

SUMMIT MEXICO TPI

WELDING PROCEDURE SPECIFICATION (WPS)

Company Name SUMMIT MEXICO TÍ By: JOSE JUAN JIMÉNEZ ALEJANDRO
 Welding Procedure Specification MDI-145-2008 Date 06-05-08 Supporting PQR No.(s) PQR-02
 Revision No. 1 Date 14-07-10
 Welding Process(es) GTAW/SMAW Type(s) MANUAL
(Automatic, Manual, Muchinc, ar Semi-Auto.)

JOINTS (QW-402)

Joint Design GROOVE AND FILLET
 Root Spacing 1/8" ± 1/16" OR SEE FABRICATION DRAWINGS
 Backing (Yes) X (SMAW) (No) X (GTAW)
 Backing Material (Type) WELD AND/OR BASE METAL
 (Refer to both backing and retainers.)

NO RETAINERS USED

Metal D Nonfusing Metal SEE FABRICATION DRAWING
 Nonmetallic D Other

Sketches, Production Drawings, Weld Symbols or Written Description should show the general arrangement of the parts to be welded. Where applicable, the root spacing and the details of weld groove may be specified. (At the option of the Mfg., Sketches may be attached to illustrate joint design, weld layers and bead sequence, e.g. for notch toughness procedures, for multiple process procedures, etc.)

BASE METALS (QW-403)

P-No. 43 Group No. - to P-No. 43 Group No. -
 OR
 Specification and type/grade or UNS Number -
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 OR
 Chem. Analysis and Mech. Prop. -
 To Chem. Analysis and Mech. Prop. -
 Thickness Range:
 Base Metal: Groove 1/16" TO 3/4" Fillet ALL
 Maximum Pass Thickness \diamond (13 mm) (Yes) X (No) -
 Other -

FILLER METALS (QW-404)

	1 (GTAW)	2 (SMAW)
Spec. No. (SFA)	5.14	5.11
AWS No. (Class)	ERNiCr-3	ENiCrFe-3
F-No.	43	43
A-No.	-	-
Size of Filler Metals	3/32"	1/8" & 5/32"
Filler Metal Product Form	SOLIO ROD	ELECTRO DE
Supplemental Filler Metal	NONE	NONE
Weld Metal		
Thickness Range:		
Groove	1/4" MAX.	1/2" MAX.
Fillet	ALL	ALL
Electrode-Flux (Class)	NONE	NONE
Flux Type	NA	NA
Flux Trade Name	NA	NA
Consumable Insert	NONE	NONE
Other	-	-

• Each base metal-filler metal combination should be recorded individually.

POSITIONS (QW-405) Position(s) of Groove <u>ALL</u> Welding Progression: Up <u>X</u> Down <u>-</u> Position(s) of Fillet <u>ALL</u> Other <u>-</u>	POSTWELD HEAT TREATMENT (QW-407) Temperature Range <u>NONE</u> Time Range <u>-</u> Other <u>-</u>																								
PREHEAT (QW-406) Preheat Temperature, Minimum <u>60 °F</u> Interpass Temperature, Maximum <u>Keco temperature below 300 °F</u> Preheat Maintenance <u>-</u> Other <u>Remove humidity from the surface when required, see technique.</u> (Continuous or special heating where applicable should be recorded)	GAS (QW-408) <table style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td colspan="3" style="text-align: center;">Percent Composition</td> </tr> <tr> <td></td> <td style="text-align: center;">Gas(es)</td> <td style="text-align: center;">Mixture</td> <td style="text-align: center;">Flow Rate</td> </tr> <tr> <td>Shielding</td> <td style="text-align: center;"><u>Ar</u></td> <td style="text-align: center;"><u>99.9%1</u></td> <td style="text-align: center;"><u>35-40 CFH</u></td> </tr> <tr> <td>Trailing</td> <td style="text-align: center;"><u>-</u></td> <td style="text-align: center;"><u>-</u></td> <td style="text-align: center;"><u>-</u></td> </tr> <tr> <td>Backing</td> <td style="text-align: center;"><u>Ar</u></td> <td style="text-align: center;"><u>99.9 %</u></td> <td style="text-align: center;"><u>25-30 CFH</u></td> </tr> <tr> <td>Other</td> <td style="text-align: center;"><u>-</u></td> <td style="text-align: center;"><u>-</u></td> <td style="text-align: center;"><u>-</u></td> </tr> </table>		Percent Composition				Gas(es)	Mixture	Flow Rate	Shielding	<u>Ar</u>	<u>99.9%1</u>	<u>35-40 CFH</u>	Trailing	<u>-</u>	<u>-</u>	<u>-</u>	Backing	<u>Ar</u>	<u>99.9 %</u>	<u>25-30 CFH</u>	Other	<u>-</u>	<u>-</u>	<u>-</u>
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ELECTRICAL CHARACTERISTICS (QW-409)

Weld Pnss(cs)	Process	Filler Metal		Current		Volts (Rnngc)	Travel Speed (Rnngc)	Other (c.g., Remark, Comments, Hot Wire Addition, Technique, Torch Angle, etc.)
		Classification	Diameter	Type and Polarity	Amps (Runge)			
1	GTAW	ERNiCr-3	3/32"	DCEN	150-200	12-16	VARIABLE	-
2 to 6	SMAW	ENiCrFe-3	1/8"	DCEP	120-160	22-28	VARIABLE	-
	SMAW	ENiCrFe-3	5/32"	DCEP	130-170	22-28	VARIABLE	-

Amps and volts range should be recorded for each electrode size, position, and thickness, etc.

Pulsing Current NA Heat Input (mux.) NA

Tungsten Electrode Size and Type 3/32" or 1/8". 2% Thoriated (EWTh-2)
 (Pure Tungsten, 2% Thoriated, etc.)

Mode of Metal Transfer for GMAW (FCAW) NA
 (Spray Arc, Short Circuiting Arc, etc.)

Electrode Wire feed speed range NA

Other -

TECHNIQUE (QW-410)

String or Weave Bead String

Orifice, Nozzle or Gas Cup Size 5/8" or as required

Initial and Interpass Cleaning (Brushing, Grinding, etc.) Grinding and brushing as necessary

Method of Back Gouging Grinding and brushing as necessary

Oscillation None

Contact Tube to Work Distance NA

Multiple or Single Pass (per side) Multiple

Multiple or Single Electrodes Single

Electrode Spacing NA

Peening Not Allowed

Other Acetone cleaning can be use to remove all contaminant traces from the surface.
Air use is not allowed.
All brushes and wheels must be S.S. and are to be used exclusively for P43 material.

Tensile Test (QW-150)

Specimen No.	IN Width	IN Thickness	IN2 Arca	Ultimate Total Load LB.	Ultimate Unit Stress psi	Type of Failure & Location
1	0.7620	0.3646	0.27783	28.439	102,364	HAZ
2	0.7640	0.3689	0.28184	28.101	99,705	

Guided-Bend Tests (QW-160)

Type and Figure No. QW-462.3(a)	Result
ROOTBEND	SATISFACTORY
FACE BEND	SATISFACTORY
ROOTBEND	SATISFACTORY
FACEBEND	SATISFACTORY

Toughness Tests (QW-170)

Specimen No.	Notch Location	Specimen Size	Test Temperature	Imoact Values			Drop Weight Break (YIN)	
				Ft-lb or J	% Shear	Mils (in) ormm		
N/A								

Comments --

Fillet-Weld Test (QW-180)

Result-Satisfactory: Yes ----- No ----- Penelration into Paren! Metal: Yes ----- No -----
 Macro-Results -----

Other Tests

Type of Test: VISUAL INSPECTION SATISFACTORY ACCORDING TO QIV-194
 Deposit Analysis --
 Other --

Welder's Name JESUS MANUEL ALEJANDRO ROMERO Clock Stamp No. JM
 No. ----- Tests conducted by: LABORATORIO MT-0235467

I hereby certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME Code.

Manufacturer **SUMMIT MEXICO TPI**

Date JULY, 02, 2010 Certified By JOSE JUAN JIMENEZ ALEJANDRO

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code)