



CERTIFICATE

No. A/18-722240

Rev 00

Date 2018-02-20

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INSPECTION CERTIFICATE acc to
EN 10204 3.1

Bandak AS
Hantovegen 328
3825 LUNDE I TELEMARK
NORWAY

INSPECTION STAMP
QA-TUBE

Customer References	Customer order	Sandvik References
829389/409286	2018-02-15	Order No. Subs No. ABSMT Dispatch note 506148 646088 15286/54 ABSMT No. C.Code 300-76601 29
125-06911 SVERDRUP S		

Material description	Steel/material Designations
SEAMLESS STAINLESS COLD FINISHED INSTRUMENTATION TUBING	Sandvik AISI 3R60 TP316/TP316L EN no 1.4435
Steel making process	
Electric furnace	

Technical requirements
ASTM A-213-17 AW, ASME SA-213-ED-17 AW, ASTM A-269-15A
NACE MR0175/ISO 15156-3:2015, NACE MR0103/ISO 17945:2015
PED 2014/68/EU EN 10216-5 TC1
HRB MAX 80

EXTENT OF DELIVERY														
It	Product designation		Heat	Lot	Pieces	Kg	M							
01	THT-3R60-9.53-1.65		551039	36744	34	66.0	204.00							
	9.53 X 1.65				Total	66.0	204.00							
TEST RESULTS														
Chemical composition (weight%)														
Heat	C	Si	Mn	P	S	Cr	Ni	Mo						
551039	0.023	0.42	1.69	0.029	0.008	17.39	13.03	2.65						
Ti	Al	N												
551039	0.020	0.006	0.041											
Chemical composition, product (weight%)														
Heat	C	Si	Mn	P	S	Cr	Ni	Mo						
551039	0.023	0.43	1.69	0.031	0.006	17.35	13.01	2.66						
N														
551039	0.045													

Quality assurance - Sofia Åkesson / Q-Manager
MTC Service / Certificates

AB SANDVIK MATERIALS TECHNOLOGY Reg No. 556234-6832 VAT No. SE663000-060901
SE-81181 SANDVIKEN SWEDEN www.smt.sandvik.com mtc_service.smt@sandvik.com

**CERTIFICATE****No. A/18-722240****Rev 00****Date 2018-02-20****Page 2/3****Tensile test at room temperature**

	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
Lot 36744	Rp0.2 298	Rp1.0 340	Rm 601	A 55	4D 54

Hardness test

	Min	Max
Lot 36744	HRB 76	HRB 78

Following controls/tests have been satisfactorily performed:

- Flattening test.
- Flaring test
- 100% PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E and EN ISO 3651-2A
- Leak test: Eddy current test acc to EN ISO 10893-1, ASME SA-1016.
- Visual inspection and dimensional control.

Heat Treatment:

Solution annealed at a temperature of Min 1040° C and quenched.

Marking:

SANDVIK 3R60 ASTM A/A269 ASME SA213 COLD EN10216-5 TC1 EN10305-1 AW EN 1.4435 TP316/316L CFA SML NDE 9.53 X 1.65 MM 3/8'' X 16 BWG/SWG HT 551039 SS LOT 36744 MADE IN SWEDEN *QA-TUBE*

The raw material is free from radioactive contamination.

Material free from mercury contamination.

No welding or weld repair.

Approved acc. AD 2000-Merkblatt W0 and certified acc. to Pressure Equipment Directive (2014/68/EU, Annex 1 para 4.3) by TUEV NORD; notified body, reg.no. 0045.

The number of tests are based on the size of the manufacturing lot before cutting to finished lengths.

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 9001:2008.

No unauthorized alterations. The contents of this Inspection Certificate may not be modified or revised in any way without the prior written approval of AB 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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The certificate is produced with EDP and valid without signature.



CERTIFICATE

No. A/17-628746

Rev 00

Date 2017-01-09

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INSPECTION CERTIFICATE acc to
EN 10204 3.1

Bandak Lunde AS
Hantovegen 328
3825 LUNDE I TELEMARK
NORWAY

Customer References

823563 Customer order
2017-01-05
125-06911 SVERDRUP S

Sandvik References

Order No. Subs No. ABSMT Dispatch note
465009 622299 45831/53
ABSMT No. C.Code
284-26629 40

Material description

HOT WORKED STAINLESS BAR STEEL
ROLLED
ANNEALED & STRAIGHTENED
PEEL TURNED AND POLISHED

Steel/material Designations

Sandvik UNS
SANMAC 2205 S31803/S32205
EN no
1.4462

Steel making process

E+AOD+LRF

Technical requirements

EN 10088-3:-2005, ASTM A-479-16A, ASME SA-479-ED-15,
ASTM A-276-16, NACE MR0175/ISO 15156-3:2009, NACE MR0103:2012
Norsok Standard M-630-ED.6 for MDS D47-REV.5, Suitable for
manufacturing of components in acc. with ASTM A-182-15, F51/F60

EXTENT OF DELIVERY

It	Product designation	Heat	Lot	Pieces	Kg
02	MBR-SANMAC2205-80	547559	47852	1	270.0
			Total	1	270.0

TEST RESULTS**Chemical composition (weight%)**

Heat PRE
547559 35.3

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
547559	0.018	0.37	0.83	0.024	0.0033	22.23	5.38	3.09
	N							
547559	0.178							

Quality assurance - Viktor Hellberg/QA-manager Primary Products
MTC Service / Certificates

AB SANDVIK MATERIALS TECHNOLOGY Reg No. 556234-6832 VAT No. SE663000-060901
SE-81181 SANDVIKEN SWEDEN www.smt.sandvik.com mtc_service.smt@sandvik.com

**CERTIFICATE****No. A/17-628746****Rev 00****Date 2017-01-09****Page 2/3****Tensile test at room temperature**

Longitudinal

Lot	Yield strength		Tensile strength MPa	Elongation		Red.of Area %
	MPa	MPa		%	2"	
47852	Rp0.2 502	Rp1.0 570	Rm 726	A 40	2" 40	Z 78

Hardness test

Lot	Min	Max
47852	HRC 19	HRC 19

Impact test, J, -50°C. Longitudinal.

Lot	Single values		Average
	Joule	Joule	Joule
47852	330	344	318

Lateral expansion

Lot	mm
47852	2.47

Corrosion test

According to ASTM G-48A, 25°C for 24 hours.

No pitting corrosion found at 20x enlargement.

Lot	Specimen weight loss	
	g/m ²	0.00

Ferrite acc to ASTM E-562

Lot	%
47852	46.7

Following controls/tests have been satisfactorily performed:

- Intergranular corrosion test acc. to EN ISO 3651-2 B
- Material Identification.
- Ultrasonic test acc to EN 10228-4, Scan coverage 1, Quality Class 3, Tab 4 and ASTM A-388.
- Visual inspection and dimensional control.

Heat Treatment:

1060°C/60 minutes. Quenched in water.

The raw material is free from radioactive contamination.

Microscopic Examination X 500: Free from grain boundary carbides and intermetallic phases

Material free from mercury contamination.

No welding or weld repair.

NORSOK M-650 ED-4 QTR NO: 22 Cr Duplex SS

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

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The material is manufactured according to a Quality system, approved and registered to ISO 9001:2008.

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The certificate is produced with EDP and valid without signature.



CERTIFICATE - ZEUGNIS - CERTIFICAT

EN 10204 - 3.1
17061715-EN-0

Invoice No.
 Rechnung Nr.
 N° de facture

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Business Unit / QCM
BA Quarto Plate,Quarto Plate Europe

Date Datum Date
 20-Jun-2017

Load, Ladung, Charge No
 153633

Acknowledged ID, Bestätigung, Commande ID
 300436859

Your ref, Ihre Ref., Votre ref 116816			Requirements, Anforderungen, Exigences AD 2000 W2, W10 & EN10028-7, PED 2014/68/EU EN 10088-2:14 EN 10088-4:2009 ASME SA-240M Code Sect. II, Part A:2015 ASTM A240M / NACE MR0175/ ISO 15156-3:16a/2015											
Buyer, Besteller, Acheteur OUTOKUMPU PSC NORDIC AB SALES OPERATIONS Industrigatan 2 693 35, DEGERFORS SVERIGE														
Consignee, Empfänger, Lieu de livraison OUTOKUMPU PSC NORDIC AB SALES OPERATIONS														
Mark of Manufacturer Zeichen des Lieferwerkes Signe de producteur	Process Erschmelzungsart Mode de fusion	Inspector's stamp Zeichen des Sachverständigen Poinçon de l'expert	Grade, Werkstoff, Nuance 1.4401 1.4404		316 316L									
W	E+AOD	DJ 2												
Product, Erzeugnisform, Produit Stainless steel hot rolled, Plate, 1D/No.1, Cut edge														
Line Reihe Ligne	Item Position Poste	Heat-Lot No Schmelze-Lot Nr Coulée n° - Lot No	Size Abmessungen Dimensions					Pieces Stückzahl Nombre	Quantity/unit, Menge/Einheit, Quantité/Unité					
1	1	571827-330876:0	30,0 X 2000,0 X 6000,0 mm					1						
1	Plate No, Blech Nr, Tôle No 5519 2101													
Chemical composition – Chemische Zusammensetzung – Composition chimique % Heat – Schmelze – coulée No														
Min	C	Si	Mn	P	S	Cr	Ni	Mo	N					
Max	0.030	0.75	2.00	0.045	0.015	18.0	13.0	2.50	0.10					
571827	0.021	0.46	1.25	0.033	0.001	17.0	10.1	2.03	0.05					
Distribution								Direct, T = Transverse L = Longitudinal	Top/Bot, F = Front B = Back	Form P = Flat C = Round	Location 1 = Center 2 = Close to Surface 3 = Standard 4 = At 1/4 of thickness			
Certificate via e-Services														
Test results - Prüfergebnisse - Résultats des essais (1N/mm² = 1MPa)														
Corrosion EN ISO 3651-2 Method A Plate-no Result 2101F OK														
Mechanical properties														
Tensile testing/Hardness Rockwell B														
Plate-no	Direct.	Top/Bot	Location	Form	Temp. °C	Rp 0,2 MPa 220	Rp 1,0 MPa 260	Rm MPa 520	A5 % 45	A50 % 40	HRB	HRB		
Min														
Max														
2101	T	F	2	C	20,0	268	306	567	59	61			95	78
Charpy impact test (V-notch) EN ISO 148-1														
Plate-no	Direct.	Top/Bot	Location	Form	Temp. °C	Value1 J	Value2 J	Value3 J	Average J					
Min														
2101	T	F	2	P	20,0	399	380	390	390					
Other Information														
Heat treated at 1100°C and Quenched in water.														
Dimensional control, visual inspection and grade check (PMI): Approved														
The results comply with the Requirements of the order - Die gestellten Anforderungen sind erfüllt - Les résultats sont conformes aux exigences de la commande														

Outokumpu Stainless AB
 BA Quarto Plate,Quarto Plate Europe
 SE- 693 81 DEGERFORS
 SWEDEN
 Regofice: SWEDEN

Computer generated original
 Quality Inspector

V.A.T no: SE556001874801
 , Regno: 556001-8748

Linda Hjalmarsson





CERTIFICATE - ZEUGNIS - CERTIFICAT

EN 10204 - 3.1

17061715-EN-0

Invoice No.
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BA Quarto Plate,Quarto Plate EuropeDate Datum Date
20-Jun-2017Load, Ladung, Charge No
153633Acknowledged ID, Bestätigung, Commande ID
300436859

Certified acc. to AD2000-Guideline W0 and
 Pressure Equipment Directive (2014/68/EU)
 annex I, sec. 4.3 by the notified body for
 pressure equipment of the TÜV NORD Systems
 notified body, reg.-no. 0045
 Construction Products Regulation (305/2011/EU)
 The Declaration of Performance (DoP), see www.outokumpu.com

Tolerance	Standard	Class
Flatness tolerance	EN 18286/A480/M/EN 10029	ISO 18286 N/A480/M/EN 10029 N
Length	Manual	0.0/+500.0 (mm)
Thickness	EN 18286/A480/M/EN 10029	ISO 18286/A480/M/EN 10029 B
Width	Manual	0.0/+150.0 (mm)

The results comply with the requirements of the order - Die gestellten Anforderungen sind erfüllt - Les résultats sont conformes aux exigences de la commande

Outokumpu Stainless AB
 BA Quarto Plate,Quarto Plate Europe
 SE- 693 81 DEGERFORS
 SWEDEN
 Regoffice: SWEDEN

V.A.T no: SE556001874801

Regno: 556001-8748

Computer generated original
Quality Inspector

Linda Hjalmarsson



Inspection certificate according to EN 10204-3.1

A02

U.S. Steel Košice, s.r.o. A01 Vstupný areál U.S. Steel 044 54 Košice SLOVAK REPUBLIC	Purchaser Art. No: 737SPRI7/06D Works Order No: XC7C2634 Advice No: 17/406207 01 Your order: 711203190 Order#: 0071203190	A09 A08 A10 A07	Salzgitter Mannesmann A06 Stahlhandel Gesellschaft mit beschränkter Haftung Schwannstr. 12 40476 DÜSSELDORF, GERMANY
METALLURGICAL CERTIFICATE NO: 17/406207 01		A03	B09
Desc. of goods: HEAVY PLATES 12MM AND UNDER		B01	Size: 8,000 x 1500,0 x 3000,0 mm EN 10051/10
Standard: EN 10149-2/13 B02		B03	Pcs: 6 B08 Net Weight: 1 680 kg B13 WeightT: 1 696 kg B12
Quality: S355MC B02	Delivery Note: 31541504 A10		

Unit No	Coil No	Heat	B07	Unit No	Coil No	Heat	B07
593510209	5935102	59351					

M E C H A N I C A L T E S T R E S U L T S

		Coil No
	Min. / Max.	5935102
C53 Bend test-ALFA(T)	(ST)	180/ 180
C12 Rm C03 +20°C(L)	(MPA)	430/550 507
C43 KV C03 -20°C avr.(L)	(J)	40/ 164
C42 KV1 C03 -20°C(L)	(J)	/ 142
C42 KV2 C03 -20°C(L)	(J)	/ 151
C42 KV3 C03 -20°C(L)	(J)	/ 198
C11 ReH C03 +20°C(L)	(MPA)	355/ 440
C13 A5 C03 +20°C(L)	(%)	23,0/ 28,0
C02 Direction: (T)-transversal; (L)-longitudinal;		

C70 Proces of steel production: LD-PROCES; Continuous casting; Controlled rolling mode.

D01 Inspection of surface appearance, shape and dimensions was conducted.

The results meet the requirements.

C71

C H E M I C A L C O M P O S I T I O N , %

	Heat No		Heat No
Min. / Max.	59351	Min. / Max.	59351
C /	0,08	Mn /	0,67
Si /0,03	0,01	P /	0,012
Al 0,020/	0,037	N /	0,003
S /	0,006	Cr /	0,038
Cu /	0,027	Mo /	0,002
Nb /	0,027	Ni /	0,014
Ti /	0,015	V /	0,001
F05 /0,220	0,043	F25 /0,090	0,044
F05=Nb+V+Ti		F25=Si+2,5P	

THE MATERIAL IS IN COMPLIANCE WITH ORDER REQUIREMENTS.

The measured weight-based activity of Co60 + Cs137 + Am241 radionuclide
is not higher than 100 Bq/kg.Z01 201 Last Page: 1
Z02 F-USM/0063-04/10-01-12

Z04	Z05	Z02	Z03
www.ussc.sk	Zertifizierungsunterschrift von Jozef Červeňák <jcervenak@sk.uss.com>, Gültigkeit unbekannt. Digitally signed by Jozef Červeňák Date: 2018.01.02 10:52:17 CET Reason: Zelenáčkuje vieročnosť pôvodu,	U. S. Steel Košice, s.r.o. Vstupný areál U. S. STEEL Odbor Analýzy kvality a špecifikácie Uvoľňovanie výrobkov a Hutné atesty 044 54 Košice	02
Košice: 31.12.2017, 7:31:22 JOZEF ČERVENÁK, AUTHORIZED INSPECTION REPRESENTATIVE. e-mail:jcervenak@sk.uss.com, tel.:+421-55-6737464 DARINA BERNÁTOVÁ, AUTHORIZED INSPECTION REPRESENTATIVE.e-mail:dbernataova@sk.uss.com,tel.:+421-55-6732373			Z02



Inspection Certificate

(A02)

EN 10204:2004/3.1

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

Our order No.: (A08) 7231461

Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

Material requirements and customer information

Product: (A03)	Plate	Steel standard and grade: (B02)	EN10025-2:2004 S355J2	Surface tolerance:	EN 10163-2 A1
Delivery condition: (B04)	Normalized rolled (+N)			Length tolerance:	EN 10029 Table 3
<u>Customer name and address</u> (A06)		<u>Certificate address</u>		Width tolerance:	EN 10029 Table 2
2121		2121001		Thickness tolerance:	EN 10029 Class A
Stena Stål AB Skeppsgatan 1 721 32 Västerås Sweden		avi.vasteras@stenastal.se; anna-karin@jarnsida.se; cert.vasteras@stenastal.se		Flatness tolerance:	EN 10029 Table 4 Class N
		Sweden			
			AVI.VASTERAS@STENASTAL.SE;CERT.VASTERAS@STENASTAL.SE;ANNA-KARIN@JARNSIDA.SE		

Supplementary information: (C04)

Fully Killed and Fine Grain

Visual examination and dimensional checking: Satisfactory. The results of tests performed are in compliance with the requirements. (Z01)

Details of supplied materials dimensions, weights and pieces

Heat/Slab (B07)	Plate No. (B06)	Item (B09)	Thickness mm (B09)	Width mm (B10)	Length mm (B11)	Pieces (B08)	Gross kg (B12)	Hard stamp	Stamp location	Customer remark (B99)
51280H4	4709M	1	15.0	1000	2000	10	2 360	S355J2+N	Head	7082096
51285K1	4693M	3	15.0	1500	3000	6	3 180	S355J2+N	Head	7082096
51285M4	4762M	4	20.0	1000	2000	13	4 082	S355J2+N	Head	7082096
51470D3	4927M	4	20.0	1000	2000	15	4 710	S355J2+N	Head	7082096
51285L3	4749M	5	20.0	1250	2500	5	2 455	S355J2+N	Head	7082096
51285J3	4719M	6	20.0	1500	3000	6	4 242	S355J2+N	Head	7082096
51285J1	4725M	6	20.0	1500	3000	6	4 242	S355J2+N	Head	7082096
51283H3	4858M	6	20.0	1500	3000	6	4 242	S355J2+N	Head	7082096
						67	29 513			



Europe - Plate

Inspection Certificate

(A02)

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

Our order No.: (A08) 7231461

Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

Chemical composition (heat analysis) all results in %

Heat No. (B07)	C	Mn	Si	P	S	Cr	Cu	Ni	Mo	Al	Nb	V	Ti	N	B
Set values:	min.				0.14					0.020					
	max.	0.20	1.60	0.25	0.025	0.025	0.300	0.400	0.300	0.080	0.100	0.060	0.100	0.050	0.0120 0.0008
51280	0.15	1.49	0.18	0.011	0.012	0.020	0.039	0.017	0.001	0.044	0.002	0.047	0.001	0.0089	0.0005
51283	0.16	1.51	0.22	0.010	0.007	0.023	0.036	0.016	0.001	0.047	0.003	0.041	0.001	0.0094	0.0005
51285	0.14	1.50	0.19	0.012	0.009	0.018	0.023	0.013	0.001	0.049	0.002	0.044	0.001	0.0091	0.0004
51470	0.17	1.48	0.19	0.013	0.004	0.026	0.034	0.013	0.002	0.046	0.036	0.002	0.002	0.0036	0.0003

Heat No. (B07)	CEV	Remark (C70)
Set values:	min.	
	max.	0.45
51280	0.41	1 3 4 6
51283	0.43	1 3 4 6
51285	0.41	1 3 4 6
51470	0.42	1 3 4 6

Supplementary information (C99)

CEV = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

1 = Basic Oxygen Steel, 2 = Electric Arc Furnace, 3 = Ladle Refined, 4 = Calcium Treated, 5 = Vacuum Degassed, 6 = Continuous Cast, 7 = Ingot



Inspection Certificate

(A02)

EN 10204:2004/3.1

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

Our order No.: (A08) 7231461

Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

Tensile testing Tensile tests were performed in accordance with EN 10002/ISO 6892-1 with results as stated below:

Heat/slab (B07)	Plate ID (B06)	Thickness mm	Shape (C10)	Loc. (C01)	Dir. (C02)	Yield MPa (C11)	Yield type	UTS Rm MPa (C12)	Elong. type	Elongation % (C13)	Yield/UTS
51285K1	4693M-2-3	15.0	R	H	T	418	R02	550	A5	29	0.76
51285K1	4693M-2-4	15.0	R	H	T	418	R02	550	A5	29	0.76
51285K1	4693M-2-5	15.0	R	H	T	418	R02	550	A5	29	0.76
51285K1	4693M-2-6	15.0	R	H	T	418	R02	550	A5	29	0.76
51285K1	4693M-2-7	15.0	R	H	T	418	R02	550	A5	29	0.76
51285K1	4693M-2-8	15.0	R	H	T	418	R02	550	A5	29	0.76
51280H4	4709M-1-1	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-10	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-2	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-3	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-4	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-5	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-6	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-7	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-8	15.0	R	H	T	412	REH	539	A5	35	0.76
51280H4	4709M-1-9	15.0	R	H	T	412	REH	539	A5	35	0.76
51285J3	4719M-1-1	20.0	R	H	T	406	REH	540	A5	31	0.75
51285J3	4719M-1-2	20.0	R	H	T	406	REH	540	A5	31	0.75
51285J3	4719M-1-3	20.0	R	H	T	406	REH	540	A5	31	0.75
51285J3	4719M-1-4	20.0	R	H	T	406	REH	540	A5	31	0.75
51285J3	4719M-2-1	20.0	R	H	T	406	REH	540	A5	31	0.75
51285J3	4719M-2-2	20.0	R	H	T	406	REH	540	A5	31	0.75
51285J1	4725M-1-10	20.0	R	H	T	410	REH	538	A5	27	0.76
51285J1	4725M-1-5	20.0	R	H	T	410	REH	538	A5	27	0.76
51285J1	4725M-1-6	20.0	R	H	T	410	REH	538	A5	27	0.76



Europe - Plate

Inspection Certificate (A02)

EN 10204:2004/3.1

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

Our order No.: (A08) 7231461Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

Tensile testing Tensile tests were performed in accordance with EN 10002/ISO 6892-1 with results as stated below:

Heat/slab <small>(B07)</small>	Plate ID <small>(B06)</small>	Thickness <small>mm</small>	Shape <small>(C10)</small>	Loc. <small>(C01)</small>	Dir. <small>(C02)</small>	Yield MPa <small>(C11)</small>	Yield type	UTS Rm MPa <small>(C12)</small>	Elong. type	Elongation % <small>(C13)</small>	Yield/UTS
51285J1	4725M-1-7	20.0	R	H	T	410	REH	538	A5	27	0.76
51285J1	4725M-1-8	20.0	R	H	T	410	REH	538	A5	27	0.76
51285J1	4725M-1-9	20.0	R	H	T	410	REH	538	A5	27	0.76
51285L3	4749M-1-10	20.0	R	H	T	410	REH	538	A5	27	0.76
51285L3	4749M-1-6	20.0	R	H	T	410	REH	538	A5	27	0.76
51285L3	4749M-1-7	20.0	R	H	T	410	REH	538	A5	27	0.76
51285L3	4749M-1-8	20.0	R	H	T	410	REH	538	A5	27	0.76
51285L3	4749M-1-9	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-1	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-10	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-11	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-12	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-13	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-2	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-3	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-4	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-5	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-6	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-7	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-8	20.0	R	H	T	410	REH	538	A5	27	0.76
51285M4	4762M-1-9	20.0	R	H	T	410	REH	538	A5	27	0.76
51283H3	4858M-2-1	20.0	R	H	T	416	REH	546	A5	27	0.76
51283H3	4858M-2-2	20.0	R	H	T	416	REH	546	A5	27	0.76
51283H3	4858M-2-3	20.0	R	H	T	416	REH	546	A5	27	0.76
51283H3	4858M-2-4	20.0	R	H	T	416	REH	546	A5	27	0.76



Inspection Certificate

(A02)

EN 10204:2004/3.1

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

Our order No.: (A08) 7231461

Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

Tensile testing Tensile tests were performed in accordance with EN 10002/ISO 6892-1 with results as stated below:

Heat/slab (B07)	Plate ID (B06)	Thickness mm	Shape (C10)	Loc. (C01)	Dir. (C02)	Yield MPa (C11)	Yield type	UTS Rm MPa (C12)	Elong. type	Elongation % (C13)	Yield/UTS
51283H3	4858M-2-5	20.0	R	H	T	416	REH	546	A5	27	0.76
51283H3	4858M-2-6	20.0	R	H	T	416	REH	546	A5	27	0.76
51470D3	4927M-1-1	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-10	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-11	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-12	20.0	R	H	T	431	REH	567	A5	27	0.76
51470D3	4927M-1-13	20.0	R	H	T	431	REH	567	A5	27	0.76
51470D3	4927M-1-14	20.0	R	H	T	431	REH	567	A5	27	0.76
51470D3	4927M-1-15	20.0	R	H	T	431	REH	567	A5	27	0.76
51470D3	4927M-1-2	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-3	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-4	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-5	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-6	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-7	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-8	20.0	R	H	T	431	REH	566	A5	23	0.76
51470D3	4927M-1-9	20.0	R	H	T	431	REH	566	A5	23	0.76

Supplementary Information (C99)

Loc.: (C01) H = head, T = tail

Dir.: (C02) T = transversal, L = longitudinal

Shape: (C10) Ø = round, R = rectangular

Original gauge length: 200 mm



Europe - Plate

Inspection Certificate

(A02)

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

EN 10204:2004/3.1

Our order No.: (A08) 7231461

Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

Impact testing Impact tests were performed in accordance with EN 10045/ISO 148-1 with results as stated below:

Heat/slab (B07)	Plate ID (B06)	Position (C01)	Notch (C40)	Shape (C41)	Loc. (C01)	Dir. (C02)	Temp. °C (C03)	SV J (C42)	SV J (C42)	SV J (C42)	AV J (C43)
51285K1	4693M-2-3	1	CV	10x10	H	L	-20	130	77	66	91
51285K1	4693M-2-4	1	CV	10x10	H	L	-20	130	77	66	91
51285K1	4693M-2-5	1	CV	10x10	H	L	-20	130	77	66	91
51285K1	4693M-2-6	1	CV	10x10	H	L	-20	130	77	66	91
51285K1	4693M-2-7	1	CV	10x10	H	L	-20	130	77	66	91
51285K1	4693M-2-8	1	CV	10x10	H	L	-20	130	77	66	91
51280H4	4709M-1-1	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-10	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-2	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-3	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-4	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-5	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-6	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-7	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-8	1	CV	10x10	H	L	-20	146	127	149	141
51280H4	4709M-1-9	1	CV	10x10	H	L	-20	146	127	149	141
51285J3	4719M-1-1	1	CV	10x10	H	L	-20	185	169	205	186
51285J3	4719M-1-2	1	CV	10x10	H	L	-20	185	169	205	186
51285J3	4719M-1-3	1	CV	10x10	H	L	-20	185	169	205	186
51285J3	4719M-1-4	1	CV	10x10	H	L	-20	185	169	205	186
51285J3	4719M-2-1	1	CV	10x10	H	L	-20	185	169	205	186
51285J3	4719M-2-2	1	CV	10x10	H	L	-20	185	169	205	186
51285J1	4725M-1-10	1	CV	10x10	H	L	-20	148	148	150	149
51285J1	4725M-1-5	1	CV	10x10	H	L	-20	148	148	150	149
51285J1	4725M-1-6	1	CV	10x10	H	L	-20	148	148	150	149



Inspection Certificate

(A02)

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

Our order No.: (A08) 7231461

Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

Impact testing Impact tests were performed in accordance with EN 10045/ISO 148-1 with results as stated below:

Heat/slab (B07)	Plate ID (B06)	Position (C01)	Notch (C40)	Shape (C41)	Loc. (C01)	Dir. (C02)	Temp. °C (C03)	SV J (C42)	SV J (C42)	SV J (C42)	AV J (C43)
51285J1	4725M-1-7	1	CV	10x10	H	L	-20	148	148	150	149
51285J1	4725M-1-8	1	CV	10x10	H	L	-20	148	148	150	149
51285J1	4725M-1-9	1	CV	10x10	H	L	-20	148	148	150	149
51285L3	4749M-1-10	1	CV	10x10	H	L	-20	148	148	150	149
51285L3	4749M-1-6	1	CV	10x10	H	L	-20	148	148	150	149
51285L3	4749M-1-7	1	CV	10x10	H	L	-20	148	148	150	149
51285L3	4749M-1-8	1	CV	10x10	H	L	-20	148	148	150	149
51285L3	4749M-1-9	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-1	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-10	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-11	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-12	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-13	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-2	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-3	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-4	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-5	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-6	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-7	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-8	1	CV	10x10	H	L	-20	148	148	150	149
51285M4	4762M-1-9	1	CV	10x10	H	L	-20	148	148	150	149
51283H3	4858M-2-1	1	CV	10x10	H	L	-20	165	155	162	161
51283H3	4858M-2-2	1	CV	10x10	H	L	-20	165	155	162	161
51283H3	4858M-2-3	1	CV	10x10	H	L	-20	165	155	162	161
51283H3	4858M-2-4	1	CV	10x10	H	L	-20	165	155	162	161



Inspection Certificate

(A02)

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

Our order No.: (A08) 7231461

Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

Impact testing Impact tests were performed in accordance with EN 10045/ISO 148-1 with results as stated below:

Heat/slab (B07)	Plate ID (B06)	Position (C01)	Notch (C40)	Shape (C41)	Loc. (C01)	Dir. (C02)	Temp. °C (C03)	SV J (C42)	SV J (C42)	SV J (C42)	AV J (C43)
51283H3	4858M-2-5	1	CV	10x10	H	L	-20	165	155	162	161
51283H3	4858M-2-6	1	CV	10x10	H	L	-20	165	155	162	161
51470D3	4927M-1-1	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-10	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-11	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-12	1	CV	10x10	H	L	-20	204	194	216	205
51470D3	4927M-1-13	1	CV	10x10	H	L	-20	204	194	216	205
51470D3	4927M-1-14	1	CV	10x10	H	L	-20	204	194	216	205
51470D3	4927M-1-15	1	CV	10x10	H	L	-20	204	194	216	205
51470D3	4927M-1-2	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-3	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-4	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-5	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-6	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-7	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-8	1	CV	10x10	H	L	-20	179	220	197	199
51470D3	4927M-1-9	1	CV	10x10	H	L	-20	179	220	197	199

Supplementary Information (C99)

Position: (C01) 1 = surface, 2 = middle, 3 = 1/3 of thickness, 4 = 1/4 of thickness

Notch: (C40) CU = Charpy U-notch, CV = Charpy V-notch, CVA = Charpy V-notch (ASTM)

Loc.: (C01) H = head, T = tail

Dir.: (C02) T = transversal, L = longitudinal



Inspection Certificate

(A02)

EN 10204:2004/3.1

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Date of creation: (Z02)

04.07.2017

Certificate No.: (A03)

067305

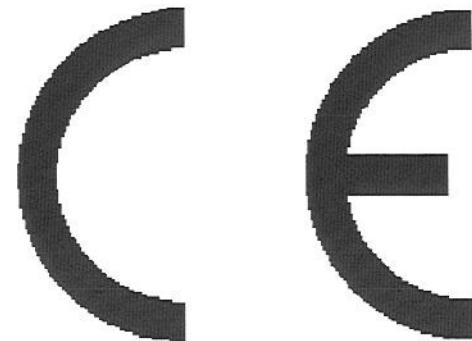
Our order No.: (A08) 7231461

Your order No.: (A07) 7082096

Order registration date: 23.05.2017

Date of dispatch: 04.07.2017 B

We hereby certify that the material has been made and tested in accordance with the mentioned specification(s).
 Certified according to Construction Products Regulations (305/2011/EU) by TÜV NORD Systems GmbH (Notified Body Reg. No. 0045).
 DOP's could be down-loaded from www.dansteel.dk



TÜV-NORD 0045-CPR-0554

Our products are Cobalt, Gold, Mercury free and are free of radioactive substances and do not exceed the clearing limit value of 100 Bg/kg, which guarantees the compliance with limit values given in the Radiation Protection Ordinance (StrlSchV) for the unrestricted clearance of solid material (StrlSchV Annex III, Section 5) for ferrous nuclides.
 Manufactured in Denmark

Information description

acc. to EN 10168

A Commercial transactions and parties involved

- A01 Manufacturer's works
- A02 Type of inspection document
- A03 Document number
- A04 Manufacturer's mark
- A05 Originator of the inspection document
- A06 Customer consignee
- A07 Purchaser's order number and, where applicable, item number
- A08 Manufacturer's works order number
- A09 Customer article number
- A10 to A99 Supplementary information

B Description of Products

- B01 Product
- B02 Steel designation
- B03 Any supplementary requirements
- B04 Product delivery condition
- B05 Reference (heat) treatment of samples
- B06 Marking of the product
- B07 Identification of the product
- B08 Number of pieces
- B09 to B11 Product dimensions
- B12 Theoretical mass
- B13 Actual mass
- B14 to B99 Supplementary information

C Inspection

- C00 Identification of the sample
- C01 Location of the sample
- C02 Direction of the test pieces
- C03 Test temperature
- C04 to C09 Supplementary information

- C10 Shape of the test piece
- C11 Yield or proof strength
- C12 Tensile strength
- C13 Elongation after fracture
- C14 to C29 Supplementary information
- C30 Method of test
- C31 Individual values
- C32 Mean value
- C33 to C39 Supplementary information
- C40 Type of test piece
- C41 Width of test piece
- C42 Individual values
- C43 Mean value
- C44 to C49 Supplementary information
- C50 to C69 Supplementary information
- C70 Steelmaking process
- C71 to C92 Chemical composition
- C93 to C99 Supplementary information

D Other tests

- D01 Marking and identification, surface appearance, shape and dimensional properties
- D02 to D50 Non-destructive tests
- D51 to D99 Supplementary information

Z Validation

- Z01 Statement of compliance
- Z02 Date of issue and validation
- Z03 Stamp of the inspection representative
- Z04 CE marking
- Z05 to Z99 Supplementary information


CERTIFICATE - ZEUGNIS - CERTIFICAT
**EN 10204 - 3.1
17070981-EN-0**

 Invoice No.
Rechnung Nr.
N° de facture

 Page Seite Page
1/2

 Business Unit / QCM
BA Quarto Plate,Quarto Plate Europe

 Date Datum Date
12-Jul-2017 Load, Ladung, Charge No
Acknowledged ID, Bestätigung, Commande ID
300434985

Your ref, Ihre Ref., Votre ref OPF011700007			Requirements, Anforderungen, Exigences EN 10088-4:2009 EN 10088-2:14 ASME SA-240M Code Sect. II. Part A:2015 NORSOK Standard MDS-D45:5 NACE MR0103 / ISO 17945:2015 ASTM A240M / NACE MR0175/ ISO 15156-3:16a/2015 PREN=CR+3.3Mo+16N: Min=35 Additional testing, see "Other information"													
Buyer, Besteller, Acheteur Metal Service Center Sp. z o.o. ul. Leonarda da Vinci 5 44-109, Gliwice POLEN																
Consignee, Empfänger, Lieu de livraison Metal Service Center Sp. z o.o.																
Mark of Manufacturer Zeichen des Lieferwerkes Signe de producteur	Process Erschmelzungsort Mode de fusion	Inspector's stamp Zeichen des Sachverständigen Poinçon de l'expert	Grade, Werkstoff, Nuance Outokumpu 2205 1.4462 UNS S31803 UNS S32205													
W			E+AOD			DJ 2										
Product, Erzeugnisform, Produit Stainless steel hot rolled, Plate, 1D/No.1, Cut edge																
Line Reihe Ligne	Item Position Poste	Heat-Lot No Schmelze-Lot Nr Coulée n° - Lot No	Size Abmessungen Dimensions				Pieces Stückzahl Nombre	Quantity/unit, Menge/Einheit, Quantité/Unité								
1	9	572362-333186:0	25,0 X 2500,0 X 6000,0 mm				1									
1	Plate No, Blech Nr, Tôle No 5664 1801															
Chemical composition – Chemische Zusammensetzung – Composition chimique % Heat – Schmelze – coulée No																
Min	C	Si	Mn	P	S	Cr	Ni	Mo	N							
Max	0.030	1.00	2.00	0.030	0.015	23.00	6.50	3.50	0.20							
572362	0.018	0.37	1.34	0.030	0.001	22.18	5.66	3.13	0.18							
Distribution							Direct. T = Transverse L = Longitudinal	Top/Bot F = Front B = Back	Form P = Flat C = Round	Location 1 = Center 2 = Close to Surface 3 = Standard 4 = At 1/4 of thickness						
Certificate via e-Services																
Test results - Prüfergebnisse - Résultats des essais (1N/mm² = 1MPa)																
Corrosion ASTM A262 Practice E Plate-no Result 1801F OK																
ASTM G48 Method A 24h Plate-no Direct. Top/Bot Location Form Temp. °C Cor.rate g/m²*24h Max T F 2 P 25,0 3.99 1801 0.00																
Metallographic testing Ferrite examination ASTM E562 Plate-no Direct. Top/Bot Location Form Temp. °C Ferrite % Min 35 Max 55 1801 T F 3 P 20,0 45																
Microstructure examination Norsok MDS D45 Plate-no Result 1801F OK																
The results comply with the Requirements of the order - Die gestellten Anforderungen sind erfüllt - Les résultats sont conformes aux exigences de la commande																

 Outokumpu Stainless AB
 BA Quarto Plate,Quarto Plate Europe
 SE-, 693 81 DEGERFORS
 SWEDEN
 Regofice: SWEDEN

 Computer generated original
 Quality Inspector

 V.A.T no: SE556001874801
 Regno: 556001-8748

 V.A.T no: SE556001874801
 Regno: 556001-8748

Daniel Mälman



CERTIFICATE - ZEUGNIS - CERTIFICAT
EN 10204 - 3.1
17070981-EN-0

 Invoice No.
 Rechnung Nr.
 N° de facture

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2/2

 Business Unit / QCM
BA Quarto Plate,Quarto Plate Europe

 Date Datum Date
12-Jul-2017

Load, Ladung, Charge No

 Acknowledged ID, Bestätigung, Commande ID
300434985
Ferrite examination Fischer Feritscope

Plate-no	Direct.	Top/Bot	Location	Form	Temp. °C	Ferrite %
Min						35
Max						65

*Mechanical properties***Tensile testing/Hardness Rockwell C**

Plate-no	Direct.	Top/Bot	Location	Form	Temp. °C	Rp 0,2 MPa	Rm MPa	A50 %	HRC
Min						450	620	25	
Max									31

Tensile testing/Hardness Rockwell C.

Plate-no	Direct.	Top/Bot	Location	Form	Temp. °C	Rp 0,2 MPa	Rm MPa	A50 %	HRC
Min						460	655	25	
Max									28

Charpy impact test (V-notch) EN ISO 148-1

Plate-no	Direct.	Top/Bot	Location	Form	Temp. °C	Value1 J	Value2 J	Value3 J	Average J
Min						20			20

Charpy impact test (V-notch) ASTM A370 (-46 °C)

Plate-no	Direct.	Top/Bot	Location	Form	Temp. °C	Value1 J	Value2 J	Value3 J	Average J	Lat ex1 mm	Lat ex2 mm	Lat ex3 mm
Min						35	35	35	45	0.38	0.38	0.38

Other Information

Heat treated at 1100°C and Quenched in water.

Dimensional control, visual inspection and grade check (PMI): Approved

Holding time approximately 1 minute/mm plate thickness

Construction Products Regulation (305/2011/EU)

The Declaration of Performance (DoP), see www.outokumpu.com

Norsok M-650 QTR. No.: QTR_S32205/S31803 Rev.2

PREN=CR+3.3Mo+16N: 35.4 (Min:35)

Additional testing:

Charpy impact test (V-notch) EN ISO 148-1: Value (J); Average Min=20 (J)

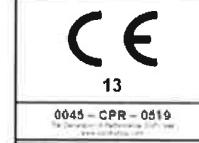
ASTM A262 Practice E

Tolerance	Standard	Class
Flatness tolerance	EN 18286/A480/M/EN 10029	ISO 18286 Class N
Length	EN 18286/A480/M/EN 10029	ISO 18286 A/A480/M/EN 10029
Thickness	EN 18286/A480/M/EN 10029	ISO 18286/A480/M/EN 10029 B
Width	EN 18286/A480/M/EN 10029	ISO 18286 A/A480/M/EN 10029

The results comply with the requirements of the order - Die gestellten Anforderungen sind erfüllt - Les résultats sont conformes aux exigencies de la commande

 Outokumpu Stainless AB
 BA Quarto Plate,Quarto Plate Europe
 SE-, 693 81 DEGERFORS V.A.T no: SE556001874801
 SWEDEN
 Regofice: SWEDEN Regno: 556001-8748

 Computer generated original
 Quality Inspector


 Daniel Mälman


INSPECTION CERTIFICATE acc to
EN 10204 3.1

Bandak Lunde AS
Hantovegen 328
3825 LUNDE I TELEMARK
NORWAY

Customer References		Sandvik References		
	Customer 826745	Order No.	Subs No.	ABSMT Dispatch note
	order	488788	635482	29679/53
	2017-08-23	ABSMT No.	C.Code	
125-06911	SVERDRUP S	284-40662	40	

Material description	Steel/material Designations	
HOT WORKED STAINLESS BAR STEEL	Sandvik	UNS
FORGED	SAF2205	S31803/S32205
ANNEALED & STRAIGHTENED	EN no	
PEEL TURNED AND POLISHED	1.4462	
Steel making process	Origin	
E+AOD+LRF	Sweden	

Technical requirements
EN 10088-3:-2005, EN10272:-2016*, EN10060:2003, EN 10221:1996
EN10222-5:-1999*, PED 2014/68/EU,
NACE MR0175/ISO 15156-3:2015, NACE MR0103/ISO 17945:2015,
ASTM A-276-16A, ASME SA-276-ED-15 SECT II PART A,
ASTM A-479-16A, ASME SA-479-ED-15 SECT II PART A,
ASTM A-484-16, ASTM A-182-16A*, ASTM A-1049-10(15)*, ASTM A-314-15*,
NORSOK M-630 ED-6, NORSOK MDS D47 REV. 5*
*For detailed information, please see the appendix

EXTENT OF DELIVERY

It	Product designation	Heat	Lot	Pieces	Kg
01	MBR-SANMAC2205-205	549107	01081	4	228.0
	FL-20-220-	550098	36031	16	914.0
			Total	20	1142.0

TEST RESULTS

Reduction ratio (times)

Lot	Reduction ratio (times)
01081	2.7
36031	2.7

Chemical composition (weight%)

Heat	PRE
549107	35.5
550098	35.7

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



CERTIFICATE

No. A/17-692829

Rev 00

Date 2017-10-17

Page 2/5

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
549107	0.022	0.48	0.79	0.025	0.008	22.51	5.64	3.09
550098	0.021	0.38	0.82	0.022	0.009	22.46	5.47	3.07
	N							
549107	0.176							
550098	0.193							

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		%	%
	Rp0.2	Rp1.0	Rm		A	2"
01081	520	589	723		39	39
36031	506	578	717		37	37
	Red.of Area					
		%				
	Z					
	74					
	75					

Transversal

Location half radius

Lot	Yield strength		Tensile strength		Elongation	
	MPa	MPa	MPa		%	%
	Rp0.2	Rp1.0	Rm		A	2"
01081	519	590	729		33	33
36031	508	590	744		38	38
	Red.of Area					
		%				
	Z					
	69					
	67					

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

Location half radius

Lot	Min	Max
	HRC	HRC
01081	18	18
36031	19	20

Impact test, J, -50°C, Longitudinal acc. to ASTM A-370

Location half radius

Lot	Single values			Average
	Joule	Joule	Joule	
01081	329	325	386	347
36031	189	182	175	182

Lateral expansion

Lot	mm
01081	1.83
36031	1.58

**Impact test, J, -50°C, Transversal acc. to ASTM A-370**

Location half radius

Lot	Single values		Average
	Joule	Joule	Joule
01081	72	79	122
36031	85	85	87

Lateral expansion

Lot	mm		
01081	0.75	0.76	1.11
36031	0.90	0.93	0.89

Corrosion test according to ASTM G-48A, 25°C for 24 hours.

In delivery condition. No pitting corrosion found at 20x enlargement.

Location half radius

Lot	Specimen weight loss	
	g/m ²	
01081	0.00	
36031	0.07	

Ferrite acc to ASTM E-562

Location half radius

Lot	%
01081	51.5
36031	47.6

Following controls/tests have been satisfactorily performed:

- Intergranular corrosion test acc. to EN ISO 3651-2 C
- Material Identification.
- Ultrasonic test acc to EN 10228-4, Scan coverage 1, Quality Class 3, Tab 4, ASTM A-388 and API 6A PSL 3/3G
- Visual inspection and dimensional control.

HEAT TREATMENT:

20 - 70 mm: Material soaking 1060°C, min. 30 minutes. Quenched in water. Water temp pre-quench max 40°C, after quench max 50°C

75 - 350mm: Continues heat treatment furnace. Material soaking at 1060°C, 30 minutes minimum. Sandvik is using a continuous water spray quenching process. Water temp pre-quench 40°C max, after quench 50°C max.

355-370mm: Material soaking 1070°C, min. 60 minutes. Quenched in water. Water temp pre-quench max 40°C, after quench max 50°C

375-450mm: Material soaking 1070°C, min. 120 minutes. Quenched in water. Water temp prequench max 40°C, after quench max 50°C.

The raw material is free from radioactive contamination.

Microscopic Examination X 500 acc. to ASTM A 923 Method A/NORSOK M630 Free from grain boundary carbides and intermetallic phases.

Material free from mercury contamination.

No welding or weld repair.

**CERTIFICATE****No. A/17-692829****Rev 00****Date 2017-10-17****Page 4/5**

NORSOK M-650 ED-4 QTR NO: 22 Cr Duplex SS

Certified acc. Pressure Equipment Directive (2014/68/EU Annex 1 para 4.3) TUEV CERT-Certification body for pressure equipment of the TUEV NORD GRUPPE; 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 9001:2008.

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

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 - 160mm: EN 10088-5 EN (Only valid for CE marked products together with Sandvik Declaration of Performance certificate).

20mm - 160mm: PED 2014/68/EU, *EN 10272 (Stainless steel bars for pressure purposes).

20mm - 260mm: NORSOK M-630 Ed. 6 - NORSOK MDS D47 Rev.5*

180mm - 450mm: PED 2014/68/EU, *EN 10222-5

Suitable for manufacturing of components in acc. with *ASTM A-182, ASTM A-1049, ASTM A-314.

Test location

Mechanical, ferrite, corrosion testing:

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

Bar dim > 50 mm - 450 mm - Longitudinal test pieces, 1/4 T and minimum 100 mm from any second surface.

Bar dim > 100mm - 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.

Micro: To ensure a sound, and unaffected structure all through the material three samples are taken, one close to surface, half radius, and in the center of the bar.

Furnace calibration every third month according to API 6A

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

SSAB EMEA AB, SE-781 84 BORLÄNGE, Sweden A01																		
Inspection certificate EN 10 204 - 3.1	A02	Issuing department Quality inspection	A05	Purchaser order no 7074006	A07	Our order no 124759-1	A08	Invoice no 2870142	A19	Certificate no and date 16931763 2017-11-14	A03							
Purchaser STENA STÅL AB FISKHAMNSGATAN 8 414 58 GÖTEBORGS		A11 24968	Product Hot rolled sheets			B01	Marking Manufacturer, MATERIAL ID					B06	Customer marks		B15			
		Quantity 50	B08	Dimensions [mm] T 5 W 1500 L 3000	B09-B11	Weight [kg] 8820	B12	Deliv. Cond.	B04	Internal code	B16	B02						
		Consignee STENA STÅL AB FISKHAMNSGATAN 8 414 58 GÖTEBORGS					A06	Standard/rules EN 10025-2 Steel grade S355J2+N	EN 10025-2					B03				
		MATERIAL ID 59-6341-162002-08 , 59-6341-162002-09 , 59-6341-162002-11 , 59-6341-162002-12														B07		
Chemical composition														C71-C92	Carbon equivalent etc Cekv = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5	C93-C99		
Heat no 59-6341	C .156	Si .01	Mn 1.46	P .009	S .006	Cr .03	Ni .04	Mo .00	V .01	Ti .00	Cu .01	Al .046	Nb .009	B .0001	N .006	Cekv .41		
Testtype	C04	Millcode	C00	Specimen position	C01	Direction	C02	Treatment	B05	Specimen type	C10	Temp [degr C]	C03	Test results				
Tensile test	DEG052		Top end	Transvers	Normalised	Rectangular 380x40			C11 NReH [MPa] 432		C12 NRm [MPa] 532	C13 NA5 [%] 34.0						
Tensile test	DEG053		Top end	Transvers	Delivery condition	Rectangular 380x40			C11 Reh [MPa] 501		C12 Rm [MPa] 586	C13 A5 [%] 26.5						
Production time: 2017-05-02																		
Customer article no: 221275																		

	This certificate is produced with EDP and valid without signature Material Testing/ H Leu / M Eriksson / V Esbelani	Z02	 10 0045-CPD-0635 www.ssab.com/downloads	Z01	It is hereby certified that the material described above complies with the requirements of the order.	Z01	A22	A04	PR0V/Collector1
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VASTAANOTTOTODISTUS INSPECTION CERTIFICATE

10

1/3

A 16852 -001

30.11.2016

Tilaaja Purchaser
TIBNOR AS
P.O. BOX 140 FURUSET
1001 OSLO NORWAY
Tilaus nro Order No.
46093074-3040

Tilausvahvistus Order Confirmation
16852

Vastaanottaja Consignee
TIBNOR AS, RM BRYNE
REE NAERINGS PARK JAERVEGEN 142
4340 BRYNE NORWAY
Asiakkaan merkki Shipping mark
46093074-3040

Päivämäärä Date
01.12.2016
Valmistajan merkki
Mark of the Manufacturer



Todistus Certificate	Laivaus Shipping	Laatumerkintä Quality Marking	Tarkastajan leima Stamp of Inspector	
31	LINK STAR	S355J2 N Y05	Vastaanottajan leima Stamp of Surveyor	
Toimitustyyppi Delivery type		Sulatus nro levy nro Cast No. Plate No.	Muut leimaukset Other Stamps	
TOTAL DELIVERY		X X X X X X X X X X X X		

Tuote Product
HEAVY PLATES
Laji Grade

S355J2+N EN 10025-2:04/M-120 EDI.5:2008

Laatuohjeet Quality Specifications

STEEL FOR GENERAL STRUCTURAL PURPOSES

Positio Item	Mitat mm Dimensions mm	Merkki Marke	Kpl Pcs	Paino kg Weight kg	Sulatus levy nro Cast plate No	SP nro SP No	UT UT	MT MT
--------------	------------------------	--------------	---------	--------------------	--------------------------------	--------------	-------	-------

HOT ROLLED STEEL PLATES

IN BUNDLES

ACC. TO DATA SHEET MDS-Y05 REV. 3 JUNE 2007, CEV MAX 0.41%

SURFACE CONDITION EN 10 163-2:2005 CLASS A1

010 40.00 X 1250 X 2500 46093074-3040

10 10000 63372 021 022

010 40.00 X 1250 X 2500

10 10000 63372 022 022

*** 20 20000

Raabe Steel Works

Tätä todistamme, että toimitus on tilausvahvistuksen mukainen.
We hereby certify that the material described above has been tested and complies with the terms of the order confirmation.

Testaus ja tarkastus Testing and Inspection

MINNA VALKAMA

Valtuuttettu tarkastaja Authorized inspection representative

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HÄMEENLINNA

Osoite Address: PL 93, P.O Box 93
FIN-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Telekopio Telefax: 020 592 2736
+358 20 592 2736

Y-tunnus Business ID: 2389445-7

AINESTODISTUS TEST REPORT

EN 10 204-3.1 (2004)

10

2/3

A 16852 -001

30.11.2016

Tilaaja Purchaser
TIBNOR AS
P.O. BOX 140 FURUSET
1001 OSLO NORWAY
Tilaus nro Order No.
46093074-3040

Tilausvahvistus Order Confirmation
16852

Vastaanottaja Consignee
TIBNOR AS, RM BRYNE
REE NAERINGSPLATE JAERVEGEN 142
4340 BRYNE NORWAY
Asiakkaan merkki Shipping mark
46093074-3040

Päivämäärä Date
01.12.2016
Valmistajan merkki
Mark of the Manufacturer



Laji Grade
S355J2+N

Lisävaatimukset Additional requirements

Jatkuvavalettuu happiterästä
Oxygen steel, continuous casting

Fully killed, Fine grain practiced

Laatuvelvitys Quality Specifications

STEEL FOR GENERAL STRUCTURAL PURPOSES

Pos. Item	Sulatus, k.erä nro Cast. test No	T-tila Cond	Vetokoe Tensile test												Taivutuskoe Bend test			Huom Nb	Päästö Tempering °C						
			K2	°C	RP02 MPa	RT05 MPa	REL MPa	REH MPa	1	RM MPa	2	3	50	A %	80	200	REH / RM	RM * A5	1	RAZ %	2	3	Keskiarvo Average	K5	D = X t
010	63372	022	NR	51		395		533		22															

K2: 51=BOTTOM,TRANSV.

NR=NORMALIZING ROLLING

Pos. Item	Sulatus k.erä nro Cast. test No	Iskukoe Impact test	Sitkeämurtuma Ductile fracture				Erikoiskokeet Special tests				Huom Nb	Päästö Tempering °C											
			K3	°C	1	2	3	Keskiarvo Average	W	1	2	3	Keskiarvo Average	K4	°C	1	2	Keskiarvo Average					
010	63372	022	151	-020	126	132	126		128														

K3: 151=CH-V/ISO-V(J),10X10,BOTTOM,LONGIT,KV600

Raabe Steel Works

Tätten todistamme, että toimitus on tilausvahvistuksen mukainen.
We hereby certify that the material described above has been tested and complies with the terms of the order confirmation.

Testaus ja tarkastus Testing and Inspection

MINNA VALKAMA

Valtuutettu tarkastaja Authorized inspection representative

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HÄMEENLINNA

Osoite Address: PL 93, P.O Box 93
FIN-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Telekopio Telefax: 020 592 2736
+358 20 592 2736

Y-tunnus Business ID: 2389445-7

**ANALYYSITODISTUS ANALYSIS CERTIFICATE
ANALYSEBESCHEINIGUNG COMPOSITIO CHIMIQUE CERTIFICAT
СЕРТИФИКАТ АНАЛИЗА**

10

3/3

A 16852 -001

30.11.2016

VJS

Sulatus nro Cast No	Koe nro Test No	Positio Item	Cekv Ceq	Analysi % Chemical composition %	Chemisch Zusammensetzung %	Composition Chimique %	Анализ плавки %	(*=ppm)	Päivämäärä Date Datum Date Дата											
Schmelzen Nr. No de coulén № Плавки	Prüf Nr. Essai No № Пробы	Pos. Poste Поз.	Cäg Cég Cekv	C	SI	MN	P	S	AL	NB	V	TI	CU	CR	NI	MO	N	B	01.12.2016	VJS
63372	010	.40	.152	.46	1.42	.012	.007	.034	.040	.007	.003	.016	0.04	0.03	.004	.004	.0002			

CEQ=C+MN/6+(CR+MO+V)/5+(NI+CU)/15

Raahe Steel WorksTestaus ja tarkastus
Prüfung und KontrolleTesting and Inspection
Essais et Contrôle

Испытание и контроль качества

Steel manufactured and supplied by Raahe Steel Works is free from radiation.
Производимая на металлургическом комбинате «Raahe Steel Works» и поставляемая
заказчику сталь не излучают радиации.**MINNA VALKAMA**Valtuutettu tarkastaja
SachverständigerAuthorized inspection representative
Inspector autorisé

Уполномоченный инспектор

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HÄMEENLINNAOsoite Address: PL 93, P.O Box 93
FIN-92101 RAAHE, FINLANDPuhelin Telephone: 020 5911
+358 20 5911Telekopio Telefax: 020 592 2736
+358 20 592 2736

Y-tunnus Business ID: 2389445-7

Declaration of performance
(according to EU No 305/2011 and 574/2014)

DoP id. P010_01

Hot rolled Plate product S355J2 / 1.0577
according to
EN 10025-2:2004
for bolted, welded and riveted structures.

SSAB
P.O Box 70
101 20 Stockholm
SWEDEN
T: +46 8 45 45 700
Email: info@ssab.com
Website: ssab.com

TÜV NORD Systems GmbH & Co. KG
Grosse Bahnstrasse 31
D-22525 Hamburg
Germany
T: +49 40 8557 2368

Assessment system and verification for constancy
of performance
System 2+

The performance of the product identified in this document is
in conformity with the set of declared performance. This declaration of performance
is issued in accordance with Regulations (EU) No 305/2011 and 574/2014,
under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:



Kari Ojala
Vice President, hot rolled plate and strip products,
SSAB Europe Oy, Raahe Steelworks
Raahe 2015-06-09



05

0045-CPR-0573
EN 10025-1:2004

Dop id: P010_01		Performance		Harmonized technical specification
S355J2	Thickness	Tolerances on the nominal thickness (acc. EN 10029 Class A unless otherwise stated)		
Tolerances on dimensions and shapes.	Nominal thickness (mm)	Lower	Upper	
Thickness	3 ≤ t < 5	-0,3	+0,7	
	5 ≤ t < 8	-0,4	+0,8	
	8 ≤ t < 15	-0,5	+0,9	
	15 ≤ t < 25	-0,6	+1,0	
	25 ≤ t < 40	-0,7	+1,3	
	40 ≤ t < 80	-0,9	+1,7	
	80 ≤ t < 150	-1,1	+2,1	
	150 ≤ t < 250	-1,2	+2,4	
Width	Nominal thickness	Tolerances		
		Lower	Upper	
	t < 40	0	+20	
	40 ≤ t < 150	0	+25	
	150 ≤ t ≤ 400	0	+30	
	Tolerances on width for plates with untrimmed edges (NK) shall be the subject of agreement between the manufacturer and purchaser at the time of enquiry and order			
Length	Nominal length	Tolerances		
	/	Lower	Upper	
	/ < 4000	0	+20	
	4000 ≤ / < 6000	0	+30	
	6000 ≤ / < 8000	0	+40	
	8000 ≤ / < 10 000	0	+50	
	10 000 ≤ / < 15 000	0	+75	
	15 000 ≤ / ≤ 20 000	0	+100	
	Tolerances on plates with nominal length l > 20 000 mm shall be agreed at the time of enquiry and order.			
Flatness	Nominal thickness t	Measuring length		
	t	1000	2000	
	3 ≤ t < 5	9	14	
	5 ≤ t < 8	8	12	
	8 ≤ t < 15	7	11	
	15 ≤ t < 25	7	10	
	25 ≤ t < 40	6	9	
	40 ≤ t < 250	5	8	

Yield strength	thickness mm	min (Mpa)			
	≤ 16	355			
	> 16 ≤ 40	345			
	> 40 ≤ 63	335			
	> 63 ≤ 80	325			
	> 80 ≤ 100	315			
	> 100 ≤ 150	295			
	> 150 ≤ 200	285			
Tensile strength	thickness mm	min (Mpa)	max (Mpa)		
	< 3	510	680		
	≥ 3 ≤ 100	470	630		
	> 100 ≤ 150	450	600		
Elongation	thickness mm	min %			
	≥ 3 ≤ 40	20			
	> 40 ≤ 63	19			
	> 63 ≤ 100	18			
	> 100 ≤ 150	18			
Impact strength	thickness mm	temperature, °C	min. energy, J		
	≤ 150	-20	27		
	> 150 ≤ 250	-20	27		
Weldability CEV	thickness mm	CEV max %			
	≤ 30	0,45			
	> 30 ≤ 40	0,47			
	> 40 ≤ 150	0,47			
Durability (chemical composition)	element	Max			
		≤ 30	> 30		
	C	0,20	0,22		
	Si	0,55			
	Mn	1,60			
	P	0,025			
	S	0,025			
	N				
Cu					
	0,55				

7.9.2016

404590

12

Customer's order number 0046076049	Manufacturer's order number 131888 1		
Customer/consignee Tibnor Ab Abramsons väg 1 63510 Eskilstuna Sweden	Buyer Tibnor Ab Box 600 16926 Solna Sweden		
Customer reference number 0046076049-0060/66874			
Product Round bar As rolled Hot rolled	Steel grade 520M/S355J2+N Specification 520M/S355J2/TIB 06.08.15		
Charge 27367	Abbreviation H82	Diameter/dimensions 25 mm	Reduction ratio 233,78 :1

CAST ANALYSIS

	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %
Min					0,020			
Result	0,12	0,32	1,25	0,010	0,035	0,21	0,13	0,04
Max	0,20	0,55	1,60	0,035	0,040			
	V %	Ti %	Cu %	Als %	As %	Sn %	B %	Ca %
Min								0,0020
Result	0,06	0,0012	0,24	0,014	0,008	0,011	0,0002	0,0043
Max	0,09							
	N %	Nb %	Co %	Pb %	W %	SB %	CEV	
Min								
Result	0,012	0,003	0,014	0,0002	0,007	0,002	0,42	
Max							0,45	

CHARPY V2/-40 C EN ISO 148-1	KV1 J	KV2 J	KV3 J	KV AVER
				27
Min				
Result	122	126	126	125
Max				

TENSILE TEST FROM 1/3 RADIUS EN ISO 6892-1	REH MPa	Rp0.2 MPa	Rm MPa	A 5 %	Z %
Min	380	520	22,0		
Result	455	454	576	23,6	52
Max		630			

520M/S355J2+N - EN10025-2:2004

The products supplied are in compliance with the requirements of the order

This certificate is issued electronically and is valid without a signature

7.9.2016
404590

Customer's order number 0046076049	Manufacturer's order number 131888 1		
Customer/consignee Tibnor Ab Abramsons väg 1 63510 Eskilstuna Sweden	Buyer Tibnor Ab Box 600 16926 Solna Sweden		
Customer reference number 0046076049-0060/66874			
Product Round bar As rolled Hot rolled	Steel grade 520M/S355J2+N		
	Specification 520M/S355J2/TIB 06.08.15		
Charge 27367	Abbreviation H82	Diameter/dimensions 25 mm	Reduction ratio 233,78 :1

Karhula Matti
 Authorized Representative

Inspection certificate acc. to EN10204/3.1



Belman

Belman A/S
Oddesundvej 18
DK-6715 Esbjerg N.
Tlf.: (45) 7515 5999
Fax: (45) 7515 5959
Web: www.belman.dk

Order no: 4717-08023-010-0

Preparation d. 23-08-17
Printed 04-09-17 (bl)

Type 25 pcs. AX1U-10-0050-003-0

Printed 04-09-17 (b1)

Customer ref. nr: BESTILLING 68556

Project manager: Dag Evertsen

Customer:	Armatec A/S	Specification:	
	Brobekkveien 101	Nominal DN	50
	Postboks 26, 0508 Økern	Nominal pressure	0 10 bar
	NO-0582 Oslo, NORWAY	Build-in length	86 mm
		Serial no.:	4717.08023.01.0001...0025

Incl. 3.1/EN10204

TEST SPECIFICATION:

Leak test:	YES	LT	Pressure test:	NO	TP
Test pressure:	0,5 barg		Test pressure:		
Test time:	5 min.		Test time:		
Result:	Accepted				
Penetrant test:	NO	PT	Radiographic test:	NO	RT
Extent:			Extent:		
Visual inspection	YES	VT	Ultrasonic test	NO	UT
Extent:	100%		Extent:		
Result:	Accepted				

Pos / Detail - drawing No: 4717-08023-010-0

We confirm, that the heat treatment conditions are in compliance with AD-HP 7/2 or HP 7/3 after forming: without heat treatment.



Belman

Date: 04-09-2017

Belman A/S | Oddesundvej 18 | DK-6715 Esbjerg N
Denmark | T: +45 7515 5999 | F: +45 7515 5959
E: belman@belman.dk | www.belman.dk

Inspecta Danmark Cert No: K0393435

Belman QA:

Organisation
certified by

ISO 9001 · ISO 3834-2 · PED

132927 132929-931 132933-935

outokumpu

ABNAHMEPRUEFZEUGNIS 3.1
DIN EN 10204 3.1

Certificate No.
Zeugnis Nr.
N° du certificat
375605/001/D 1(01)
Date Datum Date
18.01.2017

Page
Seite
Page

Delivery address: Finnfärne / Lieferadresse:										RESEKT.T.RR			
Requirements, Anforderungen, Exigences EN 10088-4:2009 AD 2000 W2, W10 & EN 10028-7:2016 ASTM A240/A240M ASME SA-240/SA-240M II A ED. 2015										Our Order No. Unser Auftrag Nr. Notre commande n° 300403114			
										Your order, Ihre Bestellung, Votre commande 20730			
Product, Erzeugnismform, Produit BLECHE AUS BAND, NICHTROSTEND										Mark of Manufacturer Zeichen des Lieferwarktes Signe de producteur		Process Erschmelzungsart Mode de fusion	Inspector's stamp Zeichen d. Sachverst. Poison de l'expert
Grade, Werkstoff, Nuance 1.4571 TYPE 316TI										Tolerances Toleranzen, Tolérances EN ISO 9445-2			
Marking, Kennzeichnung, Marquage 1.4571 2B										Marks, Versandzeichen, Marques			
Line Reihe Ligne	Item Position Poste	Charge-test No. Schmelze-Probe Nr. Coulée n°	Size, Abmessungen, Dimensions					Quantity Stückzahl Nombre	Weight, Gewicht, Poids	Finish Ausführung Finl EN/ASTM	 14 0045-CPR-0567		
X	1	64488 5	0,5 X 1250 X 2500 MM				48		2B				
	2	65256 2	0,6 X 1000 X 2000 MM				324		2B				
	3	66554 2	1,0 X 1500 X 3000 MM				90		2B				
Charge no. Schmelze Nr. Coulée n°	Chemical composition, Chemische Zusammensetzung, Composition chimiques												
	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Ti %	N %			
64488	0,05	0,47	0,99	0,030	<.001	16,7	10,5	2,02	0,40	0,013			
65256	0,031	0,52	0,92	0,029	0,002	16,8	10,5	2,03	0,30	0,014			
66554	0,030	0,46	0,90	0,031	0,001	16,7	10,5	2,03	0,28	0,015			
Line Reihe Ligne	Mechanical properties, Mechanische Eigenschaften, Caractéristiques mécaniques										Tensile test, Zugversuch, Essai de traction		
	Sample ID Proben ID Échantillon	Rp0,2 MPa	Rp1,0 MPa	Rm MPa	%	A50 %	A80 %	Hardness Härte, Duraté HBW			ISO 6892-1:2009 A224 PROBEN QUER ZUR WALZRICHTUNG		
1	01	244	274	594		63	61	136			ÜBERPRUFT NACH AD2000-W0 MIT ÜBERPRÜFUNG DER GLEICHMÄSSIGKEIT ÜBER DIE BANDLÄNGE. ZERTIFIZIERT NACH DGRL 2014/68/EU DURCH TÜV NORD KENN-NR. 0045. LEISTUNGSERKLÄRUNG NACH CPR AUF DER WEB-SEITE NACH WERKSTOFF-NR.		
2	02	247	276	600		64	62	137					
2	01	284	307	605		61	59	137					
3	02	284	307	604		61	59	130					
3	01	271	303	601		55	54	148					
	02	258	290	595		56	55	143					
Identity test, Verwechslungsprüfung, Controle d'identification Sizes, Abmessungen, Dimensions Surface, Oberfläche, Surface Test of intergran. corros, Prüfung auf interkrist. Korros, Test de corros. intercrist. EN ISO 3651-2 A: GENUEGEND O.B.													
EN 10088-2:2014/1.4571 NACE MR0103-2012 AND NACE MR0175/ISO 15156-1 / NACE MR0175/ISO 15156-3 HEAT TREATMENT 1070 C RAPID COOLING WITH AIR AND WATER ASTM A480/A480M, ASME SA-480/SA-480M													
<p>We certify that the above mentioned products comply with the terms of the order contract. Wir bestätigen, dass die Lieferung den Vereinbarungen der Bestellannahme entspricht. Nous certifions que les produits énumérés ci-dessus sont conformes aux prescriptions de la commande.</p> <p>This test certificate is made by controlled ADP-system and is valid without signature. Dieses Zeugnis wurde von einem überprüften Datenverarbeitungssystem erstellt und ist ohne Unterschrift gültig. Ce certificat a été établi par un système informatique contrôlé et est valide sans signature.</p> <p>Outokumpu Stainless Oy </p> <p>Authorized inspector Werksachverständiger Inspecteur autorisé LARI NISSINEN</p> <p>Fi-95490 Tomio, Finland Tel. +358 16 4521, email certificate.tomio@outokumpu.com, www.outokumpu.com Domicile: Tomio, Finland. Business Identity Code 0823315-9</p>													

INSPECTION CERTIFICATE EN10204 3.1

Certificate number

412-092160



Page 1 of 2

Certificate consignee	Purchaser's reference	Date
Damstahl GbmH P.O. Box 1155 40764 Langenfeld Germany	385899 OSTP Sales order no CO115831	04-11-2016 Item 10
Manufacturers mark OSTP		

Additional information

PRODUCT

Product description	Delivery condition
Welded Pipe 60,3x2 EN 1.4571/316Ti OT100 EN 10217-7 TC2 SS EN ISO 1127 D3/T3 In random lengths of ca. 6 m, Not Heat Treated, Pickled	W2

Specification	Tolerances
EN 10217-7 TC2 AD 2000 W2/W10	EN ISO 1127

Material

Steel grade	Raw material	Melting process
1.4571	EN 10028-7	E/AOD

Extent of delivery

Batch number	Dimension	Quantity
J021376	60,30 x 2,00	1998 m

Product marking

OSTP Batch:J021376 60,30 x 2,00 EN 10217-7 TC2 AD 2000 W2/W10 1.4571 W2 Z=1,0 (ID) QA Made in Finland

CHEMICAL COMPOSITION

Heat No	C	Si	Mn	P	S	Cr	Ni	Mo	Ti
644881	0,050	0,470	0,990	0,030	0,001	16,700	10,500	2,020	0,400

TEST RESULTS**Tensile Test**

	Ref	Pos	Rp0.2	Rp1.0	Rm	A5
Unit			MPa	MPa	MPa	%
Min			210	245	500	30,000
Max					800	
Result	1	LB	415	451	649	49,600
Result	2	LB	432	467	652	47,900
Result	3	LB	419	449	645	52,200
Result	4	LB	427	460	650	48,800

OTHER MECHANICAL TESTS, ALL RESULTS SATISFACTORY

Intergranular Corrosion Test EN ISO 3651-2:A

Face Bend Test EN ISO 5173

Root Bend Test EN ISO 5173

OTHER TESTS, ALL RESULTS SATISFACTORY

Visual/Dimensional inspection, Material identification test

Eddy current test ISO 10893-2 E1H/ ISO 10893-1

OSTP Finland Oy Ab

P.O. Box 15

68601, JAKOBSTAD
Finland

Tel: +358 20 778 5500

Fax:

INSPECTION CERTIFICATE EN10204 3.1

Certificate number

412-092160



No. 44 100 075263

Inspection certificate EN 10204-3.1 acc. to the AD 2000-Merkblatt W2, sec. 6.2.1; Letter of Confirmation by TÜV NORD Systems No. 1326W124260 and certified acc. to PED (2014/68/EU) by Certification Body for Pressure Equipment of TÜV Nord Systems GmbH & Co. KG (notified body, reg. no.: 0045)
Weld procedures acc. to EN ISO 15614, weld personnel acc. to EN 1418 and EN 287 and NDT personnel acc. to EN473/EN ISO 9712 are approved by a notified body

The products supplied are in compliance with the requirements of the order.

ISSUED BY

Hans Storbacka QA

**CERTIFICATE****No. A/17-640186****Rev 00****Date 2017-02-23****Page 1/2**

INSPECTION CERTIFICATE acc to
EN 10204 3.1

Bandak Lunde AS
Hantovegen 328
3825 LUNDE I TELEMARK
NORWAY

INSPECTION STAMP
QA-TUBE

Customer References	Sandvik References
824293/ 407714 125-06911 SVERDRUP S	Customer order 470082 625162 39775/54 ABSMT No. C.Code 300-59420 64

Material description	Steel/material Designations
SEAMLESS STAINLESS COLD FINISHED TUBE IN METRIC SIZES	Sandvik W.nr 3R60 1.4435 DIN EN no X 2 CRNIMO 18 14 3 1.4435
Steel making process	
Electric furnace	

Technical requirements
DIN 17458 Testing class 1 PED 2014/68/EU EN 10216-5 TC1 NACE MR0175/ISO 15156-3:2015

EXTENT OF DELIVERY									
It	Product designation		Heat	Lot	Pieces	Kg	M		
01	TST-3R60-60.3-2		545517	57726	10	183.0	61.58		
	60.30 X 2.00								
				Total	10	183.0	61.58		

Tolerances according to EN ISO 1127: D3/T3

TEST RESULTS									
Chemical composition (weight%)									
Heat	C	Si	Mn	P	S	Cr	Ni	Mo	
545517	0.021	0.42	1.58	0.032	0.008	17.26	13.09	2.63	
	N								
545517	0.039								

Tensile test at room temperature									
Lot	Yield strength		Tensile strength		Elongation				A
	MPa	MPa	MPa	MPa	%	A			
57726	Rp0.2 317	Rp1.0 358	Rm 611						52

Quality assurance - Lars-Åke Bergqvist / QA-manager
MTC Service / Certificates

AB SANDVIK MATERIALS TECHNOLOGY Reg No. 556234-6832 VAT No. SE663000-060901
SE-81181 SANDVIKEN SWEDEN www.smt.sandvik.com mtc_service.smt@sandvik.com

**CERTIFICATE****No. A/17-640186****Rev 00****Date 2017-02-23****Page 2/2****Hardness test**

	Min	Max	Avg
Lot	HRB	HRB	HRB
57726	73	73	73

Following controls/tests have been satisfactorily performed:

- Flaring test
- PMI-test.
- Intergranular corrosion test acc. to EN ISO3651-2, Method A.
- Leak test: Eddy current test acc to EN ISO 10893-1
- Visual inspection and dimensional control.

Heat Treatment:

Solution annealed and quenched.

Marking:SANDVIK 3R60 EN 10216-5 TC1 EN 1.4435 CFD 60.30 X 2.00 MM HT 545517 SS LOT 577
26 *QA-TUBE*

The raw material is free from radioactive contamination.

Material free from mercury contamination.

Approved acc. AD 2000-Merkblatt W0 and certified acc. to
Pressure Equipment Directive (2014/68/EU, Annex 1 para 4.3) by
TUEV NORD; notified body, reg.no. 0045.The number of tests are based on the size of the manufacturing lot
before cutting to finished lengths.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 9001:2008.

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

The certificate is produced with EDP and valid without signature.

VASTAANOTTOTODISTUS INSPECTION CERTIFICATE

EN 10 204-3.1 (2004)

15

1/3

A 16119 -001
10.12.2013

Tilaaja Purchaser
RUUKKI NORGE AS, RM OSLO
 1001 OSLO NORWAY
 Tilaus nro Order No.
W3712G

Tilausvahvistus Order Confirmation
16119

Vastaanottaja Consignee
RUUKKI NORGE AS, RM BRYNE
 4340 BRYNE NORWAY
 Asiakkaan merkki Shipping mark
W3712G

Päivämäärä Date
11.12.2013
 Valmistajan merkki
 Mark of the Manufacturer



Todistus Certificate	Laivaus Shipping	Laatuleimaus Quality Stamping	Tarkastajan leima Stamp of Inspector						
Toimitustyyppi Delivery type		Sulatus nro levy nro Cast No. Plate No.	Vastaanottajan leima Stamp of Surveyor						
TOTAL DELIVERY		XXXXXX XXX XX XXX	Muut leimaukset Other Stamps						
Tuote Product		Toleranssit Tolerances	Tekniset vaatimukset ja/tai viralliset määräykset Technical terms of Delivery and/or Official Regulations						
HEAVY PLATES		EN 10029:2010 CLASS B							
Laji Grade									
LASER 355 MC									
Laatuvelvitys Quality Specifications									
RUUKKI LASER, HSF FINE GRAIN STEEL FOR LASER/PLASMA CUTTING									
Positio Item	Mitat mm Dimensions mm	Merkki Marke	Kpl Pcs	Paino kg Weight kg	Sulatus levy nro Cast plate No	SP nro SP No	UT UT	MT MT	

HOT ROLLED STEEL PLATES**PACKED, IN BUNDLES**

SURFACE CONDITION EN 10 163-2:2005 CLASS A3
001 30.00 X 1250 X 2500 W3712G

14 10500 80209 021 021

*** 14 10500

4

Raabe Steel Works

Testaus ja tarkastus Testing and Inspection

JAAKKO JUUSO

Valtuutettu tarkastaja Authorized inspection representative

Yhtiön nimi Company Name: **RUUKKI METALS OY**
 Kotipaikka Registered Office: **HELSINKI**

Osoite Address: PL 93, P.O Box 93
 FIN-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
 +358 20 5911

Telekopio Telefax: 020 592 2736
 +358 20 592 2736

Y-tunnus Business ID: 2389445-7

This document is electronically reproduced and is identical to the original.

Item #	Charge #	Lot	Piece ID	Cust.art.#	Art #	Qty	Description
4	80209			654240	0	Plater 355 MC LASER.	

Tilaaja Purchaser
RUUKKI NORGE AS, RM OSLO

Vastaanottaja Consignee
RUUKKI NORGE AS, RM BRYNE

Päivämäärä Date
11.12.2013 LV
Valmistajan merkki
Mark of the Manufacturer

Tilaus nro Order No.
W3712G

Asiakkaan merkki Shipping mark
W3712G



Laji Grade
LASER 355 MC

Lisävaatimukset Additional requirements

Jatkuvavalettua happiterästä
Oxygen steel, continuous casting

Laatuohjeet Quality Specifications
RUUKKI LASER, HSF FINE GRAIN STEEL FOR LASER/PLASMA CUTTING

Fully killed, Fine grain practiced

Pos. Item	Sulatus, k.erä nro Cast. test No	T-tila Cond	Vetokoe Tensile test (EN ISO 6892-1:2009 B, EN ISO 6892-2:2011 B)												Taivutuskoe Bend test		Huom Nb	Päästö Tempering °C							
			K2	°C	RP02 MPa	RT05 MPa	REL MPa	REH MPa	1	RM MPa	2	3	A %	50	80	200	REH / RM	RM * A5	1	RAZ %	2	3	Keskiarvo Average	K5	D = Xt
001	80209	021	TM	51		388	453			31									51	1.5					

K2: 51=BOTTOM,TRANSV.
K5: 51=BENDING TEST

TM= THERMOMECH. TREATED

Pos. Item	Sulatus k.erä nro Cast. test No	Iskukoe Impact test (EN ISO 148-1:2010)					Sitkeämurtuma Ductile fracture			Erikoiskokeet Special tests			Huom Nb	Päästö Tempering °C									
		K3	°C	1	2	3	Keskiarvo Average	1	2	3	Keskiarvo Average	K4	°C	1	2	Keskiarvo Average							
001	80209	021	151	-020	291	291	286		289														

K3: 151=CH-V/ISO-V(J),10X10,BOTTOM,LONGIT,KV600

Raabe Steel Works

Testaus ja tarkastus Testing and Inspection

JAAKKO JUUSO

Valtuuttetu tarkastaja Authorized inspection representative

Yhtiön nimi Company Name: RUUKKI METALS OY
Kotipaikka Registered Office: HELSINKI

Osoite Address: PL 93, P.O Box 93
FIN-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Telekopio Telefax: 020 592 2736
+358 20 592 2736

Y-tunnus Business ID: 2389445-7



ANALYYSITODISTUS ANALYSIS CERTIFICATE
ANALYSEBESCHEINIGUNG COMPOSITIO CHIMIQUE CERTIFICAT
СЕРТИФИКАТ АНАЛИЗА

15

3/3

A 16119 -001

10.12.2013

LV

Sulatus nro Cast No Schmelzen Nr. No de couléen № Плавки	Koe nro Test No Prüf Nr. Essai № № Пробы	Positio Item Pos. Poste Поз.	Cekv Ceq Cäg Cég Cekv	Analyysi % Chemical composition % Chemisch Zusammensetzung % Composition Chimique % Анализ плавки % (*=ppm)
80209	001	.32	.078	.02 1.35 .014 .005 .033 .025 .008 .019 0.05 0.04 0.04 .006
		C	SI	MN P S AL NB V CU CR NI MO

Päivämäärä Date Datum Date Дата
11.12.2013

$$\text{CEQ} = \text{C} + \text{Mn} / 6 + (\text{Cr} + \text{Mo} + \text{V}) / 5 + (\text{Ni} + \text{Cu}) / 15$$

Raabe Steel Works

Testaus ja tarkastus Testing and Inspection Испытание и контроль качества
 Prüfung und Kontrolle Essais et Contrôle

Steel manufactured and supplied by Rautaruukki is free from radiation.
 Производимая на металлургическом комбинате «Rautaruukki» и поставляемая
 заказчику сталь не излучает радиации.

JAAKKO JUUSO

Valtutettu tarkastaja Authorized inspection representative Уполномоченный инспектор
 Sachverständiger Inspector autorisé

Yhtiön nimi Company Name: RUUKKI METALS OY
 Kotipaikka Registered Office: HELSINKI

Osoite Address: PL 93, P.O Box 93
 FIN-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
 +358 20 5911

Telekopio Tелефax: 020 592 2736
 +358 20 592 2736

Y-tunnus Business ID: 2389445-7



Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
 Telefono 0444.968211 - Fax 0444.963836
 Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
 Telefono 0471.924111 - Fax 0471.924497

CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004), 3.1 / ISO 10474 (2013), 3.1

Certificato nr. MEST097854 / 2017 / 1
 Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
 VALBRUNA NORDIC AB
 LOVARTSGATAN 7
 65221 - KARLSTAD - SWEDEN - SE

Stato di fornitura : Hot rolled - Annealed Cold Drawn
 Lieferzustand
 Delivery state
 Etat de livraison

Produttore :
 Hersteller/Item/Usine productrice

ACCIAIERIE VALBRUNA S.P.A.

Marchi di Fabbrica:
 Zeichen des Lieferwerkes
 Trade marks
 Sigles de l'usine productrice



Punzone del Collaudatore:
 Stempel des Werkssachverständigen
 Inspector's stamp/Pointon de l'assayeur

MR

Punzonatura: 1.4401/4/316/L
 Kennzeichnung
 Marking
 Marquage

Ordine nr: R33914 R33914
 Bestell
 Your order
 Commande

Tipo di Elaborazione: E+AOD
 Erschmelzungsart
 Melting process
 Mode d'elaboration

Qualità:

1.4401/1.4404/316/316L

Werkstoff/Grade/Nuance

Marca:

MVAPML MAXIVAL

Markenbezeichnung
 Brand / Nuance

Punzonatura: 1.4401/4/316/L

Kennzeichnung
 Marking
 Marquage

SPECIFICHE :

Note:

Anforderungen / Requirements / Exigences

Aufzeichnungen / Notes / Notes

VAL STOCK 2010 1.4404/316L A,CF

AISI 316

AISI 316L

AMS 5648 M S31600 A

AMS 5653 H S31603 A,CF

ASME SA182 2015 S31600 A (0)

(0)SEC.II PT.A 2015 EDITION For products machined directly from bar refer to ASME SA479.

ASME SA182 2015 S31603 A (1)

(1)SECTION II PT.A 2015 EDITION For products machined directly from bar refer to ASME SA479.

ASME SA276 2015 S31600 A,CF (2)

(2)SEC.II PT.A 2015 EDITION

ASME SA276 2015 S31603 A,CF (3)

(3)SECTION II PT.A 2015 EDITION

ASME SA479 2015 S31600 A (4)

(4)SECTION II PT.A 2015 EDITION

ASME SA479 2015 S31603 A (5)

(5)SECTION II PT.A 2015 EDITION

ASTM A182 2016 S31600 A (6)

(6)For products machined directly from bar refer also to ASTM A479.

ASTM A182 2016 S31603 (7)

(7)For products machined directly from bar refer also to ASTM A479.

ASTM A262 2015 PRACTICE E

ASTM A276 2016 S31600 A,CF

ASTM A276 2016 S31603 A,CF

ASTM A314 2015 S31600

ASTM A314 2015 S31603

ASTM A370 2017 .

ASTM A479 2017 S31600 A

ASTM A479 2017 S31603 A

EN 10088-3 2014 1.4401 A,CF

EN 10088-3 2014 1.4404 A,CF

EN 10272 2007 1.4401 A,CF

EN 10272 2007 1.4404 A,CF

ISO 6892-1 2009 .

NACE MR0103 2010 S31600 A

NACE MR0103 2010 S31603 A

NACE MR0175 2015 S31600 A (8)

(8)ANSI/NACE MR0175/ISO 15156-3, third edition November 23,2015

NACE MR0175 2015 S31603 A (9)

(9)ANSI/NACE MR0175/ISO 15156-3, third edition November 23,2015

QQ-S-763 F 316 A,CF

QQ-S-763 F 316L A,CF

MDS S01 5 316 A (A)

(A)Norsok-standard M-630 Edition 6, October 2013

ASTM A479 2017 S31600 A

Tolleranza: h9 - DIN671/EN10278

Tolleranza/Allowance/Tolerance

Pos. nr. Pos. nr. Item nr. Nr. de posito	Oggetto Gegenstand Product description Description du produit	Dimensioni - mm Abmessungen Dimensions Dimension	Lunghezza - mm Länge Length Longueur	Colata Schmelze Heat Coulée	Pezzi Stückzahl Pieces Pieces	Peso - KG Gewicht Weight Poids	Lotto nr. Lotto. List nr. List nr.
0010	Round	25,000	2900/ 3055	429620		2395,0	709702670

Vicenza, 28/08/17

VCQ008 - MEST115948

(Mod. MCE2) wscra14949675410297CAC15165989D

Il collaudatore di stabilimento / der Werkssachverständige / Works inspector / L'agent d'usine

M.RIZZOTTI *[Signature]*

Pagina - 1 di 3



CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
 Nach/According to/Selon

Certificato nr. MEST097854 / 2017 / 1
 Prüfung/Tes/Essai

Cliente / Besteller/Purchaser/Client
 VALBRUNA NORDIC AB
 LOVARTSGATAN 7
 65221 - KARLSTAD - SWEDEN - SE

Stato di fornitura : Hot rolled - Annealed Cold Drawn
 Lieferzustand
 Delivery state
 Etat de livraison

Produttore :
 Hersteller/Item/Usine productrice

ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: R33914 R33914
 Bestell
 Your order
 Commande

Tipo di Elaborazione: E+AOD
 Erschmelzungsart
 Melting process
 Mode d'élaboration

Marchi di Fabbrica:
 Zeichen des Lieferwerkes
 Trade marks
 Siges de l'usine productrice

Conferma ordine nr: EI17004361
 Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
 Werkstoff/Grade/Nuance

Punzone del Collaudatore:
 Stempel des Werkssachverständigen
 Inspector's stamp/Pointon de l'assayeur

Avviso di Spedizione: D-VI17019950
 Lieferanzeige/Packing list/B.L.

Marca: MVAPML MAXIVAL
 Markenbezeichnung
 Brand / Nuance

Punzonatura: 1.4401/4/316/L
 Kennzeichnung
 Marking
 Marquage



MR

TEST ALLO STATO DI FORNITURA													
Test on delivery condition			Prüfung auf lieferbereitem produkt			test a l'état de fourniture			Prueba sobre el material así como entregado				
TEST	Provvetta/ Probstab Specimen/Eprovette Lang diam Spess. Breite Diam. Dicke Width Diam. Thickness Lang. diam. épaisse mm	°C Temperatur Liegezeit Emplacement	Posiz. Saggio Position Liegezeit Emplacement	Snergamento Streckgrenze Yield Stress Limite élastique Rp 0,2% N/mm²	Snergamento Streckgrenze Yield Stress Limite élastique Rp 1% N/mm²	Resistenza Zugfestigkeit Tensile strength Résistance à traction Rm N/mm²	Allungamento Bruchdehnung Elongation Allongement	Strizione Einschnürung Reduction of area Striction	Resilienza Kerb schlagarbeit Impact Value Resilience KV J	Durezza Härte Hardness Dureté HB			
Valori richiesti Anforderungen/Required values Valeurs demandées	min max		207	235		517 900	20	35	-	50	100	140 235	
A	10	20	L	501	553	658	41	44	68	68	219	222	
B	10	20	L	495	548	651	42	45	69	69	225	233	

TEST ALLO STATO DI FORNITURA													
Test on delivery condition / Prüfung auf lieferbereitem produkt / Test a l'état de fourniture / Prueba sobre el material así como entregado													
TEST					min	max							
A	Grain size for ASTM E112												

Mechanical properties according to ASTM A370.

Tensile testing according to EN ISO 6892-1

Analisi chimica													
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique													
Colata /Heat Schmelze/Coulée	min - max	0,030	= 1,00	1,25 2,00	16,50 18,00	2,00 2,50	= 1,00	10,00 13,00	= 0,040	= 0,030	= 0,100	= -	= -
429620	C %	Si %	Mn %	Cr %	Mo %	Cu %	Ni %	P %	S %	N %			

Corrosion test in 16% sulfuric acid and copper sulfate solutions												
Test standard: ASTM A262-Practice E												
Test	Heat treatment before test		Length of Period (h)	Test temp (°C)	Bend Angle (°)		Ø spindle (mm)	Result of visual inspection at 20 x magnification after bend test				Result
Intergranular corrosion	Sensitization		15	boil	180		5	Absence of cracks				SATISFACTORY

Corrosion test in 16% sulfuric acid and copper sulfate solutions												
Test standard: ASTM A262-Practice E												
Test	Heat treatment before test		Length of Period (h)	Test temp (°C)	Bend Angle (°)		Ø spindle (mm)	Result of visual inspection at 20 x magnification after bend test				Result
Intergranular corrosion	Sensitization		15	boil	180		5	Absence of cracks				SATISFACTORY



Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
 Telefono 0444.968211 - Fax 0444.963836
 Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
 Telefono 0471.924111 - Fax 0471.924497

CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004), 3.1 / ISO 10474 (2013), 3.1

Nach/According to/Selon

Certificato nr. MEST097854 / 2017 / 1
 Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
VALBRUNA NORDIC AB
 LOVARTSGATAN 7
 65221 - KARLSTAD - SWEDEN - SE

Stato di fornitura: Hot rolled - Annealed Cold Drawn
 Lieferzustand
 Delivery state
 Etat de livraison

Produttore:
 Hersteller/Item/Usine productrice

ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: R33914 R33914
 Bestell
 Your order
 Commande

Tipo di Elaborazione: E+AOD
 Erschmelzungsart
 Melting process
 Mode d'elaboration

Marchi di Fabbrica:
 Zeichen des Lieferwerkes
 Trade marks
 Sigles de l'usine productrice

Conferma ordine nr: EI17004361
 Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
 Werkstoff/Grade/Nuance

Punzone del Collaudatore:
 Stempel des Werkssachverständigen
 Inspector's stamp/Pointon de l'assayeur

Avviso di Spedizione: D-VI17019950
 Lieferanzeige/Packing list/B.L.

Marca: MVAPML MAXIVAL
 Markenbezeichnung
 Brand / Nuance

Punzonatura: 1.4401/4/316/L
 Kennzeichnung
 Marking
 Marquage



MR

Corrosion test in 16% sulfuric acid and copper sulfate solutions

Test standard: UNI EN ISO 3651-2 Method A

Test	Heat treatment before test	Length of Period (h)	Test temp (°C)	Bend Angle (°)	Ø spindle (mm)	Result of visual inspection at 20 x magnification after bend test	Result
Intergranular corrosion	Sensitized T1	20	boil	90	5	Absence of cracks	SATISFACTORY

Reduction ratio = 60,4 : 1

Material solution annealed 1060° C for 0.5h/water cooled.

Sono state soddisfatte tutte le condizioni richieste
 Die gestellten Anforderungen sind erfüllt
 The material has been furnished in accordance with the requirements
 Le materiel a été trouvé conforme aux exigences

Controllo antimescolanza: OK
 Verweichungsprüfung: spectralanalytisch durchgeführt
 Anlimiting testing performed: OK
 Contrôle antimélange fait: r.a.s.

Controllo visivo e dimensionale: soddisfa le esigenze
 Besichtigung und Ausmessung: ohne Beanstandung
 Visual inspection and dimensional checks:satisfactory
 Contrôle visuel et dimensions: satisfaisant

Melted and manufactured in Italy

No welding or weld repair Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination through Portal System when it leaves the production plant.

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2008, ISO/TS16949 : 2009, AS 9100C

The Quality Management System is Certified acc. Pressure Equipment Directive ['97/23/EC] Annex 1,s.,4.3 and 2014/68/EU by TUEV and LLOYD'S
 Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
 Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
 The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

Vicenza, 28/08/17

VCQ008 - MEST115948

(Mod. MCE2) WS/PC443A9A8697542DB97EACA7564596E0

Il collaudatore di stabilimento / der Werkssachverständige / Works inspector / L'agent d'usine

M.RIZZOTTO *[Signature]*

Pagina - 3 di 3



CERTIFICATE

No. A/16-597714

Rev 00

Date 2016-08-22

Page 1/2

INSPECTION CERTIFICATE acc to
EN 10204 3.1

Sverdrup Steel AS
Strandsvingen 2
4032 STAVANGER
NORWAY

INSPECTION STAMP
SVQ

Customer References	Customer order	Sandvik References
821612	2016-08-19	Order No. Subs No. ABSMT Dispatch note 451115 615103 32169/53 ABSMT No. C.Code 284-18653 47
125-06911 SVERDRUP S		

Material description	Steel/material Designations
HOT WORKED STAINLESS BAR STEEL	Sandvik
ROLLED	SANMAC 316/SANMAC 316L
ANNEALED & STRAIGHTENED	AISI UNS
PEEL TURNED AND POLISHED	316/316L S31600/S31603
	W.nr EN no
	1.4401/1.4404 1.4401/1.4404
Steel making process	
Electric furnace	

Technical requirements
EN 10088-3:-2005, NACE MR0175/ISO 15156-3:2009
ASTM A-182-15, (Chemical composition and mechanical properties only)
ASTM A-276-16, A-479-16, ASME SA-479-ED-15 SEC II PART A
NORSOK M-630 ED.5, NORSOK MDS S01 REV.4

EXTENT OF DELIVERY															
It	Product designation			Heat	Lot	Pieces	Kg								
06	MBR-SANMAC316L-80			546361	13301	2	530.0								
					Total	2	530.0								
TEST RESULTS															
Chemical composition (weight%)															
Heat	C	Si	Mn	P	S	Cr	Ni	Mo							
546361	0.019	0.27	1.76	0.029	0.024	16.81	10.20	2.03							
	V	N													
546361	0.048	0.046													
Tensile test at room temperature															
Yield strength				Tensile strength		Elongation	Red.of Area								
MPa		MPa		MPa		%	%	%							
Lot	Rp0.2	Rp1.0		Rm		A	2"	Z							
13301	290	334		591		53	53	75							
Hardness test															
Min		Max													
Lot	HB	HB													
13301	137	142													

Quality assurance - Viktor Hellberg/QA-manager Primary Products
MTC Service / Certificates



	Min	Max
Lot	HRB	HRB
13301	74	75

Grain size acc to ASTM E-112.

Lot	8.0
13301	

Impact test, J, 20°C, Longitudinal acc. to ISO 148-1

	Single values	Average
Lot	Joule	Joule
13301	292 310 285	296

Following controls/tests have been satisfactorily performed:

- Intergranular corrosion test acc to ASTM A-262 PR.E
- Material Identification.
- Ultrasonic test acc to EN 10308 Quality Class 3/EN 10228-4 Quality Class 3/ASTM A388/API 6A PSL 3
- Visual inspection and dimensional control.

Heat Treatment:

Solution annealed and quenched.

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.

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 9001:2008.

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

The certificate is produced with EDP and valid without signature.



Swagemaster

21

Swagemaster Engineering Services Ltd
 Lint House
 Lint House Lane
 Wednesfield
 West Midlands
 WV113EA
 +44 1902 906060

Material Test Certificate

In Accordance with BS EN10204 / DIN50049 3.1

Certificate No. 78229

15/09/2017

Customer	BANDAK AS
Customer Ref	408420
Item No.	001
Order No.	S/11775/AMB
Item Desc	2 1/2" X 1 " STD ECCENTRIC REDUCER WPHY52 B16.9 WT 5.2 X 3.4
Specification	ASTM A860 WPHY 52

Cast 44954

Extra Information

Raw Material	ASTM A333 GR 6 / X52
Visual/NDT Inspection	PASS
Dim. Inspection:	ANSI B.16.9
Nace:	NACE MR-01-75 REV 2009

Chemical Analysis

(%)

Type	C	Mn	Si	P	S	Cr	Mo	V	Ni	Cu
SPEC MIN..	-	1.000	0.150	-	-	-	-	-	-	-
SPEC MAX..	0.200	1.450	0.400	0.030	0.010	0.300	0.250	0.100	0.500	0.350
BASE	0.180	1.132	0.220	0.012	0.002	0.040	0.010	0.004	0.060	0.230

Chemical Analysis

(cont)

Type	Al	Nb	Ti	Sn	N2	B	CEQ	PCM	PREN
SPEC MIN..	-	-	-	-	-	0.003	-	-	-
SPEC MAX..	0.060	0.040	0.050	-	-	0.000	0.399[1]	0.261	0.073
BASE	0.023	0.001	0.002	-	-	-	-	-	-

Tensile Test

ASTM A370

LOCATION	Y.S.	U.T.S.	%El	%RA
L/T Parent	389.00[N/mm ²]	546.00[N/mm ²]	33.00	0.00

Charpy Test

ASTM A370

LOCATION	Dimensions	Test Temp (deg C)	Energy (J)	Average (J)
L/T Parent	10 X3.30XV	-54.0	70 , 61 , 72	68

Heat Treatment

Manufacturing Specif

Normalise	NORMALIZED > 850'C STILL AIR COOL
-----------	-----------------------------------

Despatch Statement

Date 15/09/2017

Name Adam Burns

Item #	Heat #	Code #	Item Text #1	Item Text #2
1	77549K		PIPE 1" SCH 40 (33,4X3,4)	SEAMLESS TUBES ASTM A106 GR B

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BRØDRENE DAHL

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EN ISO 9001:2008 / EN ISO 14001:2004
Certificate Reg. No. 100 039041-007,
04 104 990140-007



A02 Inspection certificate "3.1" (EN 10 204)

A03 Document No.: **53708/16**

Page: **1/1**

A07	Customer's Order (P.O.) No./Item No.: 50008507						Manufacturer's Works Order No.: 32321/0/16									
A11	Supplier's Order No.: 3151001452						Advice - Note No.: 8150005874									
B08, B12/13	Quantity delivered:			B13 Actual mass			Customer / Consignee:									
	pcs	mtrs		kgs			BRODRENE DAHL A/S ETTERSTAD P.B. 6146 0602 OSLO Norway									
	bdls	feet		lbs												
	69	420,000		1059												
B09-11	Dimensions: ART. NO: 1220045 33,4 x 3,38 mm (1" SCH 40)															
B02	Steel designation: L290/X42 PSL1 Grade B Grade 6															
B01, B03, B04	Product, conditions and terms of delivery: Seamless steel pipes, API Spec.5L-45th edit.12-PSL1, ASME B36.10M-15, ASME SA530/SA530M-15, ASTM A530/A530M-12, ASTM A53/A53M-12, ASTM A106/A106M-15, ASME SA106/SA106M-15, ASME SA333/SA333-15 – PED 2014/68/EU ASTM A333/A333M-15; ASME Vessel Code, Sec. II, Part A-2013, ASME Section II.Part D Y1 NACE MR0175/ISO 15156-09. Annex A 2.1.2., NACE MR0103/12-Par. 2.1. Normalized hot finished NORSOK: MDS-C01, Rev.5, Edition 6, October 2013 and MDS-C11, Rev 5 Edition 6, October 2013 Statoil: TR2000 MDS CP101, rev.B/2.7.2013 and TR2000 MDS CP 201rev.B/ 25.9.2012															
A04, B06	Marking: Manufacturer's mark, mill inspector's stamp AMTP OSTRAVA 2															
C71-92	Heat (H) and product (P) chemical analyses (%)						C70	Steel made by basic oxygen process, fully killed, strand cast.								
B07	Heat No.:	C	MN	SI	P	S	CU	NI	CR	MO	V	TI	NB	CEQ		
	77549K H	0,17	1,15	0,227	0,016	0,006	0,09	0,03	0,08	0,008	0,001	0,001	0,005	0,39		
	P	0,15	1,14	0,192	0,013	0,009	0,07	0,03	0,05	0,002	0,001	<0,001	<0,001	0,35		
	P	0,15	1,12	0,192	0,013	0,008	0,07	0,02	0,05	0,002	0,001	<0,001	<0,001	0,35		
Z99																
B07 C04	Test results: Heat No. c00 Specimen No. Requirements: Grade 6 L290/X42 Grade B			MPa	MPa	% (2")	C40-43 Impact test				HRB					
	C11 Yield Point	C12 Tensile Strength	C13 Elongation									C30-32 Hardness max. 99				
	min. 240	min. 415	min. 21,0													
	min. 290	min. 415	min. 20,0													
	min. 240	min. 415	min. 20,0													
Z99	Longitudinal strip specimen 19,0 mm Ø min															
	77549K		322	500	27,1									74		
Z99																
D01	Visual and dimensional inspection with satisfactory results				X	D51	Hydraulic test - min. test pressure MPa / sec								20,5 / 5	
C50	Flattening test - satisfactory				X	D02	The pipes tested on tightness by NDT in acc. to									
C51	Expanding test - satisfactory															
C52	Bending test - satisfactory				X											
C53	Ring expanding test - satisfactory				D03	Nondestructive Electromagnetic Testing										
C54	Ring tensile test - satisfactory															
PED 2014/68/EU and AD 2000-Merkblatt W0 certified by TÜV NORD, cert. No. 07-202-9190-WZ-0807/15 and 07-203-9190-WP-0807/15. 22HRC=99HRBmax. Residual magnetic field [mT] max.3 - satisfactory																
MANUFACTURER OF BILLETS: AM OSTRAVA Impact strength is guaranteed on the basis of statistical data evaluation (27 J/-46°C).																
Z01	All pipes conform to the above mentioned standards and ordering requirements and agreements.															
Z02	Date of issue 27.9.2016/ZR															
	Tel.: +420 595683644															

A01 ArcelorMittal Tubular Products Ostrava a.s.

A05 QA Department

Vratimovská 689

707 02 Ostrava-Kunčice

Czech Republic

ArcelorMittal

ArcelorMittal Tubular Products Ostrava a.s.
Vratimovská 689, 707 02 Ostrava 7
Rizení jakosti

Bc. Petr Pastucha

Work's Inspector

z02 Validation

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CHANDAN STEEL LIMITED
(GOVT. OF INDIA RECOGNISED EXPORT HOUSE)

23

ADM. OFFICE: 504, SUKH SAGAR, N. S. PATKAR MARG, MUMBAI 400 007, INDIA

Tel.: 91-22- 66290600. Fax.: 91-22-66290633/34

Website : www.chandansteel.netEmail : csl@chandansteel.net

L/c. No.:

L/c. Date:

ISO 9001 : 2008 CERTIFICATE No. 04 100 011022-E3

WORKS: Plot No. 35, G. I. D. C., Umbergaon
Dist Valsad, Gujarat - 396 171.
Tel: 91-260- 308 9999 Fax: 91-260 308 9872
E-mail : exports@chandansteel.net



F824 QC 09A / 02 / 10.12.2012

MILL TEST / INSPECTION CERTIFICATE 3.1

ACCORDING TO EN 10204 : 2005

TIBNOR A S PB 140, FURUSET, N-1001 OSLO NO 911 032 767 MVA NORWAY						Test Certificate No. : EXP/00800 - 16/2015-2016 Date of Issue : 31.10.2015 P.O. No. : W8695B SC_No. & Date : 15-16/00515, Dt.19.09.2015 Invoice No. & Date : EXP/00800/2015-16 Dt.31.10.2015						
PRODUCT DESCRIPTION STAINLESS STEEL ROUND BARS [CONDITION - 1D & 2D]						LENGTH		Net Wt.				
						Ordered		Actual		4283 Kgs.		
						3.0 - 3.1 Mtrs.		3.0 - 3.1 Mtrs.				
Article No.	Item No.	Heat No.	Material/Grade	Size mm/inch	Tolerance	Process Route						
						Electric Melting, A.O.D. Refining, Continuous Casting						
CHEMICAL COMPOSITION (Weight %)												
	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Ti	Co	N
Min.	-	-	-	-	-	16.50	2.00	10.00	-	-	-	-
Max.	0.030	1.00	2.00	0.045	0.030	18.50	2.50	13.00	-	-	-	0.1000
Results	0.030	0.52	1.78	0.043	0.023	16.55	2.02	10.05	-	-	-	0.0620
MECHANICAL PROPERTIES												
Specified Values	Test Method :- EN ISO 6892-1						Test Method :- DIN EN ISO 148 - 1					
	Proof Strength N/mm ² / MPa		Tensile Strength N/mm ² /MPa (Rm)		Elongation after Fracture A	Reduction of Area	Hardness EN ISO 6506-1 (BHN)	Charpy (V) Impact Test (2mm) at 20 °C (Joules) Sample Size - 10 x 10 x 55 mm				
	0.2%(Rp0.2)	1%(Rp1.0)	%	%	I	II		III	Avg.			
Results	515	554	718	42	62	222-225	235	238	245	239.33		
Remarks:												
1. Condition : 1D & 2D (Cold drawn & Centreless Ground). 2. Solution annealed at 1050 °C. 3. PMI test done 100% & found Satisfactory. 4. The material is fully killed and calcium treated. 5. Material is free from radio-active contamination. 6. Intergranular Corrosion test carried out as per EN/ISO 3651-2-1998 (Test method A) found satisfactory. 7. Approved acc.to PED (97/23/EC) by Certification Body for Pressure Equipment of TUV NORD Systems (notified body, reg. no.:0045). 8. The material conforms to EN 10088-3:2005, EN 10088-5:2009, ASTM A479-13a & NORSO M-630 MDS S01 Specifications. 9. Location of sample - off centre, Direction - Longitudinal, Test Temp - Room Temp., Shape of Test Piece - Round. 10. Marking details - Company Logo, Size, Grade & Heat No. 11. The material is manufactured / melt in Chandan Steel Mill and is of Indian Origin.												
BUNDLE NO.: 17, 20, 24 to 29						COLOUR : GREEN						

Intended use : Building construction or civil engineering.

Regulated substance : No performance determined.

It is hereby certified that the above results are true and correct in every detail and are meeting the requirements of specification & purchase order.

D.O.P. No.: 1.4404/ROUND BAR

D.O.P. can be seen here: www.chandansteel.net

B. S. RAUTELA
 MANAGER - Q.A./WORKS INSPECTOR



BST SUPPLIES & CO LTD
 ZENITH
 FORDHOUSE ROAD
 WOLVERHAMPTON
 WEST MIDLANDS
 WV10 9FB
 UNITED KINGDOM
 tel: 01902724800
 fax: 01902725741

Certificate of Conformance

D-157232

Page 1 of 1

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Deliver to

BANDAK LUNDE AS
 BANDAK LUNDE AS
 V/ PROOUTSOURCING AS
 POSTBOKS 3
 3602 KONGSBERG
 NORWAY
 NORWAY

Invoice to

BANDAK LUNDE AS
 BANDAK LUNDE AS
 V/ PROOUTSOURCING AS
 POSTBOKS 3
 3602 KONGSBERG
 NORWAY
 NORWAY

Delivery date

01 November 2016

Account code

BAND001

Our VAT reg

GB 487099980

Item Part	Your reference	Our order	Order quantity	Quantity remaining	Despatch quantity	UOM
1 200002044/I M6 (1.0P) X 12MM LG SKT CAP SCREW Material: ISO 3506-1 A4-80 Material Standard: ISO 4762 Standard: M30207/J Release: EN10204.3.1 Transport: ROAD Nett weight: 0.000 Gross weight: 0.000	407270/20	S-151379/1	50.000	0.000	50.000	EACH

This is to certify that the whole of the supplies / packaging detailed herein (unless otherwise stated above) has been inspected and tested and conforms in all respects to Specification Drawings and Order and that the calibration of test equipment used is traceable to National Standards.

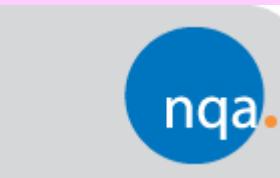
All Shortages must be reported within a 48-hour period from receipt.



Integrity at
every step

BST SUPPLIES LIMITED
ZENITH, FORDHUSES ROAD, BUSHBURY,
WOLVERHAMPTON, WV10 9ED
Tel: 01902 724800
Fax: 01902 725741
Email: quality@bstsupplies.com

Material Test Certificate



Customer

BANDAK LUNDE AS
V/ PROOUTSOURCING AS
POSTBOKS 3
3602 KONGSBERG
NORWAY

Certificate Details

Certificate Number	D-157232/1
Date	23 Nov 2016 11:02
Account Number	BAND001
bst Reference	S-151379
Your Order Ref	407270/20
Your Part Number	

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Item		Quantity		Item\Dimensions				Raw Material Details	
1	50	Part No	200002044/I					Mat Standard	ISO 4762
		Size	M6 (1.0P) X 12MM LG SKT CAP SCREW					Cast Number	327619
		Mat. Std.	M30207/J					Size\Section	A4-80 10MM DIA
		Material	ISO 3506-1 A4-80					Material Used	
		Standard	ISO 4762					Batch Ref : Q1402	EFACS Stk. Ref. : 205673
		Release	EN10204.3.1					Markings	
Chemical Analysis									
C	0.0200	(0.0001 : 0.0800)	Co	0.1100		W	0.000	Test Number	327619
Si	0.3700	(0.0001 : 1.0000)	N	0.0265		Ta	0.000	Yield Stress	733.0 N/mm ² (600.0 : 1200.0)
Mn	1.7300	(0.0001 : 2.0000)	Cu	0.2900	(0.0000 : 1.0000)	Sn	0.000	Proof Stress	0.0 (0.0 : 0.0)
S	0.0280	(0.0001 : 0.0300)	Nb	0.0000		Zn	0.000	Tensile Strength	901.0 N/mm ² (800.0 : 1300.0)
P	0.0350	(0.0001 : 0.0450)	B	0.0000		V	0.000	Elongation	23.0 % (0.0 : 0.0)
Cr	17.1000	(16.0000 : 18.5000)	Al	0.0000		W	0.000	Reduction of Area	66.0 %
Mo	2.0000	(2.0000 : 3.0000)	Fe	0.0000				Impact Values	0.0 J
Ni	11.0000	(10.0000 : 15.0000)	Pb	0.000				Hardness	28.0 HRC (1.0 : 35.0)
Ti	0.0000		Mg	0.000					
Manufacturing Information					Material testing				
MACHINED FROM BAR / CUT THREADS SOLUTION ANNEALED IN A BATCH FURNACE @ 1060°C PRIOR TO COLD DRAWING DIMENSIONAL VERIFICATION SATISFACTORY VISUAL INSPECTION SATISFACTORY TO F788/F788M					HARDNESS TESTED IAW ASTM A962 15.5 RAW MATERIAL PMI TESTED				
Special requirements					Additional Comments				
FMCPM-007 DYE PEN TESTED ON COMPONENT TO ASTM A962 S56 LPP001 100% VISUAL EXAMINATION SATISFACTORY					MECHANICAL PROPERTIES ARE CONVERTED SUBSEQUENTLY FROM KSI/PSI TO N/mm ² WHEN REQUIRED				

This is to Certify that the whole of the supplies/packaging detailed herein (unless otherwise stated above) has been inspected and tested and conforms in all respects to Specification Drawings and Order that the calibration of test equipment used is traceable to National Standards.

Customer
BST Supplies Co Ltd Zenith Ford Houses Road Bushbury Wolverhampton WV10 9ED

Delivery Address
07.9.16 WV10 9ED

Toll Point
Lichfield Road
Brownhills
WS8 6JZ
t. 01922 414003 f. 01922 414606
e. sales@offshorestainless.co.uk

OFFSHORE
STAINLESS SUPPLIES LTD.
Supplier of 1.4003 and producers of speciality stainless and high nickel products

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Report No. 028509	Our Ref. 100142	Date 07/09/16
Test No. X2522	Customer PO No. P/158875	Specification A4-80
Despatch Note No. 055481		

Page 1 of 1

TEST CERTIFICATE

Item	Quantity	Weight Kg	Part No.	Heat No.	Batch No.	Description
002		10		327619	F52556	10mm dia round bar to h11 tols
		Total				50ft 10mm Dia @ 3.0-3.6m randoms

A. HEAT TREATMENT SUPPLY CONDITION

B. TEST PIECE TREATMENT CONDITION

Solution Annealed Prior to Cold Drawing

MELTING PRACTICE

TEST COUPON SIZE

Tensile Tests				Units N/mm ²		Impact Tests												Hardness		
Temp °C	* * 0.20% Proof Result Spec-Min	Maximum Stress Result Spec-Min	%Elong 4D Result Spec-Min	% Reduction of Area Result Spec-Min		Temp °C	* * 1	ENERGY				SHEAR %				LATERAL EXPANSION				253 265 HBW
				1	2			1	2	3 MIN	AV	1	2	3 MIN	AV	1	2	3 MIN	AV	
20	733	600	901	800	23	10	66	40												
22	687	854			25		68													

Component Hardness

Heat No.	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Co	N
327619	0.02	0.37	1.73	0.035	0.028	17.1	2	11	0.29	0.11	0.0265

Material free from mercury contamination during manufacturing process.

Material free from radioactivity and inspected during manufacture.

In accordance with EN 10204 3.1

Signature

Position

Commercial Manager



**MATERIAL DOCUMENTS
SATISFACTORY C/W**

Larriola LOIU (VIZCAYA) España
P.O. Box 1.323/48080 Bilbao
Tel. 34-(4) 4 71 13 00
Fax. 34-(4) 4 53 16 36



Quality
Management
System
Approved
CERT. N°
SG1 6000360

ACEROS INOXIDABLES

OLARRA

Trade Mark - Zeichen des Lieferwerkes
Anagramma del suministrador

Works Inspector Stamp - Werkssachverständiger
Sello del Inspector

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Certificate type - ARZ Nach Certificado tipo			EN 10204/3.1			Certificate n° - Prüf-Nr Certificado n°			102324		Date - Datum - Fecha 24 - 01 - 2012			
Our order N° Werks - Nr Nº de Referencia		Heat Schmelze Colada		327619		Your order N° Bestell - Nr Pedido N°			OLF 458					
Steel Grade Werkstoff Calidad						According to Entsprechend Corresponde			BS 970:PART 3:1991.					
Shape and Size - Gegenstand Perfil y dimensión ROUND 12 mm			Tolerance - Toleranz Tolerancia DIN 59115-A.			Bundles Bunde Bultos			1	Bars Stäbe Barras	Weight Gewicht Peso	1045 Kg		
Requirements - Anforderungen - Exigencias														
EN 10.088-3.2005. EN 10.272-2007. ASTM A 580 / A 580M-08. 1.4404-TP.316L. PED 97/23/EC; Annex I, Parag.4.3/DGR 97/23/EG Anhang I Bsatz 4.3 Certificate/Zertifikat Nr. 348/2008/MUC														
Melting process / Erschmelzungsart / Proceso de Fusión E.A.F. / A.O.D.				Heat treatment / Wärmebehandlung / Tratamiento térmico 1060C 4H/Std WATER/WASSER/AGUA										
Solution annealed/Abgeschreckt/Hipertempern-Pickled/Gebetzt/Decapado.														
Test results - Ergebnis der Prüfungen - Resultados de los ensayos														
Dimension of Specimen Abmessung des Probekörpers Medida de las probetas		Rp0,2% N/mm ² MPA	Rp 1% N/mm ² MPA	Rm N/mm ² MPA	A %L 5D	A %L 4D	Z %	Hardness Härte HBw	Impact test / Kersbschlag / Resiliencia ISO V Jules					
RD. 10,00 mm.	Min.	190	225	490	40									
	Max.													
Temperature°C 20	Spec. N° Probe-Nr. Pro N°	250	297	535	60		72	131						
	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	N	Co.			
Min.						16,50	2,00	11,00						
Max.	0,030	1,00	2,00	0,045	0,030	18,50	2,50	14,00	0,70					
	0,020	0,37	1,73	0,035	0,028	17,10	2,00	11,00	0,29	0,0265	0,11			
Visual and dimensional inspection Besichtigung und Ausmessung O.K. Control visual y dimensional		Radioactivity inspection Radioaktivitätskontrolle O.K. Control de Radioactividad			Antimixing test Spektroskop Verwechslungspr O.K. Antimezcla			Grain Size Körngröße Tamaño de grano						
Remarks - Bemerkungen - Observaciones IC test acc./IK prüfung nach ASTM A 262 E.02: OK												EDV / EDP Acc. EN 10.204 Alfredo Molina Certification Mng. Works Inspector Der Werkssachverständige Inspector de fábrica		

F52556

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SOUTHDOWN MATERIALS TESTING LIMITED

DESTRUCTIVE TESTING SERVICES

UNIT 5 TANSEY GREEN TRADING ESTATE, TANSEY GREEN ROAD, PENSNETT, BRIERLEY HILL, WEST MIDLANDS DY5 4TL
Telephone No.: 01384 482880 Fax No.: 01384 482877 e-mail: southdown.smt@btconnect.com



TEST REPORT No. 96432

Offshore Stainless Supplies Limited
Toll Point
Lichfield Road
Brownhills
West Midlands
WS8 6JZ

SMT Ref. No.: X2521
Customer Order No.: 49380/ASTM
Date Received: 30/04/13
Description: 10mm dia. x 11" Stainless Steel
Bar
Cast No: 327619
Grade: 316

Report Date 01/05/13

AMBIENT TEMPERATURE TENSILE TEST (ASTM A370-11) (TAKEN FROM CORE)

Tester & Test Date	K M Winnall	01/05/13
<u>Measurements</u>	<u>Units</u>	<u>Results</u>
Diameter	mm	6.30
Original Area	mm ²	31.20
Gauge Length	mm	25
Maximum Load	kN	26.60
Tensile Strength	N/mm ²	854
Proof Strength R _{p0.2}	N/mm ²	687
Elongation (4D)	%	25
Elongation (5D)	%	21
Reduction in Area	%	68

PROOF/TENSILE RATIO = 0.80 (0.9 MAX.)

BRINELL HARDNESS TEST (ASTM E10 – HBW 10/3000)

Tester & Test Date	K M Winnall	01/05/13
<u>Location</u>	<u>Results</u>	<u>Requirements</u>
Core	253	320 max

TEST RESULTS MEET CUSTOMER SUPPLIED SPECIFICATION REQUIREMENTS

• End of Report •

Authorised by: K M Winnall – Test Technician
FOR SOUTHDOWN MATERIALS TESTING LIMITED

Test marked "NOT UKAS ACCREDITED" in this Report/Certificate are not included in the UKAS Accreditation Schedule for our Laboratory.
Tests and opinions marked "SC" have been subcontracted.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
This Test Report shall not be reproduced except in full, without written approval of the Laboratory.
Results in this Report relate only to items tested



BST Internal Sample Inspection/Dimensional Report

Part Number..... 200002044 | 1

Description..... M6 (1.0P) x 12MM LG SKT CAP SCREW

Batch Number: Q 1402 Batch Qty: 50 SHE No: N/A

BST Reference S-151379

Drawing Number/Specification..... ISO 4762

FEATURE	SPECIFICATION	ACTUAL	ACCEPTED
THD	M6 x 1.0 6g	TO GAUGE	/
CG	11.65 12.35	11.97	/
HD DIA	9.48 10.00	9.90	/
HD HT	5.4 6.00	5.93	/
SKT AF	5 nom.	OK TO SPEC	/
SKT D	3 min.	3.11	/
WALL THK	2.3 min.	2.64	/
Additional comments			

Customer..... BAND 001 Accepted..... / Rejected.....

Inspected by M. CICCHA ... Signed..... Ciccha Date 21/10/16

Description :- M6 (1.0P) X 12mm LG SKT CAP SCREW												
Matl Spec :- M30207	Revision :- J		BST Ref :- S-151379-1									
Range :- 35 HRC MAX	% 3 off		Date :- 24-10-16									
	Daily Calibration :- <input checked="" type="checkbox"/>			Temp :- 20.65°C								
				ZWICK/ROELL ZHR 165171 MACHINE NUMBER 8, DIAMOND INDENTER NUMBER 142041								
				BALL NUMBER 16642, BALL HOLDER NUMBER 27891								
Serialised :-					Signed :- 							
Item No	Hardness Result	Item No	Hardness Result	Item No	Hardness Result	Item No	Hardness Result	Item No	Hardness Result			
1	28	31		61		91		121				
2	27	32		62		92		122				
3	28	33		63		93		123				
4		34		64		94		124				
5		35		65		95		125				
6		36		66		96		126				
7		37		67		97		127				
8		38		68		98		128				
9		39		69		99		129				
10		40		70		100		130				
11		41		71		101		131				
12		42		72		102		132				
13		43		73		103		133				
14		44		74		104		134				
15		45		75		105		135				
16		46		76		106		136				
17		47		77		107		137				
18		48		78		108		138				
19		49		79		109		139				
20		50		80		110		140				
21		51		81		111		141				
22		52		82		112		142				
23		53		83		113		143				
24		54		84		114		144				
25		55		85		115		145				
26		56		86		116		146				
27		57		87		117		147				
28		58		88		118		148				
29		59		89		119		149				
30		60		90		120		150				



LIQUID PENETRANT TEST REPORT

CLIENT:	BST SUPPLIES	REPORT NO:	W034584 ITEM 6 ISSUE 2
LOCATION:	FORDHOUSE ROAD	ORDER NO.	P/160011
PAGE 1 OF 1	WOLVERHAMPTON	TEST DATE:	26/10/16
PRODUCT DESCRIPTION	M6 (1.0P) X 12MM LG SKT CAP SCREW		
SCOPE OF EXAMINATION	100% OF ALL ACCESSIBLE SURFACES		
PART NUMBER	200002044/I		
DRAWING NUMBER	N/A		
MATERIAL	M30207/J		
CAST NUMBER	327619		
BATCH NUMBER	Q1402		
REFERENCE NUMBER	S-151379/1		
MANUFACTURING STAGE.	MACHINED		
PROCEDURE	ASTM A962 S56 , LPP001 ISS.8 2012		
ACCEPTANCE LEVEL	ASTM A962 S57		
PROCESS	TYPE	APPLICATION	
CLEANER	SHERWIN BABBCO N 120	To remove residue of oil & grease. 5 minute evaporation time prior to applying penetrant.	
PENETRANT	SHERWIN BABBCO HM 3 A BATCH NUMBER: 13666	Total immersion time 20 mins. Drain/dwell time 10 mins.	
WASH	WATER	Pressure not to exceed 0.17MP. Temperature Range 10-35°C	
DRY	OVEN	70° max. 15 min duration until dry	
DEVELOPER	SHERWIN BABBCO D 90 G	Storm cabinet application time 10 minute. Settle time 5 mins.	
POST CLEANING	SHERWIN BABBCO N 120	To remove all test consumables	
CALIBRATION CHECK			
SHERWIN PANEL	*****		
BLACK LIGHT	> 1000 μ wcm ²		
WHITE LIGHT	< 10 lux		
TEST STATUS			
RESULTS	NO BLEED OUT ALL ITEMS ACCEPTABLE TO SPECIFICATION		
OPERATOR	T BARTLETT	SIGNED	
APPROVAL	PCN LEVEL 2 (332603)	DATE	26/10/16