

# Welding Procedure Data Sheet (WPDS)

Sheet 1 of 3

Ref. Standards: CSA W47.1/ W59-03

Company Name: [www.WeldCanada.com](http://www.WeldCanada.com)

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WPDS No.:

DEMO-WPDS

Ref. WPS:

MCAW-CS 01

Supporting PQR No.:

Prequalified WPDS

**Welding Process:**

MCAW

**Process Mode:**

Semi-Automatic

**Position (s):**

Flat

**Base Metal Part I (Material Spec., type or grade):**

Steels in Group 1, 2 and 3 of Table 11.1/ 12.1-CSA W59-03

**Base Metal Part II (Material Spec., type or grade):**

Steels in Group 1, 2 and 3 of Table 11.1/ 12.1-CSA W59-03

**Qualified Thickness and Diameter (Pipe) Range:**

Groove (Fillet): mm (in)

$T \leq 10 \text{ mm (3/8 in)}$

**Filler Metals:**

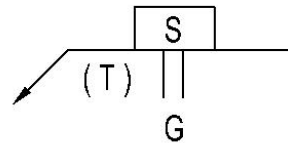
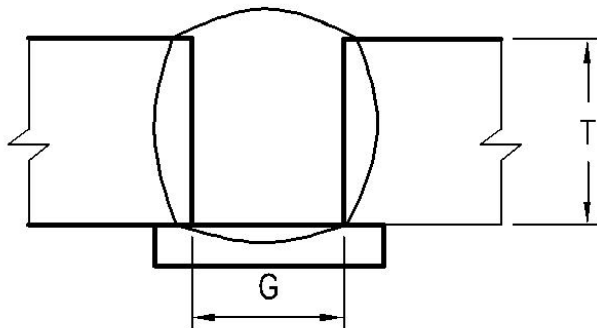
**Classification/Specification**

E491C-6M-H4

CSA W48

**Joint Details/Sketch:**

F1-1



$G_{min} = T$

$T \leq 10 \text{ mm (3/8 in)}$

B-L1a-FC

**Joint Design Used: mm (in)**

Root Opening G: *T Min.*

Root Face RF: *N/A*

Groove Angle: *N/A*

Radius (J-U): *N/A*

**Weld Type:**

Complete Joint Penetration Groove Weld

**Joint Type:**

Butt Joint

**Backing Option:**

Welded with backing

**Backing Material:**

Same as parent material

**Transfer Mode (GMAW or MCAW):**

Spray

**Electrical Characteristics:**

**Current Type/Polarity:** DCEP

**Tungsten Electrode (GTAW):**

Type: N/A

Size: mm (in) N/A

**Shielding:**

Gas Composition (Flux for SAW): Ar+15% CO2

Gas Flow Rate: lt/min. (CFH) 40 to 50 CFH

Gas Cup Size: 5/8 in.

Electrical Stickout (ESO): mm (in) 3/4 to 1 in.

**Welding Parameters**

Thickness mm (in)	Weld Size E (Groove) S (Fillet)	Weld Layer	Pass No.	Process	Filler Metal Classification	Filler Size mm (in)	Current Amps	Current Type & Polarity	Wire Feed Speed (in/min)	Volts	Travel Speed (in/min)	Remarks [Heat Input] J/mm (J/in)
6 (1/4)	E=T	1	1	MCAW	E491C-6M-H4	1.4 mm (0.052)	200-250	DCEP	200-250	25-27	10-14	N/A
8 (5/16)	E=T	1 to 2	1 to 2	MCAW	E491C-6M-H4	1.4 mm (0.052)	200-250	DCEP	200-250	25-27	10-14	N/A
10 (3/8)	E=T	2	2 to 3	MCAW	E491C-6M-H4	1.4 mm (0.052)	270-300	DCEP	270-320	26-28	12-18	N/A

**Heat Treatment:**

Preheat Temp. Min °C (°F): 10 °C, Table 5.3 of CSA W59-03

Interpass Temp. Min/Max °C (°F): 10 °C, Min. Table 5.3 of CSA W59-03

Cleaning Procedures: Wire Brush

**Additional Notes:**

- The end of contact tube recommended to be recessed in the cup nozzle at least 6 mm (1/4 in).
- Any combination of shielding gas with wire needs to be CWB Certified.

**Welding Supervisor or Welding Engineer:**

**CWB Acceptance:**

Name: Joe Smith

Date: 12,12,2005



Date: 12/14/2005

## Heat Treatment Code's Guideline:

### PREHEAT TABLE:

Preheat and interpass temperature shall be sufficient to prevent cold cracking.

The need for and the temperature of preheat are dependent upon a number of factors such as chemical analysis, degree of restraint of the parts being joined, elevated temperature mechanical properties, and material thicknesses.

CSA W59-03, Table 5.3 Minimum Preheat and Interpass Temperature °C (°F):

Preheat and Interpass temperature is provided for each material and thickness and process type on this group.

Preheat requirements shall be based on Welding Procedure Data Sheet (WPDS).

### POSTWELD HEAT TREATMENT:

PWHT requirements shall be based on Welding Procedure Data Sheet (WPDS).

CSA W59-03, 5.12 Stress-Relief Heat Treatment: Where required by the contract drawings or specifications, welded assemblies shall be stress-relieved by heat treatment.

See CSA W59-03, 5.12.4, Requirements for stress-relief treatment

See CSA W59-03, 5.12.3, Steels Not Recommended for PWHT

## WPDS Qualified Range (CSA Code's Guideline):

**Qualified Position (s):** For Prequalified WPDS, only Position (s) allowed for prequalified joint details shown in WPDS based on Section 10 (Figures for CJP and PJP) of CSA W59-03

**Qualified Thicknesses:** For Prequalified WPDS, only thickness ranges allowed as per prequalified joint details shown in WPDS based on Section 10 (Figures for CJP and PJP) of CSA W59-03

**Qualified Diameters:** For Prequalified WPDS, pipe diameters [over or less than 24 in. (600 mm OD)] allowed for prequalified joint details shown in WPDS based on Section 10 (Figures for CJP and PJP) of CSA W59-03

**Base Metal Group Allowed in Prequalified WPDS:** Only Base Metal Group-Filler Metal Combinations for Matching Strength as shown in Table 11.1 or Table 12.1 of CSA W59-03

**Filler Metal Allowed in Prequalified WPDS:** Only Filler Metal-Base Metal Group Combinations for Matching Strength as shown in Table 11.1 or Table 12.1 of CSA W59-03 (Size and other limit on electrode for prequalification of each process, as per section 10 of CSA W59-03)