



| cwbcertification



# Welding Engineers NEWSLETTER

Fall 2020

We are pleased to announce the release of the first CWB Welding Engineers Newsletter. This new quarterly publication is an initiative of CWB Certification's Procedures Department to enhance the communication with welding engineers involved in CWB certification. By providing you with valuable information on welding standards, CWB operations and welding procedure review process, we expect that the development and acceptance of welding procedures will be smoother for you, our mutual clients and CWB Certification.

In these newsletters you will find the latest news about CWB procedures and welding consumables certification department, updates on the new welding standards, information on upcoming forum and a FAQ section.



## IN THIS FIRST EDITION YOU WILL FIND:

- ▶ Details on the operations of the welding procedures department, from initial submissions to final acceptance of welding procedures.
- ▶ Prequalification requirements of CSA W59-18 for pulsed GMAW
- ▶ Qualification of welding procedures to CSA W186 for reinforcing bars
- ▶ List of certified welding consumables on CWB website
- ▶ Upcoming welding engineer forum...



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## OPERATIONS OF THE WELDING PROCEDURES DEPARTMENT

All companies certified to CSA W47.1, W47.2, W186 are required to use CWB accepted welding procedures supporting their welding operations. Year over year, CWB Certification reviews over 12,000 welding procedure submissions including 40,000 welding procedure data sheets and almost 3,000 PQR's. Since there could be some unfamiliarity about the review process of the submissions, a summary of the process is provided below for your information:

### ► SUBMISSIONS TO CWB:

Welding procedures specifications (WPS) and welding procedure data sheets (WPDS) are submitted to CWB Certification mainly by email to [procedures@cwbgroup.org](mailto:procedures@cwbgroup.org), (exceptionally WPS and WPDS can be submitted by mail). Once received, the welding procedures are logged into a log sheet for easy tracking; welding procedures are reviewed using a First-In, First-Out method, all submissions are targeted to be reviewed within three business days.

### ► REVIEWS OF WPS/WPDS:

A WPS is required for each welding processes and must meet the requirements of clause 10 of CSA W47.1 or clause 9.1 of CSA W47.2. Once accepted, an accepted and stamped copy is sent back to the engineer and client. CSA W186 process does not require that welding procedure specification (WPS) be submitted for review and approval.

WPDS's are either prequalified or will require a procedure qualification test (PQT) for approval. When the WPDS is accepted based on the prequalification or previous procedure qualification testing data accumulated by CWB Certification, the stamped WPDS is returned to the engineer and the client.

If a PQT is required, the detailed testing requirements will be described to the client. The client can then schedule the PQT with their CWB Client Service Representative (CSR). Once the PQT is completed and documented on the PQR with the results, the Procedures Department will return the final PQR to the engineer and the client. The corresponding WPDS should then be revised by the engineer according to the PQR and resubmitted to CWB Certification for final review/acceptance. Once stamped, the WPDS is returned to the engineer and the client.



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## PREQUALIFICATION REQUIREMENTS OF CSA W59-18 FOR PULSED GMAW

CSA W59-18 considers the GMAW pulsed mode of transfer as prequalified in all positions under certain restrictions. Those restrictions are:

- ▶ The joint configuration shall meet those specific to GMAW-P in figure 10.1 and 10.2 of CSA W59-18
- ▶ The maximum single pass fillets shall not exceed the limitations specified in clause 10.5.3.1 for the flat and horizontal positions, clause 10.5.3.2 for the vertical position and 10.5.3.3 for the overhead position
- ▶ The minimum diameter of electrode wire shall meet clause 10.5.3.5 of CSA W59-18
- ▶ The maximum cross-sectional area of any single pass shall meet clause 10.5.3.6
- ▶ The minimum wire feed speed, as required by clause 10.5.3.8 of CSA W59 for flat, horizontal, and overhead, shall be as followed (for all shielding gases):

For 0.9mm: 400ipm (10m/min)  
For 1.0mm: 350ipm (8.9m/min)  
For 1.2mm: 250ipm (6.3m/min)  
For 1.4mm: 225ipm (5.7m/min)  
For 1.6mm: 190ipm (4.8m/min)

If the above requirements are met, the WPDS will be stamped accepted base on CSA W59 prequalification.



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## QUALIFICATION OF WELDING PROCEDURES TO CSA W186 FOR REINFORCING BARS

The qualification of WPDS under CSA W186 is drastically different from the other CSA welding standards. CSA W186 deals with welding of reinforcing bars using three types of welded connections, direct butt joints, indirect butt-splices (flare bevel or flare-V) and T-Joints (fillet weld). below you will find the type of procedure qualification tests for each type of connections:

### ► DIRECT BUTT JOINTS:

As per clause 8.3.4 and shown in figure 2 of CSA W186-90, the largest and smallest bar diameter shall be tested (2 tests). Each specimen shall be subject to tensile test and shall demonstrate at least 1.25 times the specified yield strength based on the nominal bar area. For direct butt joints the tests are straight forward without ambiguity.

### ► INDIRECT BUTT-SPLICES:

As per clause 8.3.5 of CSA W186-90, two specimens are required as shown in figure 14 of CSA W186-90, one for the largest and one for the smallest bar diameter. Each specimen shall be subject to tensile test and shall demonstrate at least 1.25 times the specified yield strength based on the nominal bar area. For indirect butt-splices, the tests are not obvious and can lead to misunderstanding of figure 14. There are two important things to understand in figure 14. First, the middle bar is not a continuous bar, but rather two bars spaced by a gap of 2mm, and secondly the weld length is critical and must be established using the formulas in the note of figure 14 on the second page of the figure. If the weld length is longer than required, the test will not be valid and if the weld length is not long enough, then the weld could break prematurely, and the test will fail. The weld length is always specified in our testing letter.

### ► T-JOINTS (FILLET WELD):

As per clause 8.3.6 and shown in figure 6 of CSA W186-90, the largest and smallest bar diameter shall be tested (2 tests). Each specimen shall be subject to four macro-etch, in order to be considered acceptable the weld shall meet the requirements of clause 7.5 of CSA W186-90.

Additionally, the essential variables described in clause 8.3.3 of CSA W186-90 requires that each position shall be qualified independently. This is different from other CSA welding standards where most of the time the flat position is qualified by any other position.



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## LIST OF CERTIFIED WELDING CONSUMABLES ON CWB WEBSITE

Use of certified welding consumables by CSA W47.1, CSA W47.2 and CSA W186 certified companies constitutes a mandatory requirement which is observed and monitored by CWB. A currently updated list of CWB certified welding consumables is accessible on the CWB site at: <https://www.cwbgroup.org/certification-and-qualification/certified-directory-search/consumables>. Currently, there are over 2,400 CWB certified welding consumables - so to narrow your search results, any of the following fields can be used:

- Manufacture, Distributor or Supplier Name: The name of the company producing or reselling the certified welding consumable
- Type: Type of the welding consumable (i.e.: SMAW Carbon Steel)
- Class: The classification of the welding consumable (i.e.: E4918-1-H8)
- Standard: The standard to which the welding consumable is certified to (i.e.: W48-18 (SMAW Carbon Steel))
- Point of Manufacture: The country where the welding consumable is manufactured
- Electrode designation: The trade name of the welding consumable
- Flux Gas: If applicable the name of the flux (SAW) or shielding gas for which the welding consumable is certified to be used with

For the user's convenience the list is downloadable, however users are cautioned that the list changes on a regular basis as new products are certified and manufacturers drop products. Classifications for FCAW and MCAW processes are listed to include the new "open classifications" in metric, in accordance with AWS A5.36M followed by the equivalent classifications as per CSA W48-06, in brackets. The reason that the old classifications are still shown in brackets on our website is to facilitate for users the transition towards the new open classifications as described in AWS A5.36M and adopted by CSA W48-18. As of June 1st, 2020 all new WPS's and WPDS's submitted must include the new classifications. Welding consumables are currently required to use the new classifications. With some exemptions where manufacturers use retained classifications, most manufacturers opted to use the new open classifications where multiple designators give a better clarity of weld deposit properties.

### ► WELDING ENGINEER FORUM:

We are pleased to announce the introduction of bi-annual forum for welding engineers, it will be held using interactive video conferences in both English and French. These forums will be recurrent every six months in the Fall and Spring. For further information, please visit the welding engineer webpage [HERE](#).

*Thank you!*