

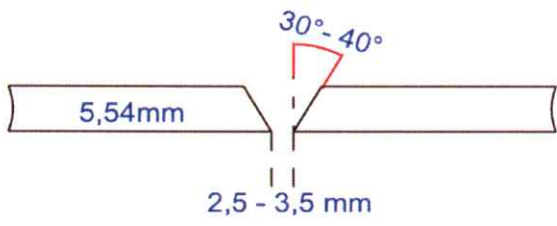
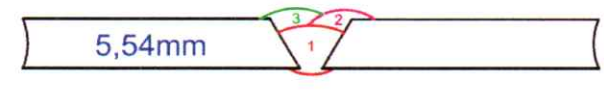
pWPS

Page 1/1

WELDING PROCEDURE SPECIFICATION

WPQR No	WPQR - 2	Parent Material Grad	Part 1 : st37	Part 2 : st37
Method of preparation	: CNC	Range of Material thickness	: 3mm to 9mm	
and cleaning	: Brushing/grinding	Range of Outside diameter	: 30,16 ≥ D > 500mm	
Joint Type	: Butt joint	Range of Welding Position	: H-L045 (All positions)	
Parent Material Spec.	: CS (st37 DN50 60,33mm)			

Welding Preparation Details

Joint design	Welding sequences
	

Welding Details

Run number	1	2	3		
Welding process	GTAW	GTAW	GTAW		
Autom. Welding .nr. of heads					
.weaving					
Filler metal: wire (W) or electrode (E)	W	W	W		
.Designation	GEDİK WELDING A.Ş				
.Grade	4YM				
.Description	GEKA SG 2				
.Diameter	2,4	2,4	2,4		
Shielding: Flux (F) or gas (G)	G	G	G		
.Powder flux .description					
.type and trade name	HABAS	HABAS	HABAS		
.Gas flux .description	%99,9 Ar				
.type and trade name					
.Backing .flow rate (l/mn)					
.Shielding .flow rate (l/mn)					
.Plasma					
Tungsten electrode: type/size					
Type of current	DC	DC	DC		
Electrode or wire polarity	-	-	-		
Current (A)	103-105	130-133	118-120		
Voltage (V)	11,2-11,3	11,1-11,2	10,3-10,5		
Travel speed S (cm/min)	18,9	11,9	8,1		
Wire feed speed (cm/min)					
Heat input (J/cm) = [k x V x A x 60] / S	2260	4506	5600		
Interpass temperature in °C (min/max)	Min 80 °C / Max 250°C				
Welding equipment .trade mark / Type	ESAB TIG 4000i				

Pre heat	NO	Temperature°C.....	Holding Time.....
Post heating	NO	Temperature°C.....	Holding Time.....
Post Weld Heat treatment	NO	Temperature°C.....	Holding Time.....
Welder: Ahmet DEMİR			

Prepared by Representative

Endorsed by BV Surveyor

Name: NEJDET AKPINAR
(TR-IIW-IWIP .INT. WELDING INSPECTOR)
Signature / Stamp :

Name: HAKAN TIRYAKI
Signature :

WELDING PROCEDURE QUALIFICATION RECORD

Firm : GÜNAL GEMİ İNŞAAT MAKİNA NAKLİYE SAN. VE TİC. LTD. ŞTİ.

Address: GÜNAL GEMİ Aydıntepe Mah. Sahil Bulvarı Alize İş Merkezi No: 191/14 Tuzla - İSTANBUL

Reference : BV Rules on Material and Welding for the Classification of Marine Units,
NR216, Ch 5, Sec 4, Approval of Welding Procedures

Further to the welding of the standardized test pieces carried out in the shipyard at GÜNAL GEMİ
Aydıntepe Mah. Sahil Bulvarı Alize İş Merkezi No: 191/14 Tuzla - İSTANBUL

on 27.04.2018 in presence of Mr. HAKAN TİRYAKİ Bureau Veritas Surveyor,

We certify that shipyard welding procedure detailed in page 2/5 of this record has given satisfactory
results in accordance with the requirements of above reference.

Date of Issue: 15.05.2018

Prepared by Representative

Name: NEJDET AKPINAR
(TR-IIW-IWIP .INT. WELDING INSPECTOR)

Signature / Stamp :



GÜNAL GEMİ İNŞAAT MAKİNA NAKLİYE SAN. VE TİC. LTD. ŞTİ.
Aydıntepe Mh. Sahil Bulvarı Alize İş Merkezi No: 191/14 Tuzla / İST.
Tel : 0216 447 37 40 Tic. Sicil No: 265 133
Tuzla V.D. 426 053 9954 Mersis No: 0426 053 9954 00018
www.gunalgemi.com e-mail: gunalgemi@gmail.com

Endorsed by BV Surveyor

Name: HAKAN TİRYAKİ

Signature / Stamp :



BUREAU VERITAS MARINE & OFFSHORE
BUREAU
VERITAS
INTERNATIONAL REGISTER

 GÜNAL GEMİ GÜNAL GEMİ İNŞAAT MAKİNA NAKLIYE SAN. VE TİC. LTD. ŞTİ.	WELDING PROCEDURE QUALIFICATION RECORD WPQR	WPQR No: 2 432ITB18 Page 2 of 4
--	---	---

1 DETAILS OF WELD TEST

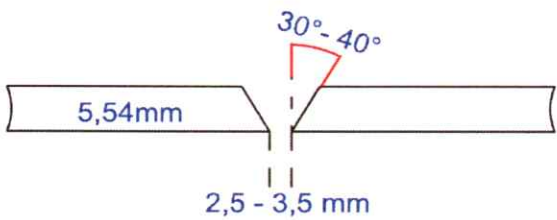
Method of preparation:.. CNC

Cleaning : Brushing/grinding

Joint type : Butt joint

	Part 1	Part 2
Parent material spec	: st37	st37
Heat Nr	: 7F1594	7F1594
Material thickness	: 4,5mm	4,5mm
Outside diameter	: 60,33 (DN50)	

Weld Preparation Details

Joint design	Welding sequences
	

Welding Details

Run number	1	2	3			
Welding process	GTAW	GTAW	GTAW			
Welding position	HL-045	HL-045	HL-045			
Autom. Welding .nr. of heads						
.weaving						
Filler metal: wire (W) or electrode (E)	W	W	W			
.Designation	GEDİK WELDING A.Ş					
.Grade	4YM					
.Description	GEKA SG 2					
.Diameter	2,4	2,4	2,4			
Shielding: Flux (F) or gas (G)	G	G	G			
.Power flux .description						
.type and trade name						
.Gas flux .description	HABAS (%99,9 Ar)					
.type and trade name						
.Backing .flow rate (l/mn)						
.Shielding .flow rate (l/mn)						
.Plasma						
Tungsten electrode: type/size						
Type of current	DC	DC	DC			
Electrode or wire polarity	-	-	-			
Current (A)	103-105	130-133	118-120			
Voltage (V)	11,2-11,3	11,1-11,2	10,3-10,5			
Travel speed S (cm/min)	18,9	11,9	8,1			
Wire feed speed (cm/min)						
Heat input (J/cm) = [k x V x A x 60] / S	2260	4506	5600			
Interpass temperature in °C (min/max)	Min 80 °C / Max 250°C					
Welding equipment .trade mark / Type	ESAB TIG 4000i					

Pre heat ☒ No ☐ Yes

Temperature°C N.A

Holding Time.....

Post heating ☒ No ☐ Yes

Temperature°C.....N.A

Holding Time.....

Post Weld Heat treatment ☒ No ☐ Yes

Temperature°C...N.A

Holding Time.....



 GÜNAL GEMİ İNŞAAT MAKİNA NAKLİYE SAN. VE TİC. LTD. ŞTİ.	WELDING PROCEDURE QUALIFICATION RECORD WPQR	WPQR No: 2 432ITB18 Page 3 of 4
--	--	---

2 TEST RESULTS

2.1

NON-DESTRUCTIVE TESTS	PERFORMED BY	REPORT Nr. / DATE	RESULT
Visual examination	İMKOSAN	04058/18/VT – 28.04.2018	OK
Dye penetrant / Magnetic particle	İMKOSAN	04057/18/MT – 28.04.2018	OK
Radiographic examination	İMKOSAN	04144/18/SE – 30.04.2018	OK
Ultrasonic examination	N/A		

2.2 TENSILE TESTS

Performed by: İMKOSAN

Report Nr. / DATE: 1736/18 - 11.05.2018

Test Numune No Test Piece No	Boyutlar Size of Specimen mm ²	Akma Dayanımı %0,2 (Yield Strength) N/mm ²	Çekme Dayanımı (Tensile Strength) N/mm ²	Maks. Yük (Max. Load) kN	Kırılma Bölgesi (Location of fracture)	Notlar; Çatlak Kırılma Görünüşü (Remarks e.g. fracture appearance)
1	56,34	344	439	25	AM	---
2	55,63	323	421	23	AM	---
--	--	--	--	--	--	--

2.3 BEND TESTS

Performed by: İMKOSAN

Report Nr. / DATE: 1737/18 – 11.05.2018

Test Numune No Test Piece No	Deney Türü (Type of test)	Boyutlar (Dimensions) w x t x l (mm)	Mandrel çapı (Former diameter) mm	Mesnetler arası mesafe (Distance between rollers) mm	Eğme açısı (Bend angle degrees)	Notlar; Çatlak Kırılma Görünüşü (Remarks e.g. fracture appearance)
1	ROOT	5,54x30x300	22	35	180	ACCEPTABLE
2	ROOT	5,54x30x300	22	35	180	ACCEPTABLE
3	FACE	5,54x30x300	22	35	180	ACCEPTABLE
4	FACE	5,54x30x300	22	35	180	ACCEPTABLE

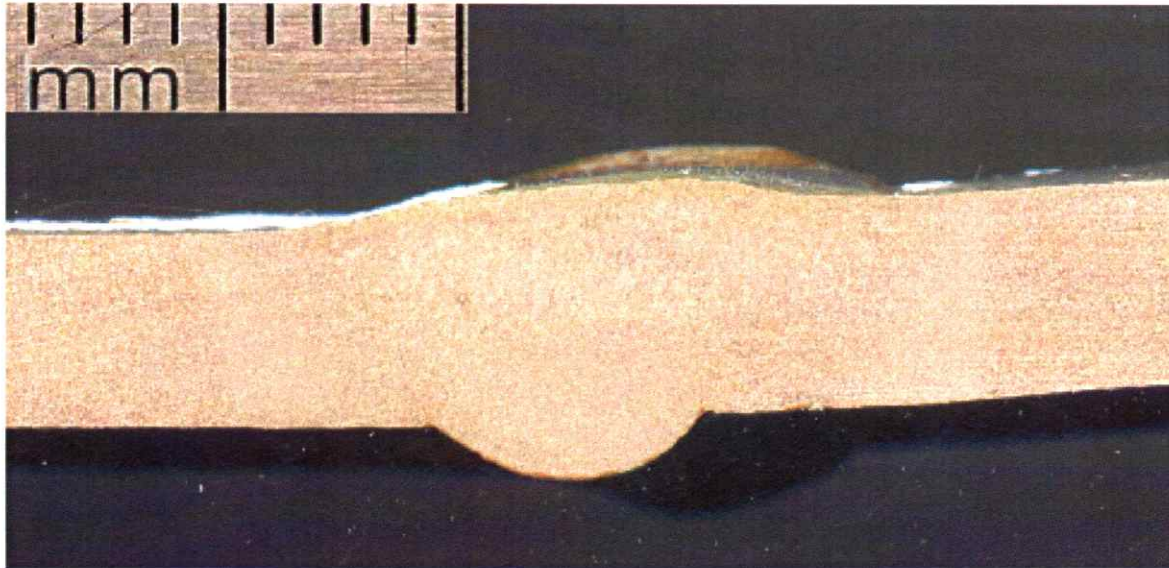


 GÜNAL GEMİ İNŞAAT MAKİNA NAKLİYE SAN. VE TİC. LTD. ŞTİ.	WELDING PROCEDURE QUALIFICATION RECORD WPQR	WPQR No: 2 432ITB18 Page 4 of 4
--	---	--

- 2.4 IMPACT TESTS-NA
- 2.5 HARDNESS TEST-NA
- 2.6 MACROGRAPHIC EXAMINATION

Performed by: İMKOSAN
MAKRO
Observations :

Report Nr. / DATE: 1738/18 – 11.05.2018



- 2.7 MICROGRAPHIC EXAMINATION-NA
- 2.8 OTHER EXAMINATIONS OR TESTS

Annexed Documents Identification	Name and Signature of Bureau Veritas Surveyor	Name and Signature of Representative
Radiographic Test Report /İMKOSAN/04144/18/SE – 30.04.2018	 MAKAN TIRYAKI 	 NEJDET AKPINAR (TR-IIW-IWP .INT. WELDING INSPECTOR)  GÜNAL GEMİ İNŞAAT MAKİNA NAKLİYE SAN. VE TİC. LTD. ŞTİ. Aytepe Mh. Sahil Bulvarı Alize İş Merkezi No: 19/14 Tuzla / İZMİR Tel : 0216 447 37 40 Tlx. Sicil No: 665 133 Tuzla V.D. 426 053 9154 Mersis No: 0426 053 9954 00018 www.gunalgem.com.tr e-mail: gunalgemi@gmail.com
Magnetic Test Report /İMKOSAN/04057/18/MT – 28.04.2018		
Visual Test Report /İMKOSAN/04058/18/VT – 28.04.2018		
Tensile Test Report/ İMKOSAN/1736/18 - 11.05.2018		
Bend Test Report /İMKOSAN/1737/18 – 11.05.2018		
Impact test report/ İMKOSAN/ N/A		
Hardness test report / N/A		
Macrographic Test Rep. /İMKOSAN/1738/18 – 11.05.2018		

WELDING PROCEDURE SPECIFICATION

WPQR No : WPQR - 2
Method of preparation : CNC
and cleaning : Brushing/grinding
Joint Type : Butt joint
Parent Material Spec. : CS (st37 DN50 60,33mm)

Parent Material Grad : st37
Range of Material thickness : 3mm to 9mm
Range of Outside diameter : 30,16 $\geq$ D $>$ 500mm
Range of Welding Position : H-L045 (All positions)

Welding Preparation Details

Joint design	Welding sequences

Welding Details

Run number	1	2	3		
Welding process	GTAW	GTAW	GTAW		
Autom. Welding .nr. of heads					
.weaving					
Filler metal: wire (W) or electrode (E)	W	W	W		
.Designation	GEDİK WELDING A.Ş.				
.Grade	4YM				
.Description	GEKA SG 2				
.Diameter	2,4	2,4	2,4		
Shielding: Flux (F) or gas (G)	G	G	G		
.Powder flux .description					
.type and trade name	HABAS	HABAS	HABAS		
.Gas flux .description	%99,9 Ar				
.type and trade name					
.Backing .flow rate (l/mn)					
.Shielding .flow rate (l/mn)					
.Plasma					
Tungsten electrode: type/size					
Type of current	DC	DC	DC		
Electrode or wire polarity	-	-	-		
Current (A)	103-105	130-133	118-120		
Voltage (V)	11,2-11,3	11,1-11,2	10,3-10,5		
Travel speed S (cm/min)	18,9	11,9	8,1		
Wire feed speed (cm/min)					
Heat input (J/cm) = [k x V x A x 60] / S	2260	4506	5600		
Interpass temperature in °C (min/max)	Min 80 °C / Max 250°C				
Welding equipment .trade mark / Type	ESAB TIG 4000i				

Pre heat : NO
Post heating : NO
Post Weld Heat treatment : NO
Welder: Ahmet DEMİR

Temperature°C :
Holding Time :
Temperature°C :
Holding Time :
Temperature°C :
Holding Time :

Prepared by Representative

Endorsed by BV Surveyor

Name: NEJDET AKPINAR
(TR-IIW-IWIP .INT. WELDING INSPECTOR)
Signature / Stamp :

Name: HAKAN TIRYAKI
Signature :
Stamp :

TS EN 5173'e göre Eğme Deneyi Raporu
Bend Test Report According to EN 5173

Rapor No/Report Nr. : 1737-18-EĞME-
Müşteri/Customer : GÜNAL GEMİ
Proje adı/Project name : ...
Test Parçası Tanımı / Test Piece Designation : WPS-2 HEAT NR 7F1594 HL045 141
Ürün Formu/Form of product : PIPE Ø2"X5,54 mm
Ortam sıcaklığı/ Ambient temp. : 23 °C
DolguMetalı/Filler metal : ...
Ana Metal /Parent metal : S235J0
Deneyin amacı/Purpose of examination : WPQR
Cihaz Bilgisi /Device Information : INSTRON 5989-600kN

Test Numune No	Deney Türü	Boyutlar	Mandrel çapı	Mesnetler arası mesafe	Eğme açısı	Notlar; Çatlak Kırılma Görünüşü
Test Piece No	(Type of test)	(Dimensions) w x t x l (mm)	(Former diameter) mm	(Distance between rollers) mm	(Bend angle degrees)	(Remarks e.g. fracture appearance)
1	ROOT	5,54x30x300	22	35	180	ACCEPTABLE
2	ROOT	5,54x30x300	22	35	180	ACCEPTABLE
3	FACE	5,54x30x300	22	35	180	ACCEPTABLE
4	FACE	5,54x30x300	22	35	180	ACCEPTABLE
5						
6						
NOTLAR	Malzeme bilgisi müşteri beyanıdır. (Material information was given by Customer)					
NOTES	Kopyalanamaz, tüm hakları gizlidir. (Can not be copied, all rights reserved.)					
	Numune ölçülerinde BV kuralları baz alınmıştır.					

TARİH

Date

11.05.2018

SURVEYOR**OPERATÖR**

(Performed by)

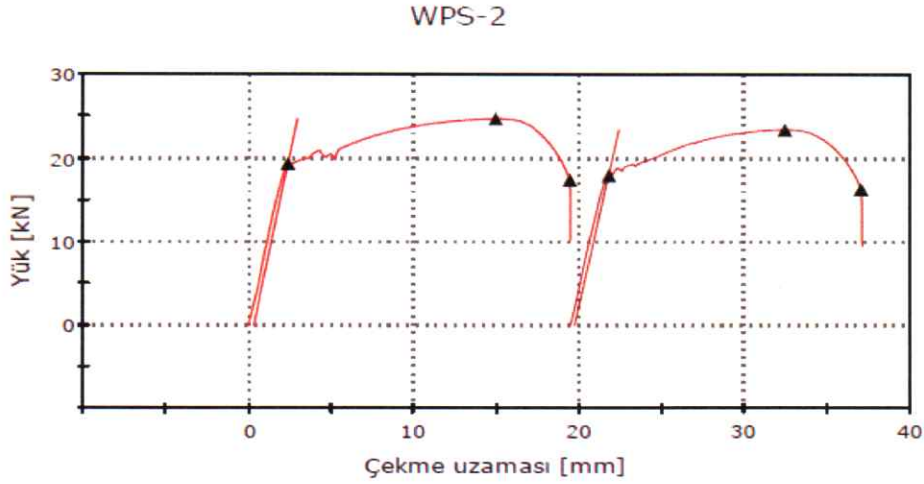
**MEK. TEST LAB. YÖNETİCİSİ**

(Mech. Testing Lab. Manager)



TS EN ISO 4136 'ya göre Çekme Deneyi Raporu
Transverse Tensile Test Report According to TS EN ISO 4136

Rapor No/Report Nr. : 1736-18-ÇEKME-
Müşteri/Customer : GÜNAL GEMİ
Proje adı/Project name : ...
Test Parçası Tanımı / Test Piece Designation : WPS-2 HEAT NR 7F1594 HL045 141
Ürün Formu/Form of product : PIPE Ø2"X5,54 mm
Ortam sıcaklığı/ Ambient temp. : 23°C
DolguMetalı/Filler metal : ...
Ana Metal /Parent metal : S235 J0
Cihaz Bilgisi /Device Information : INSTRON 5989-600kN
Deneyin Amacı: Kaynaklı malzemenin mekanik değerlerini ölçmek.
Purpose of the examination: Welded material's mechanical values of the measure.

ÇEKME DENEY GRAFİKLERİ
Tensile Test Charts

Test Numune No Test Piece No	Boyutlar Size of Specimen mm ²	Akma Dayanımı %0,2 (Yield Strength) N/mm ²	Çekme Dayanımı (Tensile Strength) N/mm ²	Maks. Yük (Max. Load) kN	Kırılma Bölgesi (Location of fracture)	Notlar; Çatlak Kırılma Görünüşü (Remarks e.g. fracture apperance)
1	56,34	344	439	25	AM	...
2	55,63	323	421	23	AM	...
..	..	..	..	..	..	..

NOTLAR Malzeme bilgisi müşteri beyanıdır.. (Material information was given by Customer)
NOTES Kopyalanamaz, tüm hakları gizlidir. (Can not be copied, all rights reserved.)

TARİH
Date

11.05.2018

SURVEYOR



OPERATÖR
(Performed by)

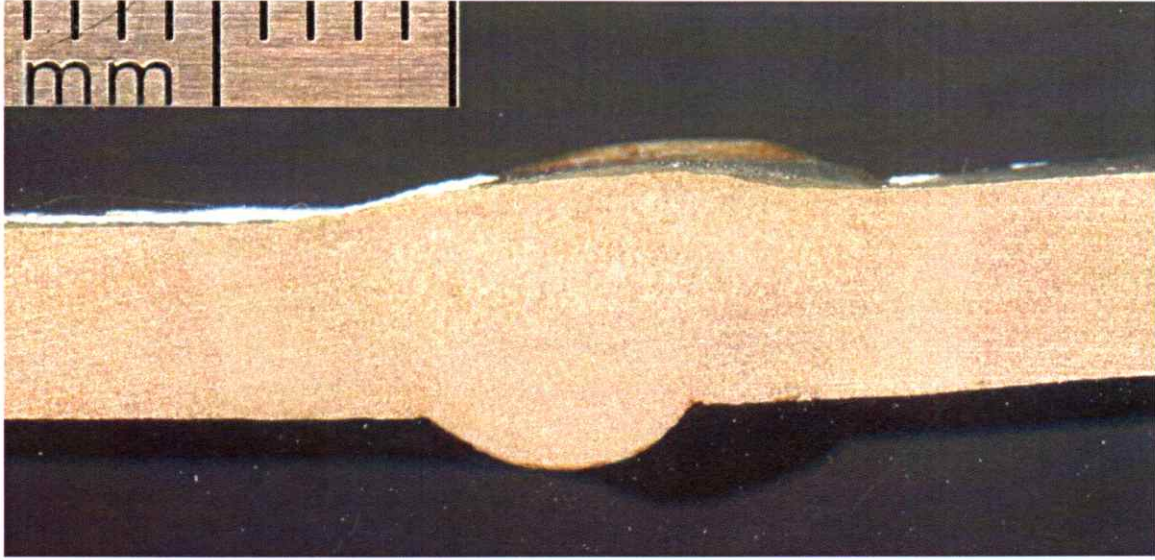


MEK. TEST LAB. YÖNETİCİSİ
(Mech. Testing Lab. Manager)



TS EN ISO 17639'a göre Makro İnceleme Deney Raporu
Macro Examination Test Report According to TS EN ISO 17639

Rapor No/Report Nr. : 1738-18-MAKRO-
Müşteri/Customer : GÜNAL GEMİ
Proje adı/Project Nr : ...
Test Parçası Tanımı / Test Piece Designation : WPS-2 HEAT NR 7F1594 HL045 141
Ürün Formu/Form of product : PIPE Ø2"X5,54 mm
Ortam sıcaklığı/ Ambient temp. : 20°C
Dağlama Çözeltisi/Eaching solution : NİTAL %10
DolguMetalı/Filler metal : ...
Ana Metal /Parent metal : S235 J0
Cihaz Bilgisi/Device information : EPSON V 500 PHOTO
Deneyin amacı/Purpose of examination : WPQR

MAKRO YAPI GÖRÜNTÜLERİ
Macro Structure Spectrum

NOTLAR Malzeme bilgisi müşteri beyanıdır. (Material information was given by Customer)
NOTES Kopyalanamaz, tüm hakları gizlidir. (Can not be copied, all rights reserved.)

TARİH
Date

OPERATÖR
Performed by

MEK. TEST LAB. YÖNETİCİSİ
Mech. Testing Lab. Manager

11.05.2018



İmkosan Mühendislik Ltd. Şti.

Adres: Güzelıyali mh. Alinteri sk. No:4 Pendik/İstanbul (34903)

Tel: 0216 392 82 78 (92) Faks: 0216 392 82 79