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Railway applications - Welding of railway vehicles and components - Part 2: Requirements for welding manufacturer

Bahnanwendungen - Schweißen von Schienenfahrzeugen und -fahrzeugteilen - Teil 2: Anforderungen an Schweißbetriebe

Applications ferroviaires - Soudage des véhicules et des composants ferroviaires - Partie 2 : Exigences de qualité du constructeur

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Railway applications - Welding of railway vehicles and components - Part 2: Requirements for welding manufacturer

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European foreword

This document (EN 15085-2:2020) 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of an identical text or by endorsement, at the latest by April 2021, and conflicting national standards shall be withdrawn at the latest by April 2021.

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 15085-2:2007. The main changes compared to the previous edition are listed below:

a) Requirements for certification of manufacturer have been deleted;

b) Classification levels and activities of manufacturers have been defined.

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.*

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Introduction

Welding is a special process in the manufacture of railway vehicles and their parts.

The general requirements for welding process control are defined in the EN ISO 3834 and EN ISO 14554 series of standards. The EN 15085 series of standards supplements those requirements and defines special requirements for the construction and maintenance of railway vehicles.

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 document defines the classification levels for welded components, the types of activity typically undertaken and the requirements to be fulfilled to demonstrate conformance.

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

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

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

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

EN 15085-6,[1] *Railway applications - Welding of railway vehicles and components - Part 6: Maintenance welding requirements*

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

EN ISO 14554 (all parts), *Quality requirements for welding - Resistance welding of metallic materials*

EN ISO 14731:2019, *Welding coordination - Tasks and responsibilities (ISO 14731:2019)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15085-1 and the following apply.

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

[1] Under preparation. Stage at the time of publication: prEN 15085-6.

3.1
safety relevance
description of the consequences of a failure of a welded component with respect to the effects on persons, facilities and the environment

Note 1 to entry: The safety relevance of a welded component is distinguished as follows:

Low: Failure of the welded component does not lead to any direct impairment of the overall function. Consequential events with personal injuries are unlikely

Medium: Failure of the welded component leads to an impairment of the overall function and/or may lead to consequential events with personal injuries

High: Failure of the welded component leads to consequential events with personal injuries and breakdown of the overall function

Note 2 to entry: Safety relevance assessment should be done according to EN 50126 series.

4 Classification levels and activities of manufacturers

4.1 Classification level

Manufacturers and the components they weld are classified in three levels depending on the safety relevance of the welded component (see 3.1).

The classification levels are defined as follows:

CL 1 For welded railway vehicles and their welded components with high safety relevance.

CL 2 For welded components of railway vehicles with medium safety relevance. (Welded joints with high safety category according to EN 15085-3 are not permitted)

CL 3 For welded components of railway vehicles with low safety relevance. (Welded joints with high or medium safety category according to EN 15085-3 are not permitted)

Table 1 allocates the most common components of railway vehicles in classification levels.

Deviations from the classification given in Table 1 are permitted.

Deviations that result in a lower classification than the ones given in Table 1 shall be documented and justified. The approach for safety relevance assessment given in the EN 50126 series of standards may be used for this purpose.

Table 1 — Allocation of components to their classification level

CL	Component
CL 1	New build, conversion and repair of rail vehicles and their components Examples for components: — bogies (headstocks, solebars, cross bearers, bogie frames); — underframes of locomotives, passenger rolling stock and freight wagons (extensions, solebars, cross bearers, bolsters, assembly); — car bodies (end and side walls, roof, driver cabin, floor plate assembly, energy absorption modules, anti-climbers); — freight wagon assembly (e.g. floor plates of car transporters, load fixing elements); — draw and buffing gear; — supporting frames, brackets and tensioning straps for exterior equipment (e.g. tanks, electrical, air-conditioning and compressed air containers); — wheelset mountings, axleboxes, spring supports, shock absorbers, vibration dampers; — brake equipment (magnetic track brake, brake rods, brake triangles, brake cylinders, brake cross beams); — supporting frames for heavy duty vehicles including road/rail vehicles; — welded components for drag transmission from bogie to vehicle (bolster); — fuel tanks of vehicles; — entrance and end doors (locking systems and structural elements); — step frames, hand rails and railings on the outside of the vehicle or in entry areas; — exterior self-supporting equipment boxes and underfloor containers (fresh water and waste-water containers); — roof construction (pantograph, panelling); e.g. equipment (CL 2), frames (CL 1) — exterior traction and power equipment (transformer casing, transformer suspension, engine suspension, transmission suspension, attachment for traction motor, instrument racks); — power transmission parts (traction coupling, cardan shafts); — turning and tipping equipment (e.g. freight wagon); — obstacle deflectors and snow ploughs; — stanchions and lashing rings; — exhaust systems including pipes; — wheel scotches; — pressure gas tanks, tanks and tank containers of rail vehicles with test pressure [a]; — containers for dangerous materials [a]; — compressed-air reservoirs for rail vehicles [a].

CL	Component
CL 2	New build, conversion and repair of structural parts for rail vehicles, e.g.: — parts inside of passenger coaches (partitions, walls, doors, panelling); — supporting frame, brackets and tensioning straps for interior equipment (electrical, air-conditioning and compressed air installations); — driving cab equipment; — lavatory parts and water containers with installations that are inside of the vehicle body; — interior doors and ramps; — fastenings for brake pipes; — underframe equipment boxes that are supported by another frame; — self-supporting gearboxes and consoles for hand brake operation; — interior traction and power equipment (transformer casing, transformer suspension, engine suspension, transmission suspension, attachment for traction motor, instrument racks); — seating frames; — pressurized air pipes. New build, conversion and repair of non-pressurized containers without special test pressure, e.g.: — payload container for non-dangerous materials; — other transport containers.
CL 3	New build, conversion and repair production of simple attached parts for rail vehicles, e.g: — cranks and levers for various operations; — striking plates; — interior equipment boxes and switch cabinets (including gearboxes and consoles for hand brake operation that are supported by another frame); — holders for index plates; — covers for freight wagons (heat protection on tank wagons); — steps, handrails, railings inside of the vehicle. New build, conversion and repair of parts or trade supply parts for rail vehicles, for instance: — window frames; — ventilation grilles.

[a] If a harmonized standard for a specific product exists, e.g. EN 286 for compressed-air reservoirs or EN 14025 for containers for dangerous materials, it supersedes the requirements of this document.

For welded joints between components with different classification levels, the higher classification level shall be applied to the entire welded assembly.

The classification level for finishing welding of cast parts shall be the same as the entire welded assembly.

4.2 Type of activity of the manufacturer

A manufacturer of welded railway vehicles or components can undertake one or more of the types of activities listed in Table 2. All activities shall conform to the requirements defined in the relevant part of EN 15085 series of standards.

Table 2 — Types of activity

Type of activity	Indicator	Description
Design	D	Calculation, design and documentation for the production and maintenance of welded railway vehicles and components
Production	P	Manufacturing, modification and testing of welded railway vehicles and components (including replacement parts).
Maintenance	M	Repair of welded railway vehicles and components by welding (including testing).
Purchase and supply	S	Purchase and supply of welded components for new fabrication or maintenance activities without carrying out welding operations

5 Requirements for the manufacturer

5.1 General

The quality requirements for manufacturers performing welding activities on rail vehicles and components are specified in the EN ISO 3834 series of standards. The relevant part of EN ISO 3834 requirements to be applied shall be determined by the classification level as follows: EN ISO 3834-2 for CL 1, EN ISO 3834-3 for CL 2 or EN ISO 3834-4 for CL 3.

For resistance welding EN ISO 14554 shall be considered.

A manufacturer, who fulfils the CL 1 requirements for a particular activity may also perform the same activity on components with CL 2 or CL 3 classification.

A manufacturer, who fulfils the CL 2 requirements for a particular activity may also perform the same activity on components with CL 3 classification.

A manufacturer, who fulfils the CL 3 requirements for a particular activity may only perform the same activity on components with CL 3 classification.

5.2 Welders and welding operators

The manufacturer shall have a sufficient number of welders and operators trained and qualified as defined in EN 15085-4.