AWS D15.1/D15.1M:2012-AMD1
An American National Standard

Railroad Welding Specification for Cars and Locomotives

American Welding Society®

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An American National Standard

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Railroad Welding Specification for Cars and Locomotives

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Prepared by the
American Welding Society (AWS) D15 Committee on Railroad Welding

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This specification establishes minimum standards for the manufacture and maintenance of railroad equipment. Clauses 4 through 17 cover the general requirements for welding in the railroad industry. Clauses 18 through 24 cover specific requirements for the welding of base metals thinner than 1/8 in [3 mm].

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Foreword

This foreword is not part of AWS D15.1/D15.1M:2012, *Railroad Welding Specification for Cars and Locomotives*, but is included for informational purposes only.

This specification establishes minimum standards for the manufacture and maintenance of railroad equipment. It was developed and is maintained by the D15 Committee on Railroad Welding of the American Welding Society.

Welding of railroad components is vital to the industry. An investigating committee was formed in 1982 which recommended a Railroad Welding Committee be formed to establish minimum welding standards for the industry. This recommendation was made because of confusion and incompleteness of the existing welding specifications and guides as applied to the railroad industry needs. The committee is made up of individuals from all segments of the railroad industry: both users and suppliers, the general public, and representatives of the Association of American Railroads.

The purpose of this specification is to provide a single comprehensive document of welding data that will be used throughout the railroad industry. Also, it should contribute to improvements in welding quality and performance. This document includes data from AWS D1.1/D1.1M, *Structural Welding Code—Steel*; AWS D1.2/D1.2M, *Structural Welding Code—Aluminum*; AWS D1.3/D1.3M, *Structural Welding Code—Sheet Steel*; and AWS D1.6/D1.6M, *Structural Welding Code—Stainless Steel*.

AWS D15.1-86 was titled simply *Railroad Welding Specification*. For the 1993 revision, the suffix Cars and Locomotives was added because the locomotive section had been introduced. A later revision was published in 2001, AWS D15.1:2001. The welding of rail is addressed in AWS D15.2, *Recommended Practice for the Welding of Rails and Related Rail Components for Use by Rail Vehicles*.

Several significant modifications have been made in AWS D15.1/D15.1M:2012. A vertical line in the margin indicates a revision from the 2007 edition. Limitations of essential variables for welding procedure qualification and welder performance qualification have been set up in table format (Tables 10.1 and 11.1, respectively). Friction stir welding has been included in the list of approved welding processes. Additional prequalified joint details for FCAW and GMAW have been added (see Figures 7.1G and 7.2A). Table 17.1 (Weld Crater Limitations) has been added. Clause 18 (Welding of Sheet Metal) has been revised.

Comments and suggestions for the improvement of this standard are welcomed. They should be sent to the Secretary, AWS D15 Committee on Railroad Welding, American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

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Railroad Welding Specification for Cars and Locomotives

1. General Requirements

1.1 Scope. This specification covers the minimum welding requirements applicable to welded structures and cast components used in the railroad industry. It is not intended to apply to tank car tanks nor to the welding of rails. Recommended practices for welding railroad rails and related components are included in D15.2, *Recommended Practice for the Welding of Rails and Related Rail Components for Use by Rail Vehicles*. Specifications for welding tank car tanks and components welded directly thereto are outlined in the AAR *Manual of Standards and Specifications for Welding*, Section C—Part III, Specification M-1002 (AAR M-1002 C-III).

Welding symbols shall be those shown in the latest edition of AWS A2.4, *Standard Symbols for Welding, Brazing, and Nondestructive Examination*.

1.2 Units of Measurement. This standard makes use of both U.S. Customary Units and the International System of Units (SI). The latter are shown within brackets ([ ]), or in appropriate columns in tables and figures. The measurements may not be exact equivalents; therefore, each system must be used independently.

1.3 Safety. Safety and health issues and concerns are beyond the scope of this standard; some safety and health information is provided, but such issues are not fully addressed herein.

Safety and health information is available from the following sources:

American Welding Society

(1) ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*

(2) AWS Safety and Health Fact Sheets

(3) Other safety and health information on the AWS website

Material or Equipment Manufacturers:

(1) Material Safety Data Sheets supplied by materials manufacturers

(2) Operating Manuals supplied by equipment manufacturers

Applicable Regulatory Agencies

2. Normative References

The standards listed below contain provisions that, through reference in this text, constitute mandatory provisions of this AWS standard. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply.

American Welding Society (AWS) standards:[1]

AWS A2.4, *Standard Symbols for Welding, Brazing, and Nondestructive Examination*;

AWS A3.0M/A3.0, *Standard Welding Terms and Definitions Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying*;

[1] AWS standards are published by the American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.