AWS D1.9/D1.9M:2015
An American National Standard

Structural Welding Code — Titanium

American Welding Society®

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An American National Standard

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Structural Welding Code—Titanium

2nd Edition

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Prepared by the
American Welding Society (AWS) D1 Committee on Structural Welding

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This code covers the requirements for design and welding of any type of titanium structure. Titanium pressure vessels and fluid-carrying pipe lines are specifically excluded. Clauses 1 through 5 and Annex A constitute a body of rules for the regulation of welding in titanium construction. A commentary on the code is also included with the document.

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Foreword

This foreword is not part of AWS D1.9/D1.9M:2015, *Structural Welding Code—Titanium*, but is included for informational purposes only.

This second edition of the AWS D1.9/D1.9M, *Structural Welding Code—Titanium* (hereafter referred to as the code), represents the continuing AWS policy to provide standards for structural welding. This code is provided for the fabrication, erection, and manufacturing industries as a set of requirements for structural titanium weldments. This code does not concern itself with such design considerations as the arrangements of parts and the computation of stresses for proportioning the load-carrying members of a structure and their connections. Such considerations, it is assumed, are covered elsewhere in a general specification.

Users of the AWS D1.1/D1.1M, *Structural Welding Code—Steel*, will note similarities in the general format of this code and D1.1. This was done in order to benefit from the long established history of D1.1, adjusted for the specific requirements for titanium. In the early 2000s, interest was expressed in developing a similar consolidated code for the structural welding of titanium. Because of the interest of both the U.S. Department of Defense and the American Welding Society, it was decided to commence the task of developing a structural welding code for titanium.

Underlined text in the clauses, subclauses, tables, figures, or forms indicates a change from the 2007-ADD1 edition. A vertical line in the margin of a table or figure also indicates a change from the 2007-ADD1 edition.

A major difference between the AWS D1.1 and this code, other than the material change from steel to titanium, is that the former allows for prequalified welding procedures, this code does not. This is mainly because of the need to have a method of demonstrating evidence of a fabricator's competency to fabricate one or more of the structural titanium alloys that may be welded under this code. Therefore, all the WPSs used for fabrication of work governed by this code are required to be qualified by testing.

This second edition includes editorial changes to improve clarity and substantive changes to all sections to reflect user feedback including a revised Table 5.1 that was first issued as an addendum in 2011.

Clauses 1 through 5 constitute a body of rules for the regulation of welding on titanium structures. Procedures and standards are outlined for several methods of nondestructive testing. Methods included are visual, radiographic, and penetrant examination.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS D1 Committee on Structural Welding, American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

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