: Standard quality requirements (ISO 3834-3:2021)*

EN ISO 3834-4:2021, *Quality requirements for fusion welding of metallic materials — Part 4: Elementary quality requirements (ISO 3834-4:2021)*

EN ISO 3834-5:2021, *Quality requirements for fusion welding of metallic materials — Part 5: Documents with which it is necessary to conform to claim conformity to the quality requirements of ISO 3834-2, ISO 3834-3 or ISO 3834-4 (ISO 3834-5:2021)*

EN ISO 15613:2004, *Specification and qualification of welding procedures for metallic materials — Qualification based on pre-production welding test (ISO 15613:2004)*

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[1] Under preparation. Stage at time of publication: prEN 15085-1:2021.
[2] Under preparation. Stage at time of publication: FprEN 15085-3:2022.
[3] Under preparation. Stage at time of publication: prEN 15085-4:2020.
[4] Under preparation. Stage at time of publication: prEN 15085-5:2020.

EN ISO 15614-1:2017, [5] *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2017, Corrected version 2017-10-01)*

EN ISO 15614-2:2005, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 2: Arc welding of aluminium and its alloys (ISO 15614-2:2005)*

EN ISO 15614-3:2008, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 3: Fusion welding of non-alloyed and low-alloyed cast irons (ISO 15614-3:2008)*

EN ISO 15614-4:2005, [6] *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 4: Finishing welding of aluminium castings (ISO 15614-4:2005)*

EN ISO 15614-7:2019, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 7: Overlay welding (ISO 15614-7:2016)*

EN ISO 15614-11:2002, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 11: Electron and laser beam welding (ISO 15614-11:2002)*

EN ISO 15614-12:2014, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 12: Spot, seam and projection welding (ISO 15614-12:2014)*

EN ISO 15614-13:2012, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 13: Upset (resistance butt) and flash welding (ISO 15614-13:2012)*

CEN ISO/TR 15608:2017, *Welding — Guidelines for a metallic materials grouping system*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15085-1:-[1], EN 17018:2019 and in EN 13306:2017 as well as the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
repair
physical action taken to restore the required function of an entity treated either in position or removed

3.2
maintenance plan
railway vehicle or component based structured document containing a set of planned maintenance activities and their maintenance interval limits based upon information in the maintenance manual

[SOURCE: EN 17018:2019, 3.1.4]

[5] Document impacted by A1:2019.
[6] Document impacted by AC:2007.

3.3
vehicle file
collection of documents containing evidence to prove that the maintenance has been performed in accordance with the maintenance plan information on the vehicle configuration and other vehicle specific information

[SOURCE: EN 17018:2019, 3.1.10]

4 Quality requirements for welding during maintenance

4.1 General

For maintenance welding of railway vehicles and their components, EN 15085-4:-[3] shall be applied.

For maintenance welding all necessary information about the vehicle such as documentation of vehicle manufacturer (drawings, operation manuals, manufacturer requirements) as well as special guidelines and working instructions should be available.

If damage occurs repeatedly on similar components or if a maintenance welding activity introduces a change with respect to the original drawing, all involved parties shall be informed.

4.2 Welding coordination

In addition to the experience requirements mandated by the classification level defined in EN 15085-2:2020, given the specific nature of maintenance welding, the responsible welding coordinator shall have experience in maintenance. This experience shall be proven by documentary evidence.

4.3 Conditions for welding

4.3.1 General

All welding should be carried out within a suitable workshop. However, welding may be carried out outside a workshop providing the conditions given in 4.3.2 and 4.3.3 are satisfied.

4.3.2 Welding outside a workshop

Welding outside a welding workshop shall only be carried out if the following conditions are fulfilled:

— Welding shall be performed in accordance with EN 15085 (all parts).

— The environmental conditions (e.g. wind, rain, relative humidity, temperature, accessibility etc.) shall be taken into account to ensure the quality of the welding operation.

— The supporting documentation shall include any special conditions that shall be met in order to return the vehicle back to service.

4.3.3 Welding to enable running for transfer purposes

If welding is required only to ensure safe movement of a railway vehicle to the nearest appropriate workshop, it shall not be considered as a maintenance activity as defined in the scope of this standard.

A description of the welding activities undertaken, including the location of any additional welds, shall be documented to support any special conditions that shall be met in order to move the vehicle.

4.4 Restrictions or prohibitions of welding

With the exclusion of original existing welds, welding is generally not allowed on the following components. If derogations from the prohibitions listed below are required, these shall be validated and documented during the design review and the responsibilities of the relevant personnel defined.

Where welding is permitted by a derogation, the details of the welding repair shall be documented and recorded in detail in the vehicle file.

a) Monobloc wheels, wheels with separate tyres and spoked wheels;

b) Rims, flanges;

c) Axle bodies;

d) Suspension arms, axle boxes, and parts of guiding of wheelset axles;

e) Crank pins (in relation with connecting rod);

f) Springs of all kind, suspension ring;

g) Oscillation damper;

h) Quenched components;

i) Screw couplings;

j) Welding of riveted assemblies;

The welding of bolt heads and nuts is not permitted without evidence of their weldability.

5 Design requirements for components manufactured prior to the implementation of EN 15085-3:-[2] or where no manufacturing drawings exist

5.1 Determination of the applicable weld performance classes

The applicable weld performance class shall be defined, validated and documented during the design review. One of the following methods should be used:

a) Based on the safety category of the weld

   If the stress level of the weld is unknown, the highest possible weld performance class related to the safety category of the weld is used, see EN 15085-3:-[2].

b) By calculation

   The weld performance class should be determined by calculation to determine the stress category and application of the safety category according to EN 15085-3:-[2].

c) Based on the classification level of the component

   If the stress level and the safety category of the weld are unknown, the weld performance class is defined in accordance with Table 1.