SLOVENSKI STANDARD
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Železniške naprave - Varjenje železniških vozil in sestavnih delov - 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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Railway applications - Welding of railway vehicles and components - Part 6: Maintenance welding requirements

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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

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European foreword

This document (prEN 15085-6:2020) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

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.*

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 in respect of the special requirements for the construction of railway vehicles.

This document aims to define the terms of enforcement applicable to European standards. It should not be construed as a substitute to these standards.

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

1 Scope

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

This part of the series defines the classification levels as well as the requirements for manufacturers of welded railway vehicles and components during maintenance or maintenance activities.

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 1011 (all parts), *Welding — Recommendations for welding of metallic materials*

EN 10025-2:2019, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 13306:2017, *Maintenance - Maintenance terminology*

EN 15085 (all parts), *Railway applications — Welding of railway vehicles and components*

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

EN ISO 3834 (all parts), *Quality requirements for fusion welding of metallic materials*

EN ISO 15614-(all parts),[1] *)*, Specification and qualification of welding procedures for metallic materials — Welding procedure test

[1] For railway applications, only EN ISO 15614-1, EN ISO 15614-2, EN ISO 15614-3, EN ISO 15614-4, EN ISO 15614-7, EN ISO 15614-11, EN ISO 15614-12, and EN ISO 15614-13 are relevant.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15085-1, EN 17018 and in EN 13306 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

[SOURCE: EN 17018]

3.2
temporary repair
physical action taken to allow a faulty item to perform its required function for a limited time interval and until a repair is carried out

[SOURCE: EN 13306]

3.3
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]

3.4
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]

4 Quality requirements for welding during maintenance

4.1 General

For maintenance welding of railway vehicles and their components, the standard EN 15085-4 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 classification level defined in EN 15085-2:2007, 5.3, given the specific nature of maintenance welding, the responsible welding coordinator shall have experience in maintenance.

Experience shall be consistent with the classification level and typical activities carried out by the manufacturer and shall be proven by documentary evidence according to EN 15085-2:2007, Annex D.

4.3 Conditions for welding

4.3.1 General

All welding should be carried out within a suitable workshop. However, welding outside a workshop or welding temporary repair may be carried out if the additional provisions given in 4.3.2 and 4.3.3 are respected.

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.

— Welding shall be performed in accordance with the recommendations of the EN 1011 series. 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 documentation shall include any special conditions that have to be met to put the vehicle back in service.

If conditions above cannot be accomplished, welding outside a workshop shall be considered as a temporary repair, see 4.3.3.

4.3.3 Welding temporary repair

Welding temporary repairs are carried out only to ensure safe movement of a railway vehicle to the nearest appropriate workshop. They shall not be considered as a maintenance activity as defined in the scope of this standard.

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

4.4 Restrictions or prohibitions of welding

Welding is not allowed on the following components:

a) Monobloc wheels, wheels with separate tire and spoke wheel;

NOTE 1 Exception: hub bore hole; repair of spokes with special agreement.

b) Rim, flange;

NOTE 2 Exception: with special agreement.

c) Body of axle;

NOTE 3 Exception: overlay welding of centre holes in wheelset axles.

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

NOTE 4 Exception: welding of wear plates on axle boxes, only if the cases of axle boxes are dismounted.

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

NOTE 5 Exception: overlay welding.

f) Springs of all kind, suspension ring;

NOTE 6 Exception: spring buckle of load carrying springs.

g) Oscillation damper;

NOTE 7 Exception: connection welding with special agreement.

h) Quenched components;

NOTE 8 Exception: quenched fine grain steel.

i) Connection and surfacing welding on screw coupling.

NOTE 9 Exception: head plate of the turnbuckle is permitted. Other exceptions can exist with special guidance.

The welding on bolt heads and nuts is not permitted without the evidence of its weldability.

The maintenance welding in the rivet assembly shall not be permitted. Exceptions can exist with agreement.

For all those restrictions or prohibitions of welding, derogations shall be documented and validated during design review, and relevant responsibilities shall be defined.

5 Design requirements for components with welding drawings prior to the publication of EN 15085-3 or if no drawings exist

5.1 Determination of the applicable weld performance classes

The performance class is defined and validated during the design review.

The combination of high safety category and high stress category should be avoided. A new type of repair should be designed. If the combination of high safety category and high stress category is unavoidable, see 7.2.

The applicable weld performance class shall be defined and validated.

One of the following methods prior to commencement of welding should be used:

a) On the basis of 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 15085-3:2007, Table 3.

b) On the basis of calculations

If the weld performance class is unknown, it is determined according to EN 15085-3, based on a calculation to define the stress level and the safety category request.

c) On the basis of the classification level of the component