



**BUREAU
VERITAS**



PRD N° 009B

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

WELDING PROCEDURE QUALIFICATION RECORD

N° QP11-ITA-22-00001-rev.0

Manufacturer's WPQR no 01-15

Manufacturer SIDERINOX SPA

Address Frazione Caselle 20081 Morimondo (MI) - ITALY

Date of welding 11/12/2015 & 16/09/2021

Reference standard UNI EN ISO 15614-11 Ed. 2003



Code/ Standard Supplem./Client Req AD 2000 Merkblatt HP 2/1

Certificate issued by / Authorized Inspector Marco Scrimieri - Bureau Veritas

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certifies that test pieces were prepared, welded and tested satisfactorily in accordance with the requirements of the documents indicated above.

Permanent Joining Procedure Qualification Record complies with the Essential Safety Requirements stated by PED Directive Appendix 1- § 3.1.2.

EXAMINATION BODY	MANUFACTURER
<p>Name, date and signature of authorized representant</p> <p>Marco Scrimieri, 01/04/2022</p> <p>Stamp  </p>	<p>Name, date and signature of representant</p>

Revision No: Reason of revision :

Other identification (if necessary) : 22.SF.3898894.138.

This document replace welding procedure qualification No. QP-ITA-B-16-39, added tests according to AD 2000 Merkblatt HP2/1

RECORD OF WELD TEST

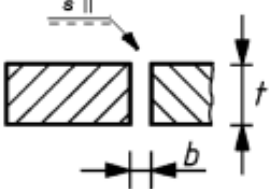
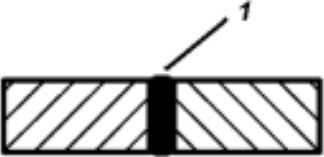
Organization Name	SIDERINOX SPA			Date	01/04/2022
Mfr Procedure Qualification Record No.	01-15				
pWPS No.	01-15				
Welding Process(es)	A) 52	B)	C)	D)	
Equipment Type	A) TRULASER CELL 100	B)	C)	D)	
Welding operators :	A) Bolzagni Omar	B)	C)	D)	

WELDING PERFORMED WITNESSED BY : Marco Scrimieri – Bureau Veritas

Laser beam welding (process 52)

EQUIPMENT IDENTIFICATION		PARENT MATERIAL	
laser welding machine:	TRULASER CELL 100	Parent material grade	1.4301/1.4307
beam polarisation:	Not applicable	Material Standard	EN 10028-7
beam delivery system:	Fiber optic	Group / Subgroup	8 / 8.1
beam focusing system:	Mirror	Thickness (mm)	3,0
plasma suppression gas system:	N.A.	Outside diameter (mm)	60,3
plasma shielding gas system:	N.A.		
filler material(s) feeding system:	N.A.		

PREPARATION		ADDITIONAL INFORMATION OR NOTE	
Joint type	Butt Weld		
Backing	No		
Gouging or grinding	N.A.		
Preparation and cleaning	Brushing		

JOINT DESIGN		WELDING SEQUENCES	
			

Note		Note	
Bevels	Angle 0	Root gap 0-0,5 mm	Root face 0-0,5 mm
		Tack weld	No

Jigs, fixtures and tooling: yes no


Mechanically fixed:

Tack weld; process:

Back support : yes no

Backing gas : N2

Filler or other additional material:					HEAT		
	A)	B)	C)	D)	Preheat temperature	10	°C
— designation	N.A.				Interpass temperature	N.A.	°C
— dimensions:	N.A.				Postheat temp and time	-	°C
— handling:	N.A.				POST WELD HEAT TREATMENT		
					Holding temp.	-	°C
					Holding time	-	min.
					Heating rate	-	°C/h
					Cooling rate	-	°C/h
Other	N.A.				Other info	-	

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RECORD OF WELD TEST

Preparation:			
<i>Procedure :</i>			
	<i>Tacking pass</i>	<i>Welding pass</i>	<i>Cosmetic pass</i>
<i>Welding position</i>	-	PA	-
<i>Welding technique</i>	-	CW Fiber laser	-
<i>Beam power at workpiece</i> — continuous (W): — F-number (for CO2 lasers): - peak power (W): - pulse energy (J): - repetition rate: - pulse duration (ms): - shape :	-	4700 Not applicable 4800 W Not applicable Not applicable Not applicable Gaussian	-
<i>Power ramping details:</i> — slope up (mm or deg) — overlap (mm or deg) — slope down (mm or deg) — slope profile	-	45% 5% 5% 45%	-
<i>Oscillation</i> — pattern — amplitude — frequency — dwell time	-	None	-
<i>Beam orientation angle :</i> — longitudinal : — transverse : — (position)	-	Vertical	-
<i>Travel speed (mm/min)</i>	-	5500	-
<i>Travel speed ramping</i>	-	N.A.	-
<i>Wire/filler feed rate</i>	-	N.A.	-
<i>Working gas</i> — classification and type: — flow rate (l/min)	-	ISO 14175 I1 (Ar 99.999%) 18	-
<i>Shielding gas</i> — classification and type: — flow rate: — purge procedure:	-	ISO 14175 N (N2 99.99%) 8 72 h	-
<i>Working distance (mm)</i>	-	-	-
<i>Shielding gas nozzle</i> — location (mm): — orientation:	-	N.A.	-
— Preheating * — Postheating *	-	N.A.	-
<i>Operations after welding *</i>	Not requested		
<i>Additional information</i>	See also Manual of laser welding machine		
* If required			

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TESTS RESULTS

NON DESTRUCTIVE TEST			
	Carried out by	Result	Report No
Visual test	Bureau Veritas Inspector	Satisfactory	
Penetrant test	Quality Control		15/2930RP01
Magnetoscopic test			
Radiographic test	Quality Control	Satisfactory	15/2930RP01
Ultrasonic test			
Other test			

MECHANICAL TEST WITNESSED BY : Marco Scrimieri - Bureau Veritas

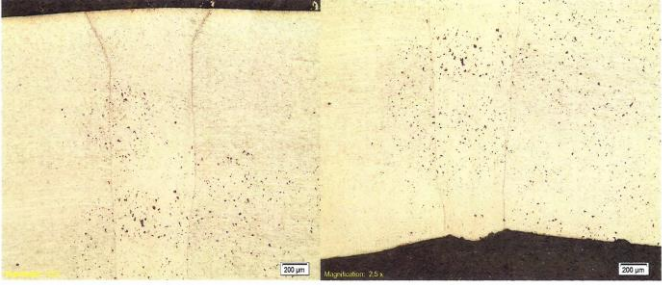
TENSILE TEST							Report No		21/2075RP04		
Test No	Direction	Position	Dimensions (mm)		Temp. °C	Rm (MPa)	Rp* (MPa)	A* (%)	Z* (%)	Fracture location	Results and remarks
			Thickness	Width - Diam.		Required ≥ 515	Required Info	Required Info	Required Info		
2075.D1	Transv	All thick	2,8	25,01	+22	677				Out of weld	Satisfactory
2075.D2	Transv	All thick	2,7	25,03	+22	671				Out of weld	Satisfactory
Note	Ductile fracture										

BEND TEST							Report No		21/2075RP04		
Test No	Direction	Specimen type			Dimensions (mm)		Former diameter (mm)	Angle °	Results and remarks		
		Face	Root	Side	Thickness	Width					
2075.D1.1	Transv-Long	X			3	25	6	180	Satisfactory		
2075.D1.2	Transv	X			3	25	6	180	Satisfactory		
2075.D2.1	Transv		X		3	25	6	180	Satisfactory		
2075.D2.2	Transv		X		3	25	6	180	Satisfactory		
Note											

IMPACT TEST										Report No									
Test No	Direction	Position	Location	Dimens. (mm)		Temp °C	Values J Acceptance				Shear area			Lateral expansion					
				Thk	W		I	II	III	Av.	I	II	III	I	II	III			
Note	B = Bottom M =Middle T = Top																		



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MACROSCOPIC EXAMINATION		Report No	01/2016
			
Note		Note	


HARDNESS TEST		Report No	
	Line	Max Results	
Note		Note	

OTHER TESTS	Report No
Micrographic examination	21/2075RP04

CERTIFICATE ATTACHMENT	
WPS	
BM Certificate	
NDT and laboratory test reports	

NOTE - OBSERVATION



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