



RINA

SINCERT

ACCREDITAMENTO ORGANISMI DI CERTIFICAZIONE E ISPEZIONE

SGQ N° 002A - SGA N° 002D  
PRD N° 002B - PRS N° 006C  
SCR N° 003F - SSI N° 001G

Membro degli Accordi di Mutuo  
Riconoscimento EA e IAF  
Signatory of EA and IAF Mutual  
Recognition Agreements

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

N. 09TA00247PO1/A

Manufacturer ITALIANA IMPIANTI srl - Portici (Na)  
WPQR No. 01/09 Dated 04/12/2009  
Manufacturer's welding procedure (WPS) No. IP01/2009 Dated 26/11/2009

RANGE OF APPROVAL

Welding process 141 Type Manual  
Joint type P/T and branch connections with angle over 60° BW ssnb-ssmb-bs/FW  
Single/Multiple pass Multiple  
Parent material group(s) 8-8 (Subgroup 8.1 only) ISO/TR 15608  
Parent material thickness (mm) Butt Joint = 3.0 to 6.8 Fillet Joint t<sub>1</sub> = 3.0 to 6.8 t<sub>2</sub> = 3.0 to 6.8  
Throat thickness (mm) No restriction  
Weld deposit thickness (mm) 3.0 to 6.8  
Outside diameter (mm) 70,65 and over  
Filler metal type Solid rod EN 12072: W 19 12 3 L Si  
Shielding gas (ISO 14175) II Backing gas (ISO 14175) II  
Type of welding current DCEN Heat input Kj/cm All  
Welding position All, PG and J-L045 excluded.  
Preheat min. (°C) None Interpass temp. Max. (°C) 180  
Post weld heat treatment / Ageing None  
Other information -

Welders name GRAZIANO Francesco Saverio Stamp No. G2  
Welding test conducted by ITALIANA IMPIANTI srl - Portici (Na)  
Mechanical test conducted by AQC - Napoli Laboratory test No. 09/255A dated 04/12/2009  
At presence of RINA Surveyor M.Buonocore

We certify that statements in this certificate are correct and that the test welds were prepared, welded and tested in accordance with the requirements of UNI EN ISO 15614-1: 2008 Standard

Issued at: Genova

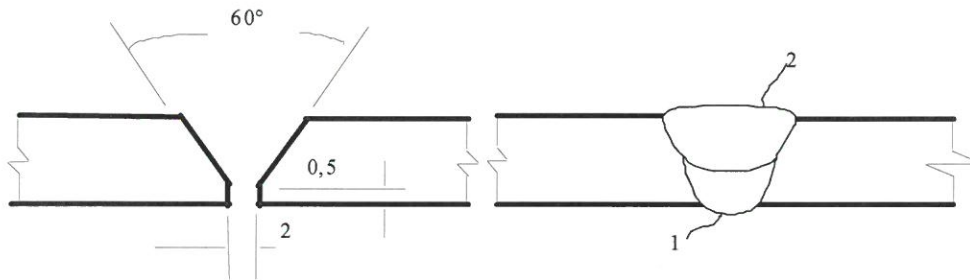
on 27 January 2010



*Manuela Muffa*

RINA Services S.p.A.

JOINT DETAILS AND WELDING SEQUENCES								
SINGLE V BUTT JOINT; ONE SIDE WELDING; WITHOUT BACKING.								
Pass No.	Process	Filler metal diam. (mm)	Filler metal classification	Amps	Volt	Travel speed (cm/min)	Heat input (kJ/cm)	Other
1	141	2.4	EN 12072	75	18	8	6.1	-
2	141	2.4	EN 12072	90	18	6	9.7	-



PARENT MATERIAL			
Material specification	ASTM A312		
Type or grade	TP316L		
Group(s)/Subgroup(s) No. (ISO/TR 15608)	8.1		
Thickness (mm)	3.40	Throat thickness (mm)	N.A.
Diameter (mm)	141.3		
Branch connection angle	N.A.		
Other	-		

WELDING CONSUMABLES			
Process	141		
Trade name(s)	ELGA CROMATIG 316 Lsi		
Specification	EN 12072		
Classification / designation	W 19 12 3 L Si		
Size (mm)	2.4		
Deposited metal thickness			
Groove	3.40 mm		
Throat	N.A.		
Flux trade name	N.A.		
Consumable insert	None		
Other	-		



<b>GAS</b>			
	Gas	Mixture	Flow rate (l/min.)
Shielding	Argon	-	10
Trailing	None	-	-
Backing	Argon	-	6

<b>POSITION</b>	
Welding position	PF
Other	-

<b>PREHEAT</b>		<b>POSTWELD HEAT TREATMENT</b>	
Preheat temperature	25 °C min.	Temperature	None
Interpass temperature	180 °C max.	Time	N.A.
Other	-	Other	-

<b>ELECTRICAL CHARACTERISTICS</b>			
Current	DC EN		
Ampere (range)	See table	Volts (Range)	See table
Mode of metal transfer	N.A.		
Tungsten electrode size and type	Diam. 2.4 mm - EN 26848 WT20		
Other	-		

<b>TECHNIQUE</b>	
Travel speed (range)	See table
String or weave bead	Weave
Oscillation (*)	N.A.
Method of groove/edge preparation	Machining/Grinding
Interpass cleaning	Grinding/Brushing
Method of back gouging	N.A.
Orifice or gas cup size	10 mm
Stand off distance (*)	N.A.
Multiple or single pass	Multiple
Multiple or single electrodes	Single
Torch angle (*)	N.A.
Other	(*) for fully mechanized/robotic only



TRANSVERSE TENSILE TEST						
Spec. (No.)	Width (mm)	Thickness (mm)	Area (mm <sup>2</sup> )	Total load (kN)	R <sub>m</sub> (N/mm <sup>2</sup> )	Fracture location
TT1	25.33	2.66	67.37	41.2	611	Weld metal
TT2	25.24	2.40	60.57	37.5	619	Weld metal

BEND TEST		
Type	No.	Result
FACE TRANSVERSE	2 OFF	Acceptable
ROOT TRANSVERSE	2 OFF	Acceptable

## OTHER TEST

MACROGRAPHIC EXAMINATION      **Acceptable**  
MICROGRAPHIC EXAMINATION      **Not required**

## NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION              **Acceptable**  
RADIOGRAPHIC EXAMINATION      **Acceptable**  
PENETRANT TEST                      **Acceptable**  
MAGNETIC PARTICLE                  **Not required**  
ULTRASONIC TEST                      **Not required**

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