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

Bahnanwendungen - Schweißen von Schienenfahrzeugen und -fahrzeugteilen - Teil 2:
Qualitätsanforderungen 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
manufacturers**

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

Bahnwendungen - Schweißen von
Schienenfahrzeugen und -fahrzeugteilen - Teil 2:
Qualitätsanforderungen an Schweißbetriebe

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 256.

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European foreword

This document (prEN 15085-2:2018) 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 document will supersede EN 15085-2:2007.

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 required provisions for this process are laid down in the standards series EN ISO 3834. The basis of these provisions are the basic technical welding standards in respect of the special requirements for the construction of railway vehicles.

This document is aimed at defining 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.

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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.

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 15085-1:2007, *Railway applications — Welding of railway vehicles and components — Part 1: General*

EN 15085-2, *Railway applications - Welding of railway vehicles and components - Part 2: Quality requirements and certification of welding manufacturer*

EN 15085-4:2007, *Railway applications - Welding of railway vehicles and components - Part 4: Production requirements*

EN 15085-5:2007, *Railway applications - Welding of railway vehicles and components - Part 5: Inspection, testing and documentation*

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

EN ISO 14731:2006, *Welding coordination - Tasks and responsibilities (ISO 14731:2006)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15085-1:2007 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 <http://www.iso.org/obp>

3.1

safety relevance

description of the consequences of a failure of a welded component in respect to the effects on persons, facilities and the environment

Note 1 to entry: The safety relevance of a welded component is differentiated 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 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

4 Classification Levels and Activities of Manufacturers

4.1 Classification Level

Three classification levels (CL) are laid down for the manufacturers and their welded components. Level 1 to Level 3 depends on the safety relevance of the welded component specified in 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 are not allowed.)
- **CL 3** For welded components of railway vehicles with low safety relevance. (Welded joints with high or medium safety category are not allowed.)

Table 1 gives the allocation for the most common parts and components of railway vehicles.

Deviations from the classification given in Table 1 are permitted, if the definition of the classification level, which is given above, is respected and the explanation of the deviation is documented.

Table 1 — Allocation of components to their classification level

CL	Component classification
CL 1	New build, conversion and repair of rail vehicles and their components Examples for components: — bogies (headstocks, solebars, cross bearers, bogie frames); — underframes (extensions, solebars, cross bearers, assembly); — vehicle body (front walls, side walls, roof); — draw and buffing gear; — supporting frames for external equipment parts (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; — finishing welding of castings within components indicated above; — pressure gas tanks, tanks and tank containers of rail vehicles with test pressure a; — containers for dangerous materials ^a; — entrance doors, end doors; — steps, hand rails and railings on the outside of the vehicle or in entry areas; — self-supporting equipment boxes and underfloor containers (fresh water and waste-water containers); — external machine equipment parts (transformer, engine, transmission suspension); — roof construction (pantograph, panelling); e.g. equipment (CL 2) Frames (CL 1) — machine room equipment (transformer casing, transformer suspension, engine suspension, transmission suspension, attachment for traction motor, instrument racks), if

CL	Component classification
	they are assembled outside of the carbody; — power transmission parts (traction coupling, cardan shafts); — traversers (e.g. car transport wagon); — turning and tipping equipment (e.g. freight wagon); — obstacle deflectors (“cow catcher”); — stanchions and lashing rings; — compressed-air reservoirs for rail vehicles ^a.
CL 2	New build, conversion and repair of non-pressurized containers without special test pressure, e.g.: — payload container for non-dangerous materials; — other transport containers. New build, conversion and repair of structural parts for rail vehicles, e.g.: — parts inside of passenger coaches (partitions, walls, doors, panelling); — supporting frame for internal parts (electrical, air-conditioning and compressed air installations); — driving cab equipment; — lavatory parts and water containers with installations; — sliding doors in vehicles including runways; — fastenings for brake pipes; — non-self-supporting equipment boxes underneath the base frame (without supporting frame); — gearboxes and consoles for hand brake operation; — machine room equipment (transformer casing, transformer suspension, engine suspension, transmission suspension, attachment for traction motor, instrument racks), if it is implemented inside the car-body; — exhaust pipes, — pressurized air pipes.
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; — equipment boxes and switch cabinets in rail vehicles (including gearboxes and consoles for hand brake operation, without supporting frame); — holders for index plates; — wheel scotches; — 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: — seating frames; — window frames; — ventilation grilles.
^a The requirements of this standard will be superseded by specific product standards, e.g. EN 286, air reservoirs.	

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For welded joints between components with different classification levels the higher classification level shall be the classification level of the new designed component.

4.2 Type of activity of the manufacturer

A manufacturer of welded railway vehicles or components can undertake different types of activity with different requirements.

Table 2 — Type of activity of manufacturers of welded railway vehicles or components

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

Manufacturers can operate in one or more of these types of activity.

5 Requirements for the manufacturer**5.1 General**

The quality requirements for manufacturers, which carry out work on welded rail vehicles, components and sub-assemblies, are specified by the standard series EN ISO 3834. Dependant on the classification level, the requirements of EN ISO 3834-2 for CL 1, EN ISO 3834-3 for CL 2 or EN ISO 3834-4 for CL 3 shall be fulfilled in principle.

A manufacturer, which fulfils the requirement for CL 1, may work for welded components with CL 1, CL 2 or CL 3 in the same type of activity.

A manufacturer, which fulfils the requirement for CL 2, may work for welded components with CL 2 or CL 3 in the same type of activity.

A manufacturer, which just fulfils the requirement for CL 3, may work for welded components only with CL 3 in the same type of activity.

5.2 Welders and welding operators

The manufacturer shall have sufficient qualified welders and operators like it is explained and required in EN 15085-4.

5.3 Welding Coordination**5.3.1 General**

It is the responsibility of the manufacturer to demonstrate that welding coordination tasks are fulfilled where welding activities are carried out.

The manufacturer shall have an adequate number of suitably qualified welding coordinators, with the relevant technical knowledge and experience, for the tasks they undertake according to EN ISO 14731,

The manufacturer shall clearly prove and document that the technical knowledge and experience of the welding coordinator(s) is at the required level. Tasks and areas of competence of welding coordinators are given in Annex A.

For the purpose of this standard three levels of welding coordinators are distinguished:

- **Level A:** Personnel with comprehensive technical knowledge according to EN ISO 14731 and adequate professional experience for the relevant scope of application.
- **Level B:** Personnel with specific technical knowledge according to EN ISO 14731 and adequate professional experience for the relevant scope of application.
- **Level C:** Personnel with basic technical knowledge according to EN ISO 14731 and adequate professional experience for the relevant scope of application.

Further requirements for professional knowledge and experience are given in Annex D.

The manufacturer shall have a written procedure how to qualify and establish welding coordinators according to this standard.

5.3.2 Welding coordinators with comprehensive technical knowledge (Level A)

Personnel shall have comprehensive technical knowledge according to EN ISO 14731 and about the relevant part of the EN 15085 series. An education level as engineer or technologist should exist.

As guidelines, to demonstrate comprehensive technical knowledge the following qualification may be used:

- Personnel with qualification according to Doc. IAB-252/EFW-416 – International Welding Engineer (IWE) or European Welding Engineer (EWE);
- Personnel with qualification according to Doc. IAB-252/EFW-416 – International Welding Technologist (IWT) or European Welding Technologist (EWT) and proof of comprehensive technical knowledge.

5.3.3 Welding coordinators with specific technical knowledge (Level B)

Personnel shall have specific technical knowledge according to EN ISO 14731 and about the relevant part of the EN 15085 series.

As guidelines, to demonstrate specific technical knowledge the following qualification may be used:

- Personnel with qualification according to Doc. IAB-252/EFW-416 – International Welding Technologist (IWT) or European Welding Technologist (EWT);
- Personnel with qualification according to Doc. IAB-252/EFW-416 – International Welding Specialist (IWS) or European Welding Specialist (EWS) and proof of specific technical knowledge.

5.3.4 Welding coordinators with basic technical knowledge (Level C)

Personnel shall have basic technical knowledge according to EN ISO 14731 and about the relevant part of the EN 15085 series.

As guidelines, to demonstrate basic technical knowledge the following qualification may be used:

- Personnel with qualification according to Doc. IAB-252/EFW-416 – International Welding Specialist (IWS) or European Welding Specialist (EWS);

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- Personnel with qualification according to Doc. IAB-252/EFW-416 – International Welding Practitioner (IWP) or European Welding Practitioner (EWP) with proof of basic technical knowledge.

5.3.5 Welding Coordination organization

Welding coordinators shall be involved in the organization of the manufacturer in such a way that they can accept their tasks and responsibility without reservation according to EN ISO 14731. They shall have the authority to issue instructions and make decisions when there are technical problems independent of manufacturing pressures.

The responsibilities and competencies as well as the mutual relationships of all manufacturer's staff performing managerial, design, production or inspection work, which influence the quality of the welding work, shall be documented in the organization chart of the manufacturer. The following items, in particular, shall be specified and described:

- tasks of the welding coordinators (when there are several equal-graded welding coordinators, their work and responsibility areas shall be specified);
- rules for deputising for the welding coordinator (also applies to recognized subcontracted welding coordinator);
- activities which require the attendance of the responsible welding coordinators e.g. contract review;
- measures which are required if the welding coordinator is absent (deputising for the welding coordinator; welding work that is still permitted; cessation of welding work);
- Involvement of the welding coordinators in charge of the internal process (e.g. preparation of quotations, design, sub-contracting).

The personal requirements for the welding coordination are laid down in Annex B in dependence of the classification level.

Depending on the classification level and the activities, the manufacturer shall have for each location site welding coordinators specified in Annex B. The number of welding coordinators depends on the extent of the welding production the monitoring of subcontractors and other executed tasks.

The number and necessary level of welding coordinators are defined in Annex B.

For the classification Level CL 1:

- The firm owners, general managers, production managers cannot be recognized as responsible welding coordinator. For small welding manufacturers recognition of the above mentioned persons is possible provided the requirements for welding coordination staff are met. The size of a small welding manufacturer is explained in Annex C.

For the classification level CL 2:

- Recognition of firm owners, general managers, production managers as responsible welding coordinator is possible, provided the requirements for welding coordination staff are met.