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CSA Standard W59 2018 "Welded Steel Construction (Metal Arc Welding)"

Highlights of the new edition

The newest edition of CSA Standard W59 "Welded Steel Construction" recently became available for sale. This 2018 edition is the tenth edition of W59, supersedes the 2013 edition of the standard, and includes several changes and additions to address evolving welding technologies and the changing needs of industry.

Like all CSA welding standards, CSA W59 was developed by a volunteer committee is made up of representatives from a cross-section of Canadian steel fabricators, engineers, designers, inspectors and other key stakeholder groups. The following is an overview of the significant changes to the standard.

New materials recognized

Several new materials have been recognized for use under CSA W59, including for prequalification. These include material grades in accordance with the following specifications: ABS, API 5L, ASTM, CSA, IACS and Lloyds. All these grades are listed in Tables 5.3, 11.1 and 12.1 on their own columns and in the applicable groups. Although some of the old material specifications have been withdrawn, the standard has maintained these older material specifications to ensure the standard can still be used to repair and modify existing structures.

Also, the Carbon Equivalent formula (CE) to be used in determining the equivalent welding quality for materials not listed in this standard has been revised. The new formula is in line with International Institute of Welding (IIW) CE formula:

$CE_{IIW} = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$

New prequalified joints requirements

With the 2018 edition, CSA W59 has changed the format of the tables for prequalified joints. In the new format each type joint is specified with separate drawing for butt, corner and tee as applicable. Also, the new format contains all welding processes for each type of joint in larger and better illustrated drawings.
The 2018 edition continues to recognize that joints welded with a combination of welding processes can be considered prequalified provided the prequalification conditions of the joint for each separate process are adhered to.

Clarification on filler-metal requirements for exposed bar applications

In this new edition Table 5.1 of CSA W59 has been revised to include consumables certified in accordance with CAN/CSA ISO 14341 and AWS A5.36/A5.36M when used for welding of exposed bar applications.

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Recognition of alternative NDE methods

To address technological changes in the non-destructive evaluation world, the previous edition of CSA W59 included allowances for the use of alternative ultrasonic methods and alternative radiation imaging systems. This change will permit the use of newer technologies such as phased array, time of flight diffraction and digital radiography where agreed to by the contractor and purchaser.

In this new edition W59 introduced in Clause 8 additional training requirements for NDE personnel performing such examinations. Also, several changes have been made to the FA technique with respect to personnel qualifications, equipment requirements, calibration standards and equipment calibration.

For radiographic testing (RT) this new edition has extended the type of radioactive isotope to include Se^{75} that can be used for RT on steels with minimum thickness of 10 mm (3/8 in).

Welding definitions

In order to address some new terms that are being used for the new alternative ultrasonic methods and alternative radiation imaging systems new definitions have been included in Annex E of this current edition. Also, the old definitions for some of the old terms have been revised to be more in line with what the welding industry is using today.

New Annexes

A significant addition to the W59: 2018 are a non-mandatory Annex W and a mandatory Annex X. Annex W has been written in mandatory language to facilitate adoption where users of the standard or regulatory authorities wish to adopt it formally. This annex specifies additional requirements for welding consumables, welded fabrication techniques, weld repairs, demand critical welds and welding inspection for seismic force resistance system (SFRS) of structures.

Annex V is a normative part of this latest edition of the standard and specifies provisions for ultrasonic examinations of groove welds using time-corrected gain technique with conventional angle beam or manual phased array ultrasonic testing.

This is only a sampling of the many updates in this new edition. The CWB encourages all those in the industry to ensure they are aware of the changes of CSA W59 2018.

The Canadian Standards Association has priced the new edition of W59 at **$345**. Interested in obtaining a copy of CSA W59 2018?

Call or visit the CWB at 1-800-844-6790 or www.cwgroup.org to order your copy today.