



Welding Procedure Qualification Certificate (EN ISO 15614-1) Energy - Downstream, Power and Manufacturing

Manufacturer's Welding Procedure Qualification Record No.: **FOR01** Examining body Reference No: **- / -**

Manufacturer: **FOR.TEC - FORNITURE TECNOLOGICHE - S.R.L.**
Address: **VIA APPIA KM 186,900 - 81040 FRANCOLISE (CE)**
Welders Name: **ANTINONE Carmine (Stamp. AC)**

Code/Testing Standard: **EN ISO 15614-1:2012**
Date of Welding: **31 marzo 2017**

Range of Qualification

Welding Process(es): **135 (Partly Mechanized)**
Type of joint and weld: **Fillet weld on plate - (range of approval: Plates and pipes FW)**
Parent material group(s) and sub-group: **S355J2 - Group 1.2 acc. to ISO/TR 15608 (Range of approval: Subgroup 1.1 to 1.2 only)**
Parent Material Thickness (mm): **T1=T2=6,0 mm - (range of approval: 3.0 to 12.0)**
Weld Metal Thickness (mm): **N.A.**
Throat Thickness (mm): **4,2 - (Range of approval: no restriction)**
Single Run/Multi Run: **Multiple run**
Outside Pipe Diameter (mm): **N.A. - Range of approval: O.D. 150 and over (PA-PC rotated pos.), 500 and over (other positions)**
Filler Material Designation: **EN ISO 14341-A: G 46 4 M21 3Si1**
Filler Material Make: **UltraMag**
Filler Material Size: **Ø 1,0 mm**
Designation of Shielding Gas/Flux: **Argon 80%+20%CO2 (EN ISO 14175: M21) - (range of approval CO2 max 22%)**
Designation of Backing Gas: **N.A.**
Type of Welding Current and Polarity: **DC EP**
Mode of Metal Transfer: **Spray Arc (range of approval: both spray and globular transfer)**
Heat Input: **Min. 5.5 KJ/cm**
Welding Positions: **All, vertical down excluded**
Preheat Temperature: **10°C**
Interpass Temperature: **250°C**
Post-Heating: **None**
Post-Weld Heat Treatment and/or Stressing: **None**

Other Information

Certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code/testing standard indicated above.

Location: **FRANCOLISE (CE)**

Date of Issue: **09 maggio 2017**

Surveyor

S. Bottari
Surveyor to Lloyd's Register EMEA

A subsidiary of Lloyd's Register Group Limited

Examining Body

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Details of Test Weld

Manufacturer's provisional Welding Procedure Specification Reference No. **FT 02/17** Examining Body: Reference No: **-/ -**

Manufacturer's Welding Procedure Qualification Record No.: **FOR01**

Manufacturer: **FOR.TEC - FORNITURE TECNOLOGICHE - S.R.L.** Date of Welding: **31 marzo 2017**

Location: **VIA APPIA KM 186,900 - 81040 FRANCOLISE (CE)**

Welder's Name: **ANTINONE Carmine (Stamp. AC)** Method of Preparation and Cleaning: **Brushing**

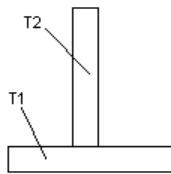
Mode of Metal Transfer: **Spray Arc** Parent Material Specification: (attach material certificates)* **UNI EN 10025-2: 2005 S355J2 - Group 1.2 acc. to ISO/TR 15608**

Joint Type and Weld: **Fillet weld on plate** Parent Material Thickness (mm): **T1=T2=6,0**

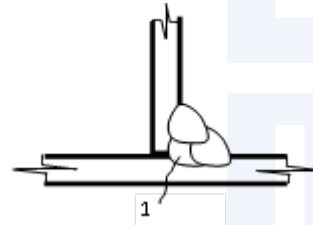
Test Piece/Welding Position: **PB** Outside Pipe Diameter (mm): **N.A.**

Weld Preparation Details (Sketch)

Joint Design



Welding Sequences

**Welding Details**

Run	Process	Size of Filler Metal	Current A	Voltage V	Type current Polarity	Wire Feed m/min	Travel Speed cm/min	Heat Input kJ/cm	Metal Transfer
1	135	1,0 mm	190	24.6	DC EP	See Amp.	38	7.4	Spray Arc
2-3	135	1,0 mm	186	26.6	DC EP	See Amp.	38	7.8	Spray Arc
/	/	/	/	/	/	/	/	/	/
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Filler Material:

Type, Designation, Trade Name: **EN ISO 14341-A: G 46 4 M21 3Si1 - UltraMag**Any Special Baking or Drying: **None**Gas/Flux: Shielding **Ar80%+20%CO2(EN14175:M21)**Backing **N.A.**Gas Flow Rate : Shielding **15 l/min**Backing **N.A.**Tungsten Electrode – Type/Size: **N.A.**Details of Back Gouging/Backing: **N.A.**Preheat Temperature: **10°C**Interpass Temperature: **250°C**Post-Heating: **None**Manufacturer's Name **FOR.TEC - FORNITURE**

Manufacturer's Signature

Other Information*:

Fillet weld, Multiple pass

Post-Weld Heat Treatment and/or Ageing

Time, Temperature, Method: **None**Heating and Cooling Rates*: **N.A.**

Surveyor

S. Bottari
Surveyor to Lloyd's Register EMEA

A subsidiary of Lloyd's Register Group Limited

Date: **09 maggio 2017**

Examining Body

* As Required

Form 4102 (2013.12)

Test Results

Manufacturer's Welding Procedure Qualification Record No.: **FOR01** Examining Body: - / -
 Reference No: - / -
 Visual Examination: **Satisfactory - Report n° 391-17** Radiography*: /
 Penetrant/Magnetic Particle Test*: **Satisfactory - Report n° 390-17** Ultrasonic Examination*: /
 Coloration Assessment**: **N.A.**

Tensile Tests*

Type/No	Re N/mm ²	Rm N/mm ²	A% on	Z%	Fracture Location	Temperature:	Remarks
Requirements	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

Bend Tests*

Type/No	Bend Angle	Former Diameter	Elongation*	Result
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/

Macroscopic Examination: **Satisfactory report n° RP 530/17 dated 02/05/2017**
 Microscopic Examination: /

Impact Tests* Type: / Size: / Requirement: /

Notch Location/Direction	Temp °C	Values (J)			Average (J)	Remarks
		1	2	3		

Hardness Tests* Other Tests:

Type/Load: **HV10** -
 Values - Parent Metal: **175 Max.**
 - H.A.Z.: **213 Max.** Remarks
 - Weld Metal: **206 Max.** -

Location of Measurements (Sketch)* see attached

Tests carried out in accordance with the requirements of: **EN ISO 15614-1:2012**
 Laboratory Report Reference No: **CTR-LAB report n° RP 530/17 dated 02/05/2017; 390-17, 391-17**

Test Results were acceptable
 Test carried out in the presence of: **A. Fasanello**

Surveyor

 S. Bottari
 Surveyor to Lloyd's Register EMEA
 A subsidiary of Lloyd's Register Group Limited

Examining Body

* As Required
 ** 15614-5 only