BRITISH STANDARD

BS EN 15085-1:2007 +A1:2013

Railway applications — Welding of railway vehicles and components —

Part 1: General

ICS 25.160.10; 45.060.01

BSI British Standards

National foreword

This British Standard is the UK implementation of EN 15085-1:2007 +A1:2013. It supersedes BS EN 15085-1:2007, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted by Technical Committee RAE/1, Railway applications, to Panel RAE/1/-/2, Structural requirements and welding.

A list of organizations represented on this committee can be obtained on request to its secretary.

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The publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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EUROPEAN STANDARD

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English Version

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

Applications ferroviaires - Soudage des véhicules et des composants ferroviaires - Partie 1: Généralités

Bahnanwendungen - Schweißen von Schienenfahrzeugen und -fahrzeugteilen - Teil 1: Allgemeines

This European Standard was approved by CEN on 26 August 2007 and includes Amendment 1 approved by CEN on 18 April 2013.

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Foreword

This document (EN 15085-1:2007+A1:2013) 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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

This document supersedes EN 1585-1:2007.

This document includes Amendment 1 approved by CEN on 2013-04-18.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1〉 〈A1▌.

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: Quality requirements and certification of welding manufacturer

— Part 3: Design requirements

— Part 4: Production requirements

— Part 5: Inspection, testing and documentation

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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 is the basic technical welding standards with respect to the special requirements for the construction of railway vehicles.

This standard is aimed at defining the terms of enforcement applicable to European Standards. It will not be construed as a substitute for these standards.

This standard can also be used by internal and external parties, including certification bodies, to assess the organisation's ability to meet customer, regulatory and the organisation'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 parts.

With respect to the railway environment, this series of standards defines the certification and quality requirements for the welding manufacturer to undertake new building and repair work. It then provides an essential link between performance requirements defined during design, and achieves appropriate quality welds during production and the demonstration of the required quality by inspection.

This link is achieved by defining a weld performance class during design, which is based on safety and stress factors relevant to railway operation. Quality levels of imperfections are assigned to weld performance classes to ensure a certain level of performance intended during design. Based on these weld performance classes, certification levels for production as well as inspection and testing and qualifications for welding personnel of the manufacturer are specified.

This standard deals with welding steel and aluminium alloys including castings.

NOTE The principle of this standard may also be applied for welding of other parent materials (e.g. Cu, Mg).

This part of the series provides general recommendations and definitions for welding railway vehicles and associated components. Except for specific provisions which are laid down contractually, this standard applies to all assemblies, sub-assemblies or parts welded by any welding process, either manual, partly mechanized, fully mechanized or automatic welding as defined in EN ISO 4063.

This series of standards does not deal with product qualification.

Items of equipment subject to specific regulations are not relevant to the scope of this series of standards, e.g. air reservoirs according to EN 286-3 and EN 286-4.

2 Normative references

The following referenced documents are indispensable for the application 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 45020:2006, *Standardization and related activities - General vocabulary (ISO/IEC Guide 2:2004)*

CEN/TR 14599:2005, *Terms and definitions for welding purposes in relation with EN 1792*

EN ISO 17659:2004, *Welding – Multilingual terms for welded joints with illustrations (ISO 17659:2002)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CEN/TR 14599:2005, EN ISO 17659:2004 and EN 45020:2006 and the following apply.

〚A1〛 *deleted text* 〚A1〛

〚A1〛 **3.1** 〚A1〛
certification level
level to classify the welded railway vehicle or the welded component depending on the weld performance class (CP)

NOTE The certification level is abbreviated by “CL”.

3.2
weld performance class
performance requirements of the welded joint as defined by the stress category and the safety category of the welded joint

NOTE The weld performance class is abbreviated by “CP” (class of performance).

3.3
weld inspection class
defines the inspections to be carried out for a given weld with respect to the weld performance class

NOTE The weld inspection class is abbreviated by “CT” (class of testing).

3.4
customer
organisation responsible for defining the technical requirements, quality requirements and the acceptance procedures for the welded product

3.5
manufacturer
organisation that

— uses a welding facility to manufacture or maintain (including repair) railway vehicles or parts of railway vehicles including finishing welding of castings – certification level CL 1, CL 2, or CL 3 (see EN 15085-2);

or

— designs welded rail vehicles or parts of welded rail vehicles, or buys welded parts for assembly into railway vehicles or sells them for assembly into railway vehicles – certification level CL 4 (see EN 15085-2).

3.6
national safety authority
national government body responsible for setting or agreeing the safety requirements for a railway and ensuring that the railway complies with the laws and statutory regulations *deleted text*

3.7
qualification
evidence of training, professional knowledge, skill and experience to enable the personnel to perform the required tasks

3.8
qualified
person with evidence of training, professional knowledge, skill and experience, proven by an internal test (e.g. personnel for VT according to EN ISO 9712, welders according to EN 287-1)

3.9
subcontracted welding coordinator
welding coordinator not employed by the welding manufacturer

3.10
joint static dimensioning
defining the dimension of a welded joint that is needed to achieve the required static mechanical characteristics

3.11
acceptance authority
organisation that is responsible for the acceptance of the product

NOTE This organisation can be part of the customer's organisation or be an independent organisation appointed or approved by the customer.

3.12
effective cross section
cross-section of a welded joint that is considered when performing dimensioning calculations

3.13
joint fatigue dimensioning
defining the dimension of a welded joint that is needed to achieve the required fatigue characteristics

3.14
stress category
category determined by the stress factor

NOTE For more detailed information on stress categories low, medium, high: see EN 15085-3.

3.15
stress factor
ratio of the calculated fatigue stress to the admissible fatigue stress of the joint type, adjusted by the appropriate safety factor

3.16
admissible fatigue stress
maximum stress applicable to materials to which a specific coefficient to the assembly to be welded is applied

3.17
safety category
defines the consequences of failure of the single welded joint in respect to the effects on persons, facilities and the environment

NOTE For more detailed information on safety categories low, medium, high: see EN 15085-3.

3.18
production weld test
mock-up
sample welded joints to prove the manual skill of the welder or to demonstrate acceptable production of the welded joint

4 General requirements

Generally, customers prescribe performances applicable to finished products; they do not prescribe welding methods. The manufacturer thus has full freedom to select whichever welding process, consumables and joint preparation they wish to implement.

In return, upon customer request, the manufacturer shall demonstrate that they have full control and that the quality level requested by customers will be achieved, in particular through the following:

— company certification;

— welder and welding operator qualification;

— welding process and mock-up qualification.

However, customers may contractually restrict the use of certain welding processes.

As regards drawings issued prior to the publication of this standard, the prescriptions laid down herein may be applied. The manufacturer shall inform their customers beforehand.

For materials and welding processes outside the scope of this standard, the customer and manufacturer shall agree on new rules or the applicability of existing rules, which achieve the same level of controls as those ensured by this standard. These shall include agreement on quality and certification requirements of the manufacturer, the application of weld performance classes based on stress and safety categories, the definition of imperfection levels to ensure the required levels of performance, and rules for production and inspection to ensure the achievement of quality requirements.

[A1⟩ *deleted text* ⟨A1]

Bibliography

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

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

[3] EN ISO/IEC 17000, *Conformity assessment — Vocabulary and general principles (ISO/IEC 17000); Trilingual version EN ISO/IEC 17000:2004*

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

[5] EN ISO 4063, *Welding and allied processes – Nomenclature of processes and reference numbers (ISO 4063:1998)*

[6] EN 286-3, *Simple unfired pressure vessels designed to contain air or nitrogen – Part 3: Steel pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock*

[7] EN 286-4, *Simple unfired pressure vessels designed to contain air or nitrogen – Part 4: Aluminium alloy pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock*

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

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

[10] EN ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel (ISO 9712)*

[11] EN 287-1, *Qualification test of welders – Fusion welding – Part 1: Steels*

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