

QUALIFICATION OF A WELDING PROCEDURE (WPQR)

CERTIFICATE 09-702-01-C-03-2017-21740268

Authority: TÜV Teknik Kontrol ve Belgelendirme A.Ş.

pWPS No: pWPS-135-17-FW-01 WPQR-No.: 135-17-FW-01 Revision: 0

Manufacturer: BARAN ÇELİK VE GALVANİZ SAN. LTD. ŞTİ.

Address: Saray Mah. Dağyaka Cd. No:4 Kahramankazan-Ankara / Türkiye

Requirements: EN ISO 15614-1 /

Range of Approval	TEST PIECE	Range of Qualification
Welding process(es):	135-Manual	135-Manual
Type of weld, joint, execution:	FW - (ml)	FW and branch connection with an angle $\geq 60^\circ$
Groove Shape:	-	Any Shape
Parent material and Group	EN 10025-2 S355J2+N ISO/TR 15608 1.2	S355J2+N (ISO/TR 15608 Steels with a specified minimum yield strength $R_{eH} \leq 355 \text{ N/mm}^2$)
Parent material thickness (mm):	30,0 mm	-
Weld Metal Thickness (mm):	30,0 mm	$5,0 \text{ mm} \leq t$
Throat Thickness (mm):	24,0 mm	No Restriction
Single run/multi run:	Multi Run	Multi Run
Pipe outside diameter(mm):	-	$D > 500 \text{ mm}$ ve/and $D > 150 \text{ mm}$ (Sadece PA ve PC / Only PA and PC rotated position)
Filler metal designation and size:	EN ISO 14341-A - G 42 4 M21/M32 3S/1 and 1,2 mm $\varnothing$	EN ISO 14341-A - G 42 4 M21/M32 3S/1 and 1,2 mm $\varnothing$
Shielding or backing gas/ flux designation:	ISO 14175 M21: Ar+0-5% CO2	Is restricted to the symbol of the gas according. to ISO 14175. Content of CO2 shall not exceed 10 % of that used to qualify the procedure test.
Type of welding current and polarity:	DC(+)	DC(+)
Mode of metal transfer:	Spray Arc	Spray Arc
Heat input:	See Page-2	(0,75Q-1,25Q)
Welding positions:	PA	All Except PG and J-L045
Preheat temperature:	Min 50°C	Min 50°C
Interpass temperature:	Min 250°C	Min 250°C
Post Weld Heat Treatment and/or aging:	N/A	N/A
TEMPERATURE LIMITATION:		
EVIDENCE FOR QUALITY ASSURANCE		-
SCOPE EXTENSION/ LIMITATION or SPECIAL ADVICE FOR MANUFACTURING		-
Certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code / testing standard indicated above. This certificate is issued under the scope of ISO/IEC 17020 accreditation by TÜRKAK. The accreditation status would be verified via https://secure.turkak.org.tr/kapsam/search under accreditation number of AB-0100-M.		
Other materials acc. To EN ISO 15614-1, 8.3.1. Change of filler materials size is permitted acc. to 8.6.4 in EN ISO 15614-1. Change of shielding gas is permitted acc. to 8.5.2.1 in EN ISO 15614-1.		

Location - İstanbul
Date - 23.03.2017

Mr. Serdar KOLDAS
Authorized Expert
TÜV Teknik Kontrol ve Belgelendirme A.Ş.

REPORT OF A WELDING PROCEDURE QUALIFICATION TEST

Supervision of test welding

Manufacturer's Welding Procedure

Authority: TÜV Teknik Kontrol ve Belgelendirme A.Ş.

WPS No.: WPS-135-17-FW-01

WPQR-No.: PQR-135-17-FW-01 Revision: 0

Manufacturer: BARAN ÇELİK VE GALVANİZ SAN. LTD. Ş

Address: Saray Mah. Dağyaka Cd. No:4 Kahramankazan-Ankara / Türkiye

DETAILS OF WELDING

Date of welding:	20.03.2017	Location:	Kahramankazan-Ankara
Identification of test piece:	Plate	Welder's name:	Orhan ÇELİK
Welding process:	135	Welding position:	PB
Base material designation 1	S355J2+N	Base material designation 2	S355J2+N
Parent Metal Thickness 1	30,0 mm	Parent Metal Thickness 2	30,0 mm
Pipe Outside Diameter 1	-	Pipe Outside Diameter 2	-

GROOVE PREPARATION

Joint Type:	-	Included angle:	-
Face:	- [mm]	Gap:	2,0 mm [mm]

WELDING PARAMETER

Bead no. / run	Process	Size of Filler Metal [mm]	Current [A]	Voltage [V]	Type of current / Polarity	Wire feed [m/min]	Travel speed [cm/min]	Heat input [KJ/mm]	Interpass temp. [°C]
1	135	1,2	135-146	17-20	DC(+)	0,47	20,00	0,56-0,71	Max.190
2	135	1,2	145-160	17-20	DC(+)	0,47	26,80	0,45-0,58	Max.190
3	135	1,2	145-160	17-20	DC(+)	0,47	29,64	0,40-0,52	Max.190
4	135	1,2	145-160	17-20	DC(+)	0,47	45,81	0,26-0,34	Max.190

Standard designation of filler metal

EN ISO 14341-A - G 42 4 M21/M32 3Si1- AWS 5.18: ER70S-6

Trade name / Manufacturer / datasheet no.

ASKAYNAK-AS SG2

Any Special Baking or Drying

-

Standard designation of welding flux

-

Trade name / Manufacturer

-

Shielding gas / flow rate

- Shielding gas: 10 -12 [l/min]

Backing gas / flow rate

- Backing gas: - - [l/min]

Tungsten Electrode Type / Size

-

Details of Back Gouging / Backing:

Grinding, 3mm x 2 mm U Groove

Preheat Temperature

+20 °C

POST WELD HEAT TREATMENT

-

Time, Temperature, Method

-

Heating and Cooling Rates*

-

The test pieces were welded in the presence of:

Location - İstanbul

Date - 23.03.2017

Mr. Serdar KOLDAS

Authorized Expert

TÜV Teknik Kontrol ve Belgelendirme A.Ş.



TÜV Teknik Kontrol ve Belgelendirme A.Ş.

Ayazmadere Cad. Pazar Sk. Bareli Plaza No: 2-4 Kat:4, Gayrettepe, İstanbul-TÜRKİYE
Telefon +90 212 293 26 42 • Fax +90 212 293 38 44 • E-mail: tuv-nord@tuv-turkey.com

REPORT OF A WELDING PROCEDURE QUALIFICATION TEST

Results of examinations

Manufacturer's Welding Procedure

Insp. Authority: TÜV Teknik Kontrol ve Belgelendirme A.Ş.

WPS-No.: WPS-135-17-FW-01

WPQR-No.: PQR-135-17-FW-01 Rev No:0

Manufacturer: BARAN ÇELİK VE GALVANİZ SAN. LTD. ŞTİ.

Visual examination:	a	Radiographic examination*):	--
Dye Penetrant examination:	a	Ultrasonic examination*):	--

TENSILE TESTS --- EN ISO 4136

Pos. / No.	Temp. [°C]	R _e /R _{p0.2/1.0} [N/mm ²]	R _m [N/mm ²]	A %	Z %	Fracture Location ¹	Remarks
Requirement							
						--	--
						--	--
						--	--

BEND TESTS --- EN ISO 5173 Former diameter: 2,5t

Pos. / No.	Type	Bend angle	Elongation*)	Result
Requirement				
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				--
				--
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MACRO /MICRO EXAM: QVV-FRM-056 a

IMPACT TESTS* --- ISO 148-1

Type:

Pos. / Des.	Notch location	Temperature [°C]	Values (J)			Average	Remarks / type of fracture ²
			K1	K2	K3		
Requirement							
							-- -- --

HARDNESS TESTS* QVV-FRM-049 EN ISO 6507

Type / Load	HV10	Requirement	Result
Base material:	≤ 380	Max. 380	a
HAZ:	≤ 380	Max. 380	a
Weld material:	≤ 380	Max. 380	a

OTHER TESTS:

REMARKS:

Test carried out in accordance with the requirements of:

EN 15614-1

Test results were acceptable.

Location - İstanbul

Date - 23.03.2017

Mr. Serdar KOLDAŞ
Authorized Expert
TÜV Teknik Kontrol ve Belgelendirme A.Ş.

*) If required

a: acceptable na: Not acceptable

1) B: Base material / T: Transition zone / W: weld

2) D: ductile fracture / M: mixed fracture / BR: brittle fracture / N: no fracture

QUALIFICATION OF A WELDING PROCEDURE (WPQR)

CERTIFICATE 09-702-02-C-03-2017-21740268

Authority: TÜV Teknik Kontrol ve Belgelendirme A.Ş.

pWPS No: pWPS-135-17-BW-01 WPQR-No.: 135-17-BW-01 Revision: 0

Manufacturer: BARAN ÇELİK VE GALVANİZ SAN. LTD. ŞTİ.

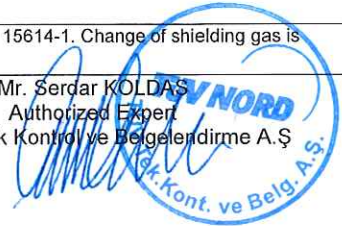
Address: Saray Mah. Dağyaka Cd. No:4 Kahramankazan-Ankara / Türkiye

Requirements: EN ISO 15614-1 /

Range of Approval	TEST PIECE	Range of Qualification
Welding process(es):	135-Manual	135-Manual
Type of weld, joint, execution:	BW - (bs)	BW(ss,nb),(ss,mb),(bs),(ss,gb), (ss,fb)-FW and branch connection with an angle $\geq 60^\circ$
Groove Shape:	V	Any Shape
Parent material and Group	EN 10025-2 S355J2+N ISO/TR 15608 1.2	S355j2+N (ISO/TR 15608 Steels with a specified minimum yield strength $ReH \leq 355 \text{ N/mm}^2$)
Parent material thickness (mm):	12,0 mm	-
Weld Metal Thickness (mm):	12,0 mm	3,0 mm $\leq t \leq 24,0$ mm (BW) 6,0 mm $\leq t \leq 24,0$ mm (FW)
Throat Thickness (mm):	-	-
Single run/multi run:	Multi Run	Multi Run
Pipe outside diameter(mm):	-	$D > 500 \text{ mm}$ ve/and $D > 150 \text{ mm}$ (Sadece PA ve PC / Only PA and PC rotated position)
Filler metal designation and size:	EN ISO 14341-A - G 42 4 M21/M32 3S/1 and 1,2 mm $\varnothing$	EN ISO 14341-A - G 42 4 M21/M32 3S/1 and 1,2 mm $\varnothing$
Shielding or backing gas/ flux designation:	ISO 14175 M21: Ar+0-5% CO ₂	Is restricted to the symbol of the gas according to ISO 14175. Content of CO ₂ shall not exceed 10 % of that used to qualify the procedure test.
Type of welding current and polarity:	DC(+)	DC(+)
Mode of metal transfer:	Spray Arc	Spray Arc
Heat input:	See Page-2	(0,75Q-1,25Q)
Welding positions:	PA	All Except PG and J-L045
Preheat temperature:	Min 50°C	Min 50°C
Interpass temperature:	Min 250°C	Min 250°C
Post Weld Heat Treatment and/or aging:	N/A	N/A
TEMPERATURE LIMITATION:		Impact test has been conducted at -20 °C with above mentioned parent and filler metal combination.
EVIDENCE FOR QUALITY ASSURANCE		-
SCOPE EXTENSION/ LIMITATION or SPECIAL ADVICE FOR MANUFACTURING		-
Certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code / testing standard indicated above. This certificate is issued under the scope of ISO/IEC 17020 accreditation by TÜRKAK. The accreditation status would be verified via https://secure.turkak.org.tr/kapsam/search under accreditation number of AB-0100-M.		
Other materials acc. To EN ISO 15614-1, 8.3.1. Change of filler materials size is permitted acc. to 8.6.4 in EN ISO 15614-1. Change of shielding gas is permitted acc. to 8.5.2.1 in EN ISO 15614-1.		

Location - ANKARA-TURKEY
Date - 22.03.2017

Mr. Serdar KOLDAS
Authorized Expert
TÜV Teknik Kontrol ve Belgelendirme A.Ş.



REPORT OF A WELDING PROCEDURE QUALIFICATION TEST

Supervision of test welding

Manufacturer's Welding Procedure
WPS No.: WPS-135-17-BW-01

Authority: TÜV Teknik Kontrol ve Belgelendirme A.Ş.
WPQR-No.: PQR-135-17-BW-01 Revision: 0

Manufacturer: BARAN ÇELİK VE GALVANİZ SAN. LTD. Ş
Address: Saray Mah. Dağyaka Cd. No:4 Kahramankazan-Ankara / Türkiye

DETAILS OF WELDING

Date of welding:	20.03.2017	Location:	Kahramankazan-Ankara
Identification of test piece:	Plate	Welder's name:	Orhan ÇELİK
Welding process:	135	Welding position:	PA
Base material designation 1	S355J2+N	Base material designation 2	S355J2+N
Parent Metal Thickness 1	12,0 mm	Parent Metal Thickness 2	12,0 mm
Pipe Outside Diameter 1	-	Pipe Outside Diameter 2	-

GROOVE PREPARATION

Joint Type: V Type	Included angle:	60 °
Face: 2,0 mm [mm]	Gap:	2,0 mm [mm]

WELDING PARAMETER

Bead no. / run	Process	Size of Filler Metal [mm]	Current [A]	Voltage [V]	Type of current / Polarity	Wire feed [m/min]	Travel speed [cm/min]	Heat input [KJ/mm]	Interpass temp. [°C]
1	135	1,2	135-146	17-20	DC(+)	0,47	20,00	0,56-0,71	Max.190
2	135	1,2	145-160	17-20	DC(+)	0,47	26,80	0,45-0,58	Max.190
3	135	1,2	145-160	17-20	DC(+)	0,47	29,64	0,40-0,52	Max.190
4	135	1,2	145-160	17-20	DC(+)	0,47	45,81	0,26-0,34	Max.190
5	135	1,2	145-160	17-20	DC(+)	0,47	40,64	0,30-0,38	Max.190
6	135	1,2	145-160	17-20	DC(+)	0,47	43,44	0,28-0,36	Max.190

Standard designation of filler metal	EN ISO 14341-A - G 42 4 M21/M32 3S1- AWS 5.18: ER70S-6
Trade name / Manufacturer / datasheet no.	ASKAYNAK-AS SG2
Any Special Baking or Drying	-
Standard designation of welding flux	-
Trade name / Manufacturer	-
Shielding gas / flow rate	- Shielding gas: 10 -12 [l/min]
Backing gas / flow rate	- Backing gas: - - [l/min]
Tungsten Electrode Type / Size	-
Details of Back Gouging / Backing:	Grinding, 3mm x 2 mm U Groove
Preheat Temperature	+20 °C
POST WELD HEAT TREATMENT	-
Time, Temperature, Method	-
Heating and Cooling Rates*	-

The test pieces were welded in the presence of:
Location - Kahramankazan-Ankara
Date - 22.03.2017

Mr. Serdar KOLDAS
Authorized Expert
TÜV Teknik Kontrol ve Belgelendirme A.Ş.



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REPORT OF A WELDING PROCEDURE QUALIFICATION TEST

Results of examinations

Manufacturer's Welding Procedure

Insp. Authority: TÜV Teknik Kontrol ve Belgelendirme A.Ş.

WPS-No.: WPS-135-17-BW-01

WPQR-No.: PQR-135-17-BW Rev No:0
01

Manufacturer: BARAN ÇELİK VE GALVANİZ SAN. LTD. ŞTİ.

Visual examination:	a	Radiographic examination*):	a
Dye Penetrant examination:	a	Ultrasonic examination*):	--

TENSILE TESTS BT-21740268-1 EN ISO 4136

Pos. / No.	Temp. [°C]	R _e /R _{p0,2/1,0} [N/mm ²]	R _m [N/mm ²]	A %	Z %	Fracture Location ¹	Remarks
Requirement			470-630				
1	25	406,30	506,80	28,00		B	a
2	25	400,80	509,40	25,33		B	a
						--	--

BEND TESTS BT-21740263-1 EN ISO 5173 Former diameter: 2,5t

Pos. / No.	Type	Bend angle	Elongation*)	Result
Requirement				
1	Root Bend	180 °		a
2	Root Bend	180 °		a
3	Face Bend	180 °		a
4	Face Bend	180 °		a

MACRO / MICRO EXAM: M-21740268-1 a

IMPACT TESTS* CI-21740263-1 ISO 148-1

Type: KV300/5 10 x10x55 mm

Pos. / Des.	Notch location	Temperature [°C]	Values (J)			Average	Remarks / type of fracture ²
			K1	K2	K3		
Requirement		-20	Min. 27,0	Min. 27,0	Min. 27,0	Min. 27 Joule	
1	HAZ	-20	142,91	138,86	155,32	145,70	D
2	WELD	-20	137,25	153,44	108,97	133,22	D
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HARDNESS TESTS* HA-21740268-1 EN ISO 6507

Type / Load	HV10	Requirement	Result
Base material:	≤ 380	Max. 380	a
HAZ:	≤ 380	Max. 380	a
Weld material:	≤ 380	Max. 380	a

OTHER TESTS:

REMARKS:

Test carried out in accordance with the requirements of:

EN 15614-1

Test results were acceptable.

Location - Kahramankazan-Ankara

Date - 22.03.2017

Mr. Serdar KOLDAŞ
Authorized Expert
TÜV Teknik Kontrol ve Belgelendirme A.Ş.

*) If required

a: acceptable na: Not acceptable

1) B: Base material / T: Transition zone / W: weld

2) D: ductile fracture / M: mixed fracture / BR: brittle fracture / N: no fracture

TÜV Teknik Kontrol ve Belgelendirme A.Ş.

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