



Page 1 of 2
Certificate No. OSL2350284
First Date of Inspection 07 December 2023
Final Date of Inspection 07 December 2023
Office Oslo

Certificate for Machinery Equipment

Valves

This is to certify that the undersigned Surveyor to LLOYD'S REGISTER did at the request of the below client, attend the testing and examination of the product(s) described below in accordance with the relevant Rules and Regulations for the Classification of Ships and found it/them satisfactory.

General information

Customer	Jotron Skipper AS
Purchase Order No	130621
Manufacturer	Jotron Skipper AS
Intended for	Warehouse
Customer Work Order No	130621 and 122599
Date of issue	12 December 2023
Quantity	2 Batch

Particulars

Description	1 off valve DB-60-SA with bottom flange + 5 off ETNST transducer tanks
Size	Valve size DN 65
Valve body material	Steel
Test pressure body	5 Bar
Test pressure seat	5 Bar
Design pressure	-
Set pressure if applicable	-

Identification Marks On Product

I.D number	LR OSL2350284
Surveyors initials	-
Date of inspection	-

Remarks

No remarks raised

Stein Vangen
Lloyd's Register EMEA
A subsidiary of Lloyd's Register Group Limited



Page 2 of 2
Certificate No. OSL2350284
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Office Oslo

Description	Manufacturer Designation	Serial Number	IMO Number
Ball valve		23624	0
Standars tanks		N142SGK8	0

Sertifika No / Number of Cert.: :2022/092

Tarih/Date

21.11.2022

Firma Adı / Customer Name : :LANGTHON AS/ SKIPPER

Malzeme Kalitesi / Material Standard : CF8M

Sıra Pos	Döküm No/Heat Number	Malzeme Adı / Material Name	Parça Adeti / Material Quantity	Kimyasal Kompozisyon / Chemical Composition							
				% C	% Si	% Mn	% P	% S	% Cr	%Mo	%Ni
				0.08 Max	1.5 Max.	1.5 Max.	0.040 Max	0.030 Max.	17.0-21.0	2.0-3.0	9.0-12.0
1	6208	DN65 INTERMEDIATE PART	50	0.05	1.37	1.070	0.030	0.025	17.6	2.17	9.11
2	6218	DN65 INTERMEDIATE PART	50	0.042	1.15	1.090	0.032	0.024	17.5	2.13	9.16
3	6228	DN65 INTERMEDIATE PART	50	0.049	1.22	1.120	0.026	0.022	17.4	2.12	9.05
4	6238	DN65 INTERMEDIATE PART	50	0.046	1.26	1.090	0.028	0.019	17.5	2.05	9.14
5											

Mekanik Özellikler / Mechanical Properties

Döküm No / Heat Number.	Akma Dayanımı N/mm ² Yield Strength	Çekme Dayanımı N/mm ² Tensile Strength	Uzama / Elongation %	Kesit Daralması / Reduction of Area %	Darbe Testi / Charpy Impact test J/0°C	Sertlik / Hardness HB
		180 Min.	440	30 Min.	-	-
6208	302	599	36.2	-	-	-
6218	295	580	34.9			
6228	287	575	36.2			
6238	287	569	35.5			

Tahribatsız Testler / Non Destructive Tests

Döküm No / Heat Number.	Parça Adeti / Material Quantity	MT	PT	UT	RT	VT	Microstructure Ranges
6208	50	-	-	-	-	OK	-
6218	50	-	-	-	-	OK	-
6228	50	-	-	-	-	OK	-
6238	50	-	-	-	-	OK	-

Uygulanan Isıl İşlemler / Heat Treatment Applied

Döküm No / Heat Number.	Parça Adeti / Material Quantity	Normalizing °C	Annealing °C	Stress Relieving °C	Quenching °C	Tempering °C
6208	50	1100°C/ 2 Hours	-	-	-	-
6218	50	1100°C/ 2 Hours	-	-	-	-
6228	50	1100°C/ 2 Hours	-	-	-	-
6238	50	1100°C/ 2 Hours	-	-	-	-

We hereby certify that the material has been made by an approval process and satisfactorily tested in accordance with the rules of BV,LR and DNV-GL.

Surface quality is suitable with eye examination of MSS SP55 Standard.

KONTROL / CONTROLLED BY		ONAY / APPROVED BY		GÖZETİM / WITNESS BODY (If necessary)	
Adı / Name	M.Merih TAŞKIN	Hakan ÇALIŞKAN			
Ünvanı/ Title	Quality Control Engineer	Quality Manager			
İmza/ Signature					
Tarih/ Date	21.11.2022	21.11.2022			

CERTIFICATES:(Validities:DD/MM/..YY)

Naviga Certification ISO 9001:2015 Cert No:1840017(10.01.2022-06.01.2023)

DNV-GL : Certificate No:AMMM00002YE (05.04.2022-04.04.2025)

Bureau Veritas-Mode II Survey Scheme- Marine Division Cert No:SMS.W.II./57463/A.0 (09.11.2018-09.11.2022)

Lloyd's Register-Certificate No:LR2004266WA (03.07.2020-02.07.2023)





SAMSVARSERKLÆRING

Leverandør / produsent:

Strømmen Dreieverksted AS

Sendt dato:

31/1-2023

SKIPPER bestillings nr:

1061507

SKIPPER varenummer:

DB-1022

Revisjon:

02

Antall levert:

10

Stål produsentens Heat / Charge nr:

1. 566504

2.

3.

4.

5.

Batch nr (år-uke-løpenummer):

Eks på batch nr: 13441

0523

Hvis samme varenummer blir levert mer enn en gang i løpet av uken, skal løpenummer endres fra 1 til 2 o.s.v.

Produsenten/leverandøren erklærer herved at produktet er laget i henhold til SKIPPERs seneste godkjente tegning, og i samsvar med SKIPPERs bestilling.
(Batch nummer skal stemples i materialet)

Dette skjemaet skal følge med varene som blir levert til SKIPPER, og evt. skannes og sendes til SKIPPER sammen med materialsertifikat.

Produktet er målt, kontrollert og godkjent av:

Stempel / Sign:

Strømmen Dreieverksted AS

E-post: firmapost@dreie.no

www.dreie.no

A02/Z03

INSPECTION CERTIFICATE acc to
EN 10204 3.1

A06

SVERDRUP STEEL AS
STRANDSVINGEN 2
4032 STAVANGER
NORWAY

INSPECTION STAMP

SVQ

Customer References A07 PO-03705 125-06911 SVERDRUP S	Alleima References A08 <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Order No.</td> <td style="width: 33%;">Subs No.</td> <td style="width: 33%;">Dispatch note</td> </tr> <tr> <td>590387</td> <td>714251</td> <td>37697/53</td> </tr> <tr> <td>Suppl. No</td> <td>C.Code</td> <td></td> </tr> <tr> <td>284-64142</td> <td>87</td> <td></td> </tr> </table>	Order No.	Subs No.	Dispatch note	590387	714251	37697/53	Suppl. No	C.Code		284-64142	87	
Order No.	Subs No.	Dispatch note											
590387	714251	37697/53											
Suppl. No	C.Code												
284-64142	87												

Material description B01/B04 HOT WORKED BAR STEEL ROLLED ANNEALED & STRAIGHTENED PEEL TURNED AND POLISHED <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Metallurgical process</td> <td style="width: 20%;">Origin</td> <td style="width: 30%; text-align: right;">c70</td> </tr> <tr> <td>E+AOD+LRF</td> <td>Sweden</td> <td></td> </tr> </table>	Metallurgical process	Origin	c70	E+AOD+LRF	Sweden		Steel/material Designations B02 Alleima SANMAC 316/SANMAC 316L <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">AISI</td> <td style="width: 50%;">UNS</td> </tr> <tr> <td>316/316L</td> <td>S31600/S31603</td> </tr> <tr> <td>W.nr</td> <td>EN no</td> </tr> <tr> <td>1.4401/1.4404</td> <td>1.4401/1.4404</td> </tr> </table>	AISI	UNS	316/316L	S31600/S31603	W.nr	EN no	1.4401/1.4404	1.4401/1.4404
Metallurgical process	Origin	c70													
E+AOD+LRF	Sweden														
AISI	UNS														
316/316L	S31600/S31603														
W.nr	EN no														
1.4401/1.4404	1.4401/1.4404														

Technical requirements B03 EN 10088-3:-2014, EN10272:-2016*, EN10060:2003, EN 10221:1996 EN10222-5:-2017*, PED 2014/68/EU, QQ-S-763 F, NACE MR0175/ISO 15156-3:-2015, NACE MR0103/ISO 17945-1:-2015, ASTM A-276-17, ASME SA-276-ED-21 SECT II PART A, ASTM A-479-21, ASME SA-479-ED-21 SECT II PART A, ASTM A-484-22, ASTM A-182-22*, ASTM A-965-21A*, ASTM A-314-19*, NORSOK M-630:2020, NORSOK MDS S17 REV. 1 *For detailed information, please see the appendix
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EXTENT OF DELIVERY B07-B13								
It	Product designation	Heat	Lot	Pieces	Kg			
06	MBR-SANMAC316L-140	566504	78963	1	737.0			
			Total	1	737.0			
Heat		Recycled material(%)						
566504	Continuous casting		95.3					
TEST RESULTS								
Reduction ratio (times)								
Lot								
78963	5.7							
Chemical composition (weight%) acc. to ASTM A-751								
Heat	C	Si	Mn	P	S	Cr	Ni	Mo
566504	0.012	0.28	1.71	0.031	0.027	16.91	10.19	2.04
	N							
566504	0.044							

Quality assurance - Erik Jansson/QA-manager Primary Products A05/Z02 MTC Service / Certificates
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Tensile test at room temperature acc. to ASTM A370/ISO 6892-1

Longitudinal

Location half radius

Lot	Yield strength		Tensile strength	Elongation	
	Mpa	MPa	Mpa	%	%
78963	Rp0.2	Rp1.0	Rm	A	2"
	218	253	544	62	62
	Red.of Area				
	%				
	Z				
	79				

Transversal, 90° from each other.

Location half radius

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
78963	Rp0.2	Rp1.0	Rm	A	2"
	222	271	546	58	49
	Red.of Area				
	%				
	Z				
	72				

Hardness test acc.to ASTM A-370/ISO 6506-1

Location half radius

Lot	Min	Max
	78963	HB
	139	140
Lot	Min	Max
	78963	HRB
	75	76

Grain size acc to ASTM E-112.

Location half radius

Lot		
78963	7.0	7.0

Impact test, J, Longitudinal acc. to ASTM A-370/ISO 148-1

Location half radius

Lot	Single values			Avg.	Temperature
	Joule			Joule	°C
78963	261	257	226	248	20
	266	276	269	270	20

Following controls/tests have been satisfactorily performed:

- Intergranular corrosion test acc to ASTM A-262 PR.E and EN ISO 3651-2A
- Positive Material Identification (PMI)
- Ultrasonic testing (*)
- Visual inspection and dimensional control.

Heat Treatment:

Solution annealed and quenched.



HEAT TREATMENT:

Up to 35mm: Material soaking 1050°C, min. 20 minutes. Quenched in water. Water temp pre-quench max 38°C, after quench max 49°C.

>35-150mm: In process annealed according to ASTM A484 above the minimum hot rolling temperature of 1010°C and cooled in air.

>150-350mm: Material soaking 1065°C, min. 30 minutes. Quenched in water. Water temp pre-quench max 38°C, after quench max 49°C.

>350-375mm: Material soaking 1050°C, min. 60 minutes. Quenched in water. Water temp pre-quench max 38°C, after quench max 49°C.

>375mm: Material soaking 1050°C, min. 120 minutes. Quenched in water. Water temp pre-quench max 38°C, after quench max 49°C.

The raw material is free from radioactive contamination.

Material free from mercury contamination.

No welding or weld repair.

This is to certify that the contents of this certified material test report are correct and accurate and that all test results and operations are in compliance with the material specification.

Approved acc. AD 2000-Merkblatt W0 and certified acc. to Pressure Equipment Directive (2014/68/EU) by TÜV NORD; notified body, reg.no. 0045.

The material is manufactured according to a Quality system, approved and registered to ISO 9001:2015.

No unauthorized alterations. The contents of this Inspection Certificate may not be modified or revised in any way without the prior written approval of Alleima.

Unauthorized alterations to the Inspection Certificate, including introduction of false, fictitious or fraudulent statements or entries, may be punishable by fines, imprisonment, or both. This Inspection Certificate may be copied only in the manner and for the purposes specified in Section 6 of EN 10204:2004. Contravention of this notice will be prosecuted to the fullest extent of applicable law.

The certificate is produced with EDP and valid without signature.



APPENDIX

Lab accreditation

Our lab is accredited under SWEDAC Accreditation number 1636 for testing as per ISO/IEC 17025

Applicable only to specific dimensions

20mm - 250mm: EN 10088-5 EN (Only valid for CE marked products together with Alleima Declaration of Performance certificate).

20mm - 400mm: PED 2014/68/EU EN 10272 (Stainless steel bars for pressure purposes)

20mm - 375mm: AD-2000-W2/W10

20mm - 450mm: NORSOK M-630 - NORSOK MDS S11

180mm- 450mm: PED 2014/68/EU EN 10222-5 (Chemical composition only)

70mm - 450mm: AMS 5648 Rev. L, AMS 5653 Rev. H

Suitable for manufacturing of components in acc. with *ASTM A-182, (F316/F316L), ASTM A-965, ASTM A-314.

Test location

Mechanical, ferrite, corrosion testing:

Bar dim <=50mm - Longitudinal test pieces in center of the bar.

Bar dim > 50mm - 160 mm - Longitudinal test pieces, 1/4 T and minimum 100 mm from any second surface.

Bar dim > 160mm- 450 mm - Transversal test pieces, 1/4 T and minimum 100 mm from any second surface.

One set of test samples per heat treatment lot.

Maximum lot size 15 ton.

Furnace calibration every third month according to API 6A

Thermocouples of S-type (+/- 5°C tolerance) are used to monitor the furnace temperature.

Ultrasonic test

Dim 29 - 74 mm: EN 10308 quality class 3

Dim 75 mm - : EN 10228-4, Tab 3 Scan coverage 1a 100%, Tab 5
Quality Class 3, ASTM A-388, API 6A PSL3/3G.

Alleima, formerly Sandvik Materials Technology. During a brand transition period, both Sandvik and Alleima marking on products may exist.



**CERTIFICATE**

A03/Z02

No. A/21-977521**Rev****00****Date**

2021-10-20

Page

1/4

A02/Z03

INSPECTION CERTIFICATE acc to
EN 10204 3.1

A06

SVERDRUP STEEL AS
STRANDSVINGEN 2
4032 STAVANGER
NORWAY

INSPECTION STAMP

SVQ

Customer References 851173 125-06911 SVERDRUP S	A07		Sandvik References Order No. 577064 Subs No. 703374 SMT Dispatch note 26718/53 SMT No. 284-46141 C.Code 87	A08
	Customer order			
	2021-10-19			

Material description HOT WORKED BAR STEEL FORGED ANNEALED & STRAIGHTENED PEEL TURNED AND POLISHED	B01/B04		Steel/material Designations Sandvik SANMAC 316/SANMAC 316L AISI 316/316L UNS S31600/S31603 W.nr 1.4401/1.4404 EN no 1.4401/1.4404	B02
Metallurgical process E+AOD+LRF	Origin Sweden	c70		

Technical requirements EN 10088-3:-2014, EN10272:-2016*, EN10060:2003, EN 10221:1996 EN10222-5:-2017*, PED 2014/68/EU, QQ-S-763 F, NACE MR0175/ISO 15156-3:-2015, NACE MR0103/ISO 17945-1:-2015, ASTM A-276-17, ASME SA-276-ED-21 SECT II PART A, ASTM A-479-20, ASME SA-479-ED-21 SECT II PART A, ASTM A-484-20B, ASTM A-182-21*, ASTM A-965-21*, ASTM A-314-19*, NORSOK M-630 ED-6, NORSOK MDS S01 REV. 5, *For detailed information, please see the appendix	B03
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EXTENT OF DELIVERY							B07-B13	
It	Product designation	Heat	Lot	Pieces	Kg			
12	MBR-SANMAC316L-190 MI-1-5000-	562966	64923	1	1318.0			
				Total	1	1318.0		
Heat		Recycled material(%)						
562966	Continuous casting	93.6						
TEST RESULTS								
Reduction ratio (times)								
Lot								
64923	3.1							
Chemical composition (weight%) acc. to ASTM A-751								
Heat	C	Si	Mn	P	S	Cr	Ni	Mo
562966	0.010	0.24	1.76	0.035	0.026	16.81	10.15	2.02
	N							
562966	0.052							

Quality assurance - Erik Jansson/QA-manager Primary Products
MTC Service / Certificates

A05/Z02

A01

AB SANDVIK MATERIALS TECHNOLOGY Reg No. 556234-6832 VAT No. SE556234683201
SE-81181 SANDVIKEN SWEDEN www.materials.sandvik mtc_service.smt@sandvik.com



**Tensile test at room temperature acc. to ASTM A370/ISO 6892-1**

Longitudinal

Location half radius

Lot	Yield strength		Tensile strength	Elongation	
	Mpa	MPa	Mpa	%	%
64923	Rp0.2	Rp1.0	Rm	A	2"
	265	301	534	62	62
	Red.of Area				
	%				
	Z				
	76				

Transversal, 90° from each other.

Location half radius

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
64923	Rp0.2	Rp1.0	Rm	A	2"
	225	266	531	64	64
	234	271	529	63	63
	Red.of Area				
	%				
	Z				
	72				
	67				

Hardness test acc.to ASTM A-370/ISO 6506-1

Location half radius

Lot	Min	Max
	HB	HB
64923	133	134
Lot	Min	Max
	HRB	HRB
64923	73	74

Grain size acc to ASTM E-112.

Location half radius

Lot		
64923	4.0	4.0

Impact test, J, Transversal acc. to ASTM A-370

Location half radius

Lot	Single values			Avg.	Temperature
	Joule			Joule	°C
64923	133	115	127	125	20
	145	127	130	134	20

Following controls/tests have been satisfactorily performed:

- Intergranular corrosion test acc to ASTM A-262 PR.E and EN ISO 3651-2A
- Positive Material Identification (PMI)
- Ultrasonic testing (*)
- Visual inspection and dimensional control.

Heat Treatment:

Solution annealed and quenched.





HEAT TREATMENT:

Up to 35mm: Material soaking 1050°C, min. 20 minutes. Quenched in water. Water temp pre-quench max 38°C, after quench max 49°C.

>35-150mm: In process annealed according to ASTM A484 above the minimum hot rolling temperature of 1010°C and cooled in air.

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Material free from mercury contamination.

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Approved acc. AD 2000-Merkblatt W0 and certified acc. to Pressure Equipment Directive (2014/68/EU) (PMA 1326W113330-1) by TUEV NORD GmbH; notified body, reg.no. 0045.

The delivered products comply with the specifications and requirements of the order.

The material is manufactured according to a Quality system, approved and registered to ISO 9001:2015.

No unauthorized alterations. The contents of this Inspection Certificate may not be modified or revised in any way without the prior written approval of Sandvik Materials Technology. Unauthorized alterations to the Inspection Certificate, including introduction of false, fictitious or fraudulent statements or entries, may be punishable by fines, imprisonment, or both. This Inspection Certificate may be copied only in the manner and for the purposes specified in Section 6 of EN 10204:2004. Contravention of this notice will be prosecuted to the fullest extent of applicable law.

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20mm - 450mm: NORSOK M-630 Ed. 6 - NORSOK MDS S01 Rev. 5

180mm- 450mm: PED 2014/68/EU EN 10222-5 (Chemical composition only)

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One set of test samples per heat treatment lot.

Maximum lot size 15 ton.

Furnace calibration every third month according to API 6A

Thermocouples of S-type (+/- 5°C tolerance) are used to monitor the furnace temperature.

Ultrasonic test

Dim 29 - 74 mm: EN 10308 quality class 3

Dim 75 mm - : EN 10228-4, Tab 3 Scan coverage 1a 100%, Tab 5
Quality Class 3, ASTM A-388, API 6A PSL3/3G.





SAMSVARERKLÆRING

Leverandør / produsent:
Asen Dreierverksted AS

Sendt dato:
Ski 12/09-23

SKIPPER bestillings nr:	SKIPPER varenummer:	Revisjon:	Antall levert:
106317	TB-2002	01	6

Stål produsentens Heat / Charge nr:

Batch nr (år-uke-løpenummer):

Eks på batch nr: **13353**

1. Gland CH-276262

23361

2. Topp lokk CH-T17533

Hvis samme varenummer blir levert mer enn en gang i uken, skal løpenummer endres fra 1 til 2 o.s.v.

3. Tønne /Rør CH-890945

4. Inner ring CH-478089

Produsenten/leverandøren erklærer herved at produktet er laget i henhold til SKIPPERs seneste godkjente tegning, og i samsvar med SKIPPERs bestilling.

Dette skjemaet skal følge med varene som blir levert til SKIPPER, og evt. skannes og sendes til SKIPPER sammen med materialsertifikat.

Produktet er målt, kontrollert og godkjent av:

Stempel / Sign:



AASEN DREIERVERKSTED AS

HAUGENVEIEN 4 - 1400 SKI

TLF: 64 94 67 87

FAX: 64 94 51 11

Jotron Skipper AS

Postboks 151, Manglerud

0612 OSLO

www.aasendv.no

post@aaasendv.no

Foretaksreg.: NO 817 694 942 MVA

telefon

kontakttype

epost invoice@skipper.no

Følgeseddel.nr

10487

Dato

tirsdag 12. september 2023



postboks

Antall	Best.nr.	Tegningsnr.	Tittel	Art.nr.	Ch.nr.	Matkval.	Stk.pris	Pris
2	106317		Europall med karm				kr 625,00	1 250,00
30	106317	TB-2002 rev.01	Tank Standard , steel		276262,T1753	S355	kr 3 672,00	110 160,00

111 410,00

Pris eks Mva



ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY

ACCIAIERIE BERTOLI SAFAU SpA

Via Buttrini n.28 - Frazione Caragnacco - 33050 Pozzuolo del Friuli (UD)
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprüfzeugnis 3.1

N. 337185 / 1
Data 11.07.2022
COLATA N. Heat-C. / n° Schmelze 276262
Pag. 1 / 2

CLIENTE Customer-Client-Beveller STENA STAL AB

PROFILO Shape-Section-Profil HOT ROLLED ROUND BARS , 70 MM -

ACCIAIO Steel-Acier-Stahl S355J2+AR / ST52.3

CAPITOLATO ABS: Technical Specification: ABS

CAPITOLATO DI ANALISI: Material Specification: EN10025-2/DIN17100 (ASQ) REV.0 2022.03

CAPITOLATO DI FORNITURA: Technical Delivery Requirements:

ORDINE Order-Commande-Bestellung 7279025

STATO DI FORNITURA Supply Condition-Etat de livraison UNTREATED

COMESSA/POS Sales Order/Pos: 1086989/70

MATERIALE CLIENTE Customer Material Code 216066

COMPOSIZIONE CHIMICA DI COLATA %

CAST ANALYSIS % - COMPOSITION CHIMIQUE DE COULEE % - SCHMELZE CHEMISCHE ANALYSE %

	C	Mn	Si	P	S	Cr	Ni	Mo	Al (T)	Cu	Sn	Ti
Min	0,160	0,60	0,15		0,020				0,015			
Max	0,200	1,35	0,30	0,025	0,035	0,29	0,42	0,11	0,050	0,55	0,030	0,0200
Colata/Heat	0,166	1,17	0,20	0,015	0,024	0,16	0,18	0,05	0,015	0,29	0,012	0,0021
	B (T)	V	Nb	As	Ca	Sb	Co	Pb	O/ppm	H/ppm	N/ppm	C EQ. LONG FORMULA
Min												
Max	0,0008	0,080	0,020	0,020	0,0020	0,050	0,100	0,1000	20,00	2,00	120	0,450
Colata/Heat	0,0001	0,004	0,001	0,008	0,0002	0,001	0,011	0,0001	11,00	0,90	71	0,435

CARATT. MECCANICHE

MECHANICAL PROPERTIES - CARACTERISTIQUES MECANIQUE - MECHANISCHE EIGENSCHAFTEN

TENSILE/IMPACT TEST ON PRODUCT

TRATTAMENTO TERMICO HEAT TREATMENT

TRAZIONE TENSILE TEST

	R LONG.	REH	A%SD LONG.									
Min	470Mpa	325Mpa	20%									
Max	630Mpa											
Colata/Heat	516Mpa	328Mpa	26,5%									

RESILIENZE IMPACT TEST

	KV -20°C Long	KV -20°C Long	KV -20°C Long	KV 0°C Long	KV 0°C Long	KV 0°C Long						
Min	27J	27J	27J									
Max												
Colata/Heat	63J	70J	51J	94J	105J	89J						

DUREZZE HARDNESS

	ON SURFACE	SURFACE HARDNESS					
Min							
Max	999HBW	238HB					
Colata/Heat	158HBW	158HB					

IMPACT TEST ACC. TO EN ISO 148-1

TENSILE TEST ACC. TO EN ISO 6892-1

INCLUSIONI NON METALLICHE

NON METALLIC INCLUSION - INCLUSIONS NON METALLIQUES - PRUFUNG NICHEMETALLISCHE EINSCHLUSSE

	Tipo A Type A	Tipo B Type B	Tipo C Type C	Tipo D Type D
Fine Thin	2	1	0	1
Grosso Heavy	1,5	0,5	0	0,5

MICROINCLUSIONS : METHOD A

MICROINCLUSIONS: STANDARD ISO 4967/ASTM E45

GRANO

GRAIN - GRAIN - KORNGROSSE

C GRAIN : STANDARD EN ISO 643/ASTM E45

C GRAIN: METHOD MC QUAD



ACCIAIERIE BERTOLI SAFAU
SUPERIOR STEEL QUALITY

ACCIAIERIE BERTOLI SAFAU SpA
Via Buttrio n.28 - Frazione Carnaccio - 33050 Pozzuolo del Friuli (UD)
Tel +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1 / Certificat de reception 3.1 /
Abnahmeprufzeugnis 3.1

N. 337185 / 1
Data 11.07.2022
COLATA N. 276262
Heat-Coulee-Schmelze
Pag. 2 / 2

TEMPERATURE AUSTENITIC GRAIN 920 °C

AUSTENITIC GRAIN SIZE 8

NOTE

INTERNAL DEFECT METHOD UT 100%

INTERNAL DEFECTS EN10308 CL.4/SEP1920 CL.C

ANTIMIX 100 %

R/R = 15

TEST CERTIFICATE ISSUED ACCORDING TO: EN 10204/3.1

FINE GRAIN STEEL .

ELECTRIC ARC FURNACE STEEL .

VACUUM DEGASSED STEEL .

COUNTRY OF ORIGIN : ITALY

FULLY KILLED .

- Material free from lead, mercury, cadmium and hexavalent chromium (dir. 2000/53/CE - dir. 2011/65/UE as amended)
- Material with radioactivity not exceeding 0,1Bq/g (d.lgs. 230/1995 as amended)

CONTROLLO QUALITA'

QUALITY CONTROL - CONTROLE DE QUALITE - QUALITÄTSSTELLE

Company with a management system certified by IGQ to
ISO 9001 and IATF 16949

Verif.:Giovanna Rojatti

Giovanna Rojatti



TRINECKÉ ŽELEZÁŘNY
MORAVIA STEEL

A02 Art der Prüfbescheinigung / Type of inspection document											
Abnahmeprüfzeugnis 3.1 - Inspection certificate 3.1, EN 10204:2004											
A01/A05 Herstellerwerk / Manufacturer Issued by				Seite / Page							
TRINECKÉ ŽELEZÁŘNY, a.s., Průmyslová 1000, Staré Město, 739 61 Třinec, Czech Republic VZ - Sochorová válcovna, 272 01 Kladno - Dříň, Czech Republic				2023/01/008279-CAN							
A07 Kundenbestellnummer / Purchaser's order No.			A06 Empfänger / Consignee								
7265101			Stena Stal AB								
A10 Kontraktnummer / Contract No.			Fabriksgatan 14								
0041668501			331 35 Värnamo								
A08 Werksauftragsnummer / Manufacturer's order No.			Sweden								
7000507359/000010											
B01, B09-B11 Spezifikation der Produkt / Masse / Toleranz Product description / Dimensions / Tolerance		B02, B04 Stahlbezeichnung / Lieferzustand Steel designation / Deliv. state		B03 Materialnorm Classification standard	B03 Massnorm Dimensional standard						
HOT ROLLED ROUND STEEL BARS		S355J2 +N		EN 10025-2:2019 Material Spec. S355J2 (+N) / 12.03.2014 Rev.2	EN 10060						
200 mm + 2,500 - 2,500											
6,000 m +200 -0											
Straightness 0,200%											
A11 Wagen Nr. Waggon No.	A13 Lieferschein Nr. Delivery note	B07 Schmelze Heat No.	B08 Ringen / Stück Coils / Pieces	B08 Krbd Crbd	B13 Gewicht (kg) Weight (kgs)						
ZS312JT ZSWAH62	23/01/004375/01	20.01.2023	T17533	6	0						
B07, B14, C70 Schmelze / Herstellungsjahr/ Stahlerstellung. Heat No./ Year of production/ Steelmaking process		C71-C92 Chemische Zusammensetzung-Chemical composition [%]									
T17533/2022		C	Mn	Si	P	S	Cr	Ni	Cu	Mo	Al
BOF-cc blooms		0.18	1.27	0.378	0.018	0.004	0.07	0.04	0.02	0.010	0.026
		Sn	V	Ti	N	H	CEV				
		0.003	0.004	0.0018	0.0083	1.30 ppm	0.41				
Mechanische Werte-Mechanical values											
B07 Schmelze Heat No.	B05 Probezustand Test state	C11 Streckgrenze Yield point Re[MPa]	C12 Zugfestigkeit Tensile strength Rm [MPa]	C13 Bruchdehnung Elongation A5 [%]	C14 Brucheinschn. Contraction Z [%]	B05 Probezustand Test state	C03 Prüftemperatur Test temperature	C40, C42 Schlagarbeit Energy of impact KV [J] / KCV [J/cm ²]			
T17533	+N	382	524	31,8	67,1	+N	- 20 °C	147,0			
								117,0			
								140,0			



TRINECKÉ ŽELEZÁŘNY
MORAVIA STEEL


A02 Art der Prüfbescheinigung / Type of inspection document Abnahmeprüfzeugnis 3.1 - Inspection certificate 3.1, EN 10204:2004						
A01/A05 Herstellerwerk / Manufacturer Issued by TRINECKÉ ŽELEZÁŘNY, a.s., Průmyslová 1000, Staré Město, 739 61 Třinec, Czech Republic VZ - Sochorová válcovna, 272 01 Kladno - Dříň, Czech Republic					Seite / Page 2/2	
A03 Bescheinigungsnummer / Document No. 2023/01/008279-CAN						
B07 Schmelze Heat No.	D56 Stampfproben Heading tests (EN 10263-1)	D57 Entkohlen Decarburization (max. / mm)	C54 Reinheitsgrad Micropurity (DIN 50602)	C57 Korngröße Grain size	C30 Härte HB Hardness HB	C93 Vakuumtgas Vacuum degassing
T17533						yes
B07 Schmelze Heat No.	D53 VerwechseInprüfung 100% Sparking test 100%	D02 US Prüfung US test		D54 Oberflächenfehler Surface defects		
T17533	O.K.	EN 10308 class 2		1 %		
B07 Schmelze Heat No.	D61 Umformungsgrad Reduction ratio					
T17533	4,2					
						Z04  1020 06
D01 Die Kontrolle der Oberfläche, Form und Abmessung entspricht der Bestellung. Control of surface, shape and dimension corresponds to the order.						
D05 Unsere Erzeugnisse sind frei von schädlichen Bestandteilen, welche zu toxischen Emissionen führen. Die Produkte sind ebenso frei von Radioaktivität und sonstigen Verunreinigungen, welche Erdboden, Luft und Wasser belasten könnten. Products which do not cause harmful emission of toxic gasses, dangerous particles or radiation to the indoor environment nor contamination of the outdoor environment (air, soil, or water) Die Radioisotopische Aktivität max. 100 Bq/kg wurde eingehalten. Radio - isotopic activity was controlled in ladle sample, it was no higher than 100 Bq/kg. Z01 Die obengenannten Erzeugnisse entsprechen den Bestimmungsvorschriften. Products conform with the prescription of order.					A04 Herstellerzeichen / Manufacturer's logo 	
Z03 Die elektronische Version dieses Dokuments ist mittels elektronischer Unterschrift entsprechend der Anordnung (EU) Nr. 910/2014 geschützt. Electronical version of this document is protected by the electronical signature according to Regulation (EU) No. 910/2014.						
Z02 Der Werksachverständige -Expert : Soňa Caniga, Kladno: 20.01.2023			Der Sachbearbeiter der Qualitätskontrolle für Freigabe und Atteste, unabhängiger berechtigter Vertreter Officer of Quality Inspection of Releasing and Attesting, independent authorized agent			



ALCHEMIA S.A.
Oddział Walcownia Rur Batory
w Chorzowie
ul. Dyrekcyjna 6
41-506Chorzów
POLAND

(A03) **ŚWIADECTWO ODBIORU № 3161/2021/AH**
CERTYFIKAT DE RECEPTION INSPECTION CERTIFICATE
ABNAHMEPRÜFZEUGNIS СЕРТИФИКАТ
(A02) nach **EN 10204:2004 type 3.1 AD2000W4**
/nr normy/ Strona Page Page Seite Страница 1/2



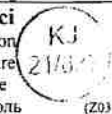
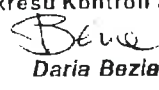

(A06) Zamawiający Acheteur-Customer-Besteller-Заказчик		SALZGITTER MANNESMANN 40476 DUESSELDORF	
(A06) Adres wysyłkowy Adresse-Address-Versandadresse-Адрес получателя			
(A07) Nr zamówienia klienta Numéro de la commande du client Purchaser's order No Kundenbestellnummer № заказа	(A08,09) Nr potwierdzenia No de la commande Manuf. Order No Werksauftragsnummer Приказ №		
71268506	H2100705/2/1 37835		

Wyszczególnienie zamówienia: Specification de la commande-Order Specification-Spezifikation der Bestellung-Спецификация заказа						
Wyrób i wymagania dodatkowe (stan obr. termicz., mech. itp.) Produit et prescriptions supplémentaires (traitement thermique et l'usinage) Product and any supplementary requirements (Heat and mechanical treatment etc.) Erzeugnis und Zusätzliche Anforderungen (therm und mechan. Bearbeitung usw.) Продукта и дополнительные требования (состояние терм. и механообаб. и пр.)	Wymiar wyrobu Dimensions du produit Product dimensions Masse des Erzeugnisses Размер продукта	Oznaczenie stali Désignation de l'acier Steel designation Stahlbezeichnung Марка стали	Wytop Coulée Heat Abstich Плавка	Sztuk Pièces Pieces Stück Штук	mb ft (c mtr.) c mtr. l. M. пог. м	kg lb (kg) кг
(B01,B03)	(B04)	(B02)	(B07)	(B08)	(B15)	(B13)
Nähtlose Stahlrohre nach EN 10220/DIN 2448. Technische Lieferbedingungen nach EN 10216-3/13 - TC1/ EN 10297-1/03 / EN 10210-1/06/ DIN 1629/84. AD 2000 Merkblatt W4/01. Normalgluehen 900 °C/45'. Lieferzustand - Rohzustand Erschmelzungsart - E. AD2000 Merkblatt W4 /01 nur fuer Stahlgueten nach DIN 1629.	219,1 x 22,20 mm 5 - 7 m	P355N/E355/ S355J2H/ St52.0S	890945	5	31,73	3389
 (Z04) ALCHEMIA S.A Oddział Walcownia Rur Batory w Chorzowie, ul. Dyrekcyjna 6 41-506 Chorzów POLEN 06 0045-CPR-0888 EN 10210:2006 Warmgefertigte nahtlose Hohlprofile für den Stahlbau Für die Verwendung in Metallbauwerken oder in Metall-/ Betonverbundbauwerken						

Kontrolę techniczną powyższego zamówienia przeprowadził Oddział Technicznej Kontroli. Wyniki badań podano niżej.
Le controle technique de la été exécuté par le Service de Controle. Les resultats des essais sont indiqués ci-après.
The technical investigation of this order has been executed by the Works Control. Results of tests are as follows.
Die technische Prüfung obiger Bestellung wurde von der Fabrikationskontrolle durchgeführt. Die Ergebnisse der Proben sind nachstehend angeführt.
Технический контроль вышеупомянутого заказа произвел Отдел Технического Контроля. Результат испытания представлен ниже

1. SKŁAD CHEMICZNY - COMPOSITIO CHIMIQUE - CHEMICAL COMPOSITION - CHEMISCHE ZUSAMMENSETZUNG
(C71-C92) **ХИМИЧЕСКИЙ СОСТАВ**

Wytop Coulée Heat Abstich Плавка	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	Al
(B07) 890945	0,14	1,26	0,20	0,011	0,005	0,13	0,10	0,22	0,04	0,05	0,030
	N	Ti	Nb	B	Ceq						
	0,010	0,000	0,001	0,0003	0,42						

2. BADANIA MECHANICZNE – ESSAIS MECANIQUES – MECHANICAL TESTS – MECHANISCHE UNTERSUCHUNGEN МЕХАНИЧЕСКИЕ ИСПЫТАНИЯ							
Nr wytopu lub próby No de la coulée ou De l'éprouvette Heat No Or. Tests No Abstich Oder Probe No № плавки или пробы	Re	Rm	A 5	Z	Badanie udarności Impact Impact test Kerbschlagprobe Испытание на удар nach EN ISO 148 - 1 KV(10x10mm) (T) min 27J/-20°C		Twardość Dureté Hardness Härte Твердость
	MPa min 345	MPa 500 630	% min 22,0	%	Wartość pojedyncza Valeurs individuelles Individual values Einzelwerte Едиственный результат	Srednia Moyenne Mean Mittel Средний	°C MPa min
(B07,C02,C00)	(C11)	(C12)	(C13)	(C50-69)	(C40,C41,C02) (C42)	(C43)	(C30) (C31) (C50-C69)
890945/17992 L	351	514	32,0		112 - 108 -113	111	
<p>ALCHEMIA S.A. Cedźnia Walcowania Rur Batory w Chorzowie</p> 							
3. INNE BADANIA – AUTRES ESSAIS – OTHER TESTS – ANDERE UNTERSUCHUNGEN – ДРУГИЕ ИСПЫТАНИЯ (D51-D99)							
BADANIA TECHNOLOGICZNE – ESSAIS TECHNOLOGIQUES – TECHNOLOGICAL TESTS – TECHNOLOGISCHE PRÜFUNGEN ТЕХНОЛОГИЯ ИССЛЕДОВАНИЯ							
Ringzugversuch mit gutem Ergebnis durchgeführt Kaltwasserdruckprobe bei 70 Bar Probedruck mit gutem Ergebnis in 100 %. Zeit 5 s							
Powierzchnię i wymiary zbadano w 100% - Surface et dimensions ont été contrôlés et 100% - Surface and dimensions tested at 100% Oberfläche und Abmessungen geprüft zu 100% - Наружный осмотр и проверка измерений произведены в 100% - mit gutem Ergebnis							
4. BADANIA NIENISZCZĄCE - Essais Non Destructifs – Non Destructive Tests – Zerstörungsfreie Prüfungen - Неразрушающий Контроль (D02-D50)							
Numery rur - Le nombre de tubes - Numbers of tubes - Nummern von Röhren - Номера трубок							
5. UWAGI DODATKOWE – Additional Remarks – Autres observations – Andere Bemerkungen- Дополнительные примечания (Z05-Z99)							
Überprüft nach AD2000-Merkblatt W0 durch den TÜV NORD Systems GmbH & Co. KG, Zertifiziert nach Richtlinie 2014/68/UE, Anh. I, Kap. 4.3 durch die Zertifizierungsstelle für Druckgeräte der TÜV NORD Systems GmbH & Co. KG, Benannte Stelle, Kenn-Nr 0045, Zertifikat Nr 07/203/9120/WP/0888/19R1 und Zertifikat Nr 07/202/9120/WZ/0888/19/R1 und ISO 9001/TUV Zertifikat Nr 04-100 950250-001. Der Hersteller bescheinigt die werkseigene Produktionskontrolle System gemäß der Verordnung des Europäischen Parlaments und des Rates (EU) CPR 305/2011 Zertifikats Nr. 0045-CPD-0888. Details Leistungserklärung CPR/HBT/EN 10210/16/07/2020 auf der Seite www.alchemiasa.pl. Das Zeichen Ü betrifft nur die Norm DIN 1629.							
(Z01)Niniejszym potwierdzam, że wyżej wymieniony materiał został zbadany i spełnia warunki potwierdzenia zamówienia - Par la presente je confirme que le matériel susmentionné a été examiné et il remplit les conditions de la confirmation de commande. - We hereby certify, that the material described above has been tested and complies with the terms of the order. - Es wird bestäetigt, dass das oben genannte Material geprüft wurde und den Bedingungen der Bestellung entspricht. - Подтверждаем, что вышеуказанный материал был протестирован и соответствует условиям подтверждения договора.							
(D01)Cechowanie – Marquage – Marking – Kennzeichnung – Обозначен EN 10216-3/ P355N-TC1/ EN10297-1/ E355N/ EN 10210/ S355J2H /DIN 1629/S152.OS/ Charge/Werksstempel/ Stempel der T.K. 							
(D51-D99)Na podstawie wyżej przeprowadzonych prób materiał zwolniono – Sur la base des essais si-dessus le matériel est libéré - According to the carried out tests the material released – Untersuchungen wurde das Material freigegeben – На основании вышеупомянутых Испытаний признан годным							
Kontrola Jakości Contrôle de Fabrication Control of Manufacture Fabrikationskontrolle Технический контроль				Dyrekcja Direction Management Direktion Дирекция		(Z02)	
SPECJALISTA z zakresu Kontroli Jakości  Daria Bezia		Kierownik Działu Kontroli Jakości i Nadzoru Technologicznego  Barbara Czuj		dn. 23.08. 2021 r.		3161/2021/AH Strona Page Page Seite Страница 2/2	



ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY

CERTIFICATO DI COLLAUDO

N. 359723 / 1
Data 15.03.2023
COLATA N. 478089
Heat-Coulee-Schmelze
Pag. 1 / 2

ACCIAIERIE BERTOLI SAFAU SpA
Via Buttrio n.28 - Frazione Carnaccio - 33050 Pozzuolo del Friuli (UD)
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprüfzeugnis 3.1

CLIENTE Customer-Client-Besteller STENA STAL AB

ORDINE Order-Commande-Bestellung 7297018

PROFILO Shape-Section-Profil HOT ROLLED ROUND BARS , 190 MM -

STATO DI FORNITURA SupplyCondition-Etat de livraison UNTREATED

ACCIAIO Steel-Acier-Stahl S355J2+AR / ST52.3

COMESSA/POS Sales Order-Pos 1091170/40

CAPITOLATO ABS: Technical Specification: ABS

MATERIALE CLIENTE Customer Material Code 215396

CAPITOLATO DI ANALISI: Material Specification: EN10025-2/DIN17100 (ASQ) REV.0 2022.03

CAPITOLATO DI FORNITURA: Technical Delivery Requirements:

COMPOSIZIONE CHIMICA DI COLATA %

CAST ANALYSIS % - COMPOSITION CHIMIQUE DE COULEE % - SCHMELZE CHEMISCHE ANALYSE %

	C	Mn	Si	P	S	Cr	Ni	Mo	Al (T)	Cu	Sn	Ti
Min	0,160	0,60	0,15		0,020				0,015			
Max	0,200	1,35	0,30	0,025	0,035	0,29	0,42	0,11	0,050	0,55	0,030	0,0200
Colata/Heat	0,167	1,16	0,15	0,012	0,030	0,17	0,11	0,05	0,020	0,15	0,008	0,0018
	B (T)	V	Nb	As	Ca	Sb	Co	Pb	O/ppm	H/ppm	N/ppm	C EQ. LONG FORMULA
Min												
Max	0,0008	0,080	0,020	0,020	0,0020	0,050	0,100	0,1000	20,00	2,00	120	0,450
Colata/Heat	0,0001	0,003	0,003	0,004	0,0009	0,001	0,008	0,0001	11,00	0,80	73	0,422

CARATT. MECCANICHE

MECHANICAL PROPERTIES - CARACTERISTIQUES MECANIQUE - MECHANISCHE EIGENSCHAFTER

TENSILE/IMPACT TEST ON PRODUCT

TRATTAMENTO TERMICO HEAT TREATMENT

TRAZIONE

TENSILE TEST

	R LONG.	REH	A%5D LONG.									
Min	450Mpa	285Mpa	17%									
Max	600Mpa											
Colata/Heat	509Mpa	333Mpa	28,1%									

RESILIENZE

IMPACT TEST

	KV -20°C Long	KV -20°C Long	KV -20°C Long	KV 0°C Long	KV 0°C Long	KV 0°C Long						
Min	27J	27J	27J									
Max												
Colata/Heat	35J	35J	37J	70J	72J	73J						

DUREZZE

HARDNESS

	ON SURFACE	SURFACE HARDNESS				
Min						
Max	999HBW	238HB				
Colata/Heat	143HBW	143HB				

IMPACT TEST: ACC. TO EN ISO 148-1

TENSILE TEST: ACC. TO EN ISO 6892-1

INCLUSIONI NON METALLICHE

NON METALLIC INCLUSION - INCLUSIONS NON METALLIQUES - PRUFUNG NICHTMETALLISCHE EINSCHLUSSE

	Tipo A Type A	Tipo B Type B	Tipo C Type C	Tipo D Type D
Fine Thin	2,5	1	0	1
Grosso Heavy	1,5	0	0	0,5

MICROINCLUSIONS : METHOD A

MICROINCLUSIONS: STANDARD ISO 4967/ASTM E45

GRANO

GRAIN - GRAIN - KORNGROSSE

AUSTENITIC GRAIN : STANDARD EN ISO 643/ASTM E45

AUSTENITIC GRAIN: METHOD MC QUAD



ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY

ACCIAIERIE BERTOLI SAFAU SpA

Via Buttrio n.28 - Frazione Cargnecco - 33050 Pozzuolo del Friuli (UD)
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprüfzeugnis 3.1

N. 359723 / 1

Data 15.03.2023

COLATA N. 478089
Heat-Contic-Schmelze

Pag. 2 / 2

TEMPERATURE AUSTENITIC GRAIN 920 °C

AUSTENITIC GRAIN SIZE 8

NOTE

INTERNAL DEFECT METHOD UT 100%

INTERNAL DEFECTS EN10308 CL.4/SEP1920 CL.C

ANTIMIX 100 %

TEST CERTIFICATE ISSUED ACCORDING TO: EN 10204/3.1

VACUUM DEGASSED STEEL .

ELECTRIC ARC FURNACE STEEL .

COUNTRY OF ORIGIN : ITALY

FULLY KILLED .

FINE GRAIN STEEL .

- Material free from lead, mercury, cadmium and hexavalent chromium (dir. 2000/53/CE - dir. 2011/65/UE as amended)

- Material with radioactivity not exceeding 0,1Bq/g (d.lgs. 230/1995 as amended)

CONTROLLO QUALITA'

QUALITY CONTROL - CONTROLE DE QUALITE - QUALITATSSTEILE

Company with a management system certified by IGQ to
ISO 9001 and IATF 16949

Verif.: Omar Tonetti

HAITIMA CORPORATION

MATERIAL TEST CERTIFICATE

8F, No. 201, Tiding Blvd. Sec. 2,

Neihu Area Taipei 114 Taiwan

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Date: Jun. 19, 2023

Messrs. MESON AB

Contract No.		P.O. IK20378								Invoice No.		HIV063023					
Description		VALVES & FITTINGS								Specification		ACC. TO EN 10204 3.1		Type		EN 1.4408	
Item No.		Size						Quantity		Heat No.		Pressure Test		Finish			
												Shell	Seat				
11		#2052A DN50						40 PC		NBA2		60 BAR	7 BAR	GOOD			
12										N944		60 BAR	7 BAR	GOOD			
13		DN65						140 PC		CP2F2		24 BAR	7 BAR	GOOD			
14										CNCN4		24 BAR	7 BAR	GOOD			
15										CP16M		24 BAR	7 BAR	GOOD			
16										CP3PF		24 BAR	7 BAR	GOOD			
17										CP3K9		24 BAR	7 BAR	GOOD			
18										CP2C1		24 BAR	7 BAR	GOOD			
19										CP3PC		24 BAR	7 BAR	GOOD			
20										CNC SB		24 BAR	7 BAR	GOOD			
Item No.		Chemical Composition (%)									Mechanical Properties				Solution Heat Treatment		
		Spec.	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Y.S. Mpa	T.S. Mpa	Elongation %		Impact Test	
		Max.	0.070	1.500	1.500	0.040	0.030	20.00	2.50	12.00	0.50	-	640	-		-	1150 C
		Min.	-	-	-	-	18.00	2.00	9.00	-	210	440	L: 30	60 J	1080 C		
11		0.047	1.082	0.979	0.030	0.005	18.192	2.123	9.190	0.223	299	526	53	194	1080		
12		0.055	1.088	1.064	0.023	0.008	18.077	2.133	9.231	0.210	297	582	53	199	1080		
13		0.049	1.079	0.994	0.031	0.004	18.414	2.251	9.213	0.217	328	567	51	195	1080		
14		0.047	0.934	0.977	0.029	0.006	18.106	2.258	9.054	0.228	306	524	53	195	1080		
15		0.050	0.842	0.949	0.024	0.006	18.184	2.226	9.167	0.220	315	558	47	195	1080		
16		0.060	0.969	0.838	0.031	0.009	18.474	2.043	9.265	0.198	294	513	58	195	1080		
17		0.056	1.035	0.893	0.025	0.005	18.183	2.127	9.094	0.240	297	560	51	204	1080		
18		0.061	0.957	1.054	0.031	0.007	18.084	2.202	9.098	0.219	321	595	52	204	1080		
19		0.055	0.854	0.986	0.022	0.006	18.182	2.225	9.095	0.187	317	562	48	200	1080		
20		0.059	0.891	0.877	0.025	0.005	18.140	2.244	9.198	0.237	326	568	47	196	1080		
Remarks: WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS.												Inspector		Q C Manager			
												<i>Louis Liu</i>		<i>Hanson Chen</i>			

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SKIPPER

C.O. reg no: NO-965378847-MVA

INSPECTION & TEST PROTOCOL FOR SEA VALVE

Document No: Q12-TI-0108-02 2023

SKIPPER sea valve Serial No.:	23624
Class certificate no.:	

Class stamp and certificate no. shall be stamped on main element and bottom flange (welding part)

Class: DNV ABS BV LR RINA NK

Sea valve Type:

		<u>-SA</u>	<u>-SB</u>	<u>-LA</u>	<u>-LB</u>	<u>-F1</u>	<u>SLB</u>	<u>SJB</u>
<u>SB-60</u>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		
<u>DB-60</u>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		
<u>SB-100</u>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<u>DB-100</u>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<u>ETN- 100mm</u>							<input type="checkbox"/>	<input type="checkbox"/>
<u>SB-200-Echo</u>	<input type="checkbox"/>							

Assembly, Items Serial No. / Batch No. / Charge No.:

	<u>Heat no Body</u>	<u>Heat no Cap</u>	<u>Skipper Part No.</u>
Valve Element:	CP2 F2		ZCC-02001
Intermediate Element:		6208	DB-1021
Bottom Flange:		566504	DB-1022
Intermediate flange (for DB valves)		562966	DB-1030

Visual Inspection:

Performed without remarks:

Pressure Test:

Working pressure 2 bar

Tested for 5 minutes with 5 bar pressure,

According to procedure no. 02-Q12_Pressure testing Gate_ball Valve

Performed without remarks:

Date: 6/12-23

Sign.: A.S

