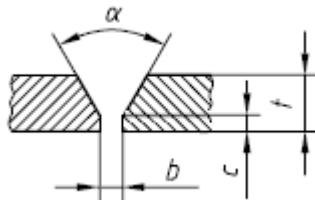


**QW-483 PROCEDURE QUALIFICATION RECORD (PQR)**  
 (See QW-201.2, section IX, ASME Boiler and Pressure Vessel Code)  
**RECORD ACTUAL CONDITIONS USED TO WELD TEST COUPON**

Company name Twinweld Sweden AB  
 Procedure Qualification Record No 2-141-34-1,5-7,8-BW Date 13.05.2020  
 WPS No 612 Welding Process (es) GTAW  
 Types (Manual, Automatic Semi-Auto) Manual

Joints (QW-402) Single V butt joint,  $\alpha=60^\circ$ ,  $b=2$  mm,  $c=1$  mm,  $t=3.91$  mm



Groove Design of test Coupon

Groove Design of test Coupon	
<b>BASE METALS (QW-403)</b>	<b>POSTWELD HEAT TREATMENT (QW-407)</b>
Material Spec. <u>ASTM B466, cast: E417062905</u>	Temperature <u>N.A.</u>
Type of Grade <u>UNS C70600</u>	Time <u>N.A.</u>
P-No <u>34</u> to P-No <u>34</u>	Other <u>N.A.</u>
Thickness of Test Coupon <u>3.91 mm</u>	
Diameter of Test Coupon <u>26.67 mm</u>	<b>GAS (QW-408)</b>
Other	Type of Gas or Gases <u>AGA Varigon He70, 15 l/min</u>
	Composition of Gas mixture <u>30% Ar, 70% He</u>
<b>FILLER METALS (QW-404)</b>	Backing <u>AGA Argon, 100% Ar, 15 l/min</u>
Weld Metal Analysis A-No <u>-</u>	
Size of Filler Metal <u>Ø2,0 mm</u>	<b>ELECTRIC. CHARACTERISTICS (QW-409)</b>
Filler Metal F-No <u>34</u>	Current/Polarity <u>DC / EN</u>
SFA Specification <u>5.7</u>	Heat Input <u>Run:1: 1.99, 2: 1.27 kJ/mm</u>
AWS Classification <u>ERCuNi</u>	Amps <u>Run:1: 95, 2: 95</u>
Other <u>Product form: Solid, weld metal thickness 3.91 mm</u>	Volts <u>Run 1: 13, 2: 13</u>
	Tungsten Electrode Size and Type <u>2.4 mm, EWTh-2 (WT20)</u>
<b>POSITION (QW-405)</b>	
Position of Groove <u>6G (H-L045)</u>	<b>TECHNIQUE (QW-410)</b>
Weld Progression (Uphill, Downhill) <u>Uphill</u>	Travel Speed <u>Run 1: 37.3, 2: 58.5 mm/min</u>
Other <u>-</u>	String of Weave Bead <u>String</u>
	Oscillation <u>N.A.</u>
<b>PREHEAT (QW-406)</b>	Multipass or Single Pass (per side) <u>Multipass</u>
Preheat Temp <u>Min +10°C</u>	Single or Multiple Electrodes <u>Single</u>
Interpass Temp <u>Max +50°C</u>	Other <u>Nozzle size: 10 mm, Cleaning: Grinding, spirit</u>
Other	

**TENSILE TEST (QW-150)**

Specimen No	Test piece dimensions mm D	Test piece dimensions mm d	Area mm <sup>2</sup>	Ultimate Total Load kN	Ultimate Unit Stress MPa	Type of Failure and Location
<b>1</b>	<b>26.60</b>	<b>18.89</b>	<b>275.5</b>	<b>86.4</b>	<b>314</b>	<b>HAZ</b>
<b>2</b>	<b>26.60</b>	<b>18.90</b>	<b>275.2</b>	<b>84.9</b>	<b>309</b>	<b>HAZ</b>

**GUIDED BEND TESTS (QW-160)**

Type and Figure No	Bend Angle	Result
<b>Face Bend 1</b>	<b>180° at 4t</b>	<b>Acceptable</b>
<b>Root Bend 2</b>	<b>180° at 4t</b>	<b>Acceptable</b>
<b>Face Bend 3</b>	<b>180° at 4t</b>	<b>Acceptable</b>
<b>Root Bend 4</b>	<b>180° at 4t</b>	<b>Acceptable</b>

**IMPACT TESTS (QW-170)**

Specimen No	Notch Location	Notch Type	Specimen Size	Test Temp	Impact J			Average J
-								

**FILLET WELD TEST (QW-180)**

Result-Satisfactory: Yes - ..... No - ..... Penetration into Parent Metal: Yes - ..... No - .....

Macro-results: .....

**OTHER TESTS**

Type of test - ..... Result - .....

Deposit Analysis - .....

Other **Visual, radiographic testing** ..... Result **Acceptable** .....

Welders Name **Kristofer Olsson, 840130** ..... Clock No ..... Stamp No .....

Test conducted by **Inspecta Latvia, Riga, Kiwa Inspecta AB** ..... Report No **4-4.1.-868-2020, 1012859-114** .....

We 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. *(Tests with higher requirements can be used.)*

Manufacturer **Twinweld Sweden AB** .....

Date: **2020-05-25** .....

By **Pontus Björk** .....

(Detail of record of tests is illustrative only and may be modified to conform to the type and number of tests)