

Customer Flow Technology Ltd Half House Lane Hove Edge Brighouse West Yorkshire HD6 2PH	Delivery Address Flow Technology Ltd Half House Lane Hove Edge Brighouse West Yorkshire HD6 2PH
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OFFSHORE
STEELLESS SUPPLIES LTD.
Supplier of 1,4003 and producers of specialist stainless and high nickel products

FLOW TECHNOLOGY LTD
TEST CERTIFICATE
VERIFIED TRUE
COPY OF ORIGINAL

Report No. 041710	Our Ref. 106522	Date 27/02/18	Page 1 of 1
Test No. OSS003118	Customer PO No. 014915/JS	Specification AIST 316/316L Cold Drawn To Nace	TEST CERTIFICATE
Despatch Note No. 062348		MR0175 & Linished	

Item	Quantity	Weight Kg	Part No.	Heat No.	Batch No.	Description
001	0	70			F62370	3" x 1.1/2" Flat bar
		Total				1 bar 3" x 1 1/2" Flat @ 3m Random Linished


A. HEAT TREATMENT SUPPLY CONDITION
B. TEST PIECE TREATMENT CONDITION
MELTING PRACTICE
Rotech report 168895 refers

Tensile Tests				Units	Impact Tests									
Temp °C	0.20% Proof	Maximum Stress	%Elong	N/mm ²	SHEAR %			LATERAL EXPANSION						
	Result	Result	Result		1	2	3	MIN	AV	1	2	3	MIN	AV
20	L	500	225		1	2	3	MIN	AV	1	2	3	MIN	AV
					4D	43	30	66	40					

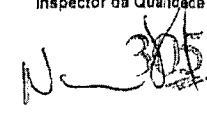
Hardness on TestPiece		1	
Location	Designation	Requirements	Results
	HBW		206

Heat No.	C	Si	Mn	P	S	Cr	Mo	Ni	Al	Cu	Co	N	Ti	Nb
56160593	0.019	0.480	1.500	0.033	0.027	16.740	2.030	10.100	0.005	0.440	0.338	0.051	0.003	0.044

Material free from mercury contamination during manufacturing process.
Material free from radioactivity and inspected during manufacturing.
In accordance with EN 10204 3.1

Signature  Position Commercial Manager

F13668
9/16" HP FEM EQ CROSS 60K 316L

BOLLINGHAUS STEEL Bollinghaus Steel, SA DIN EN ISO 9001:2008 TÜV CERT No. 01 100 030458	Abnahmeprüfzeugnis/Mill Test Certificate/Certif. de Qualidade EN 10204:2004 / 3.1										No.: / Nr.: /Nr.: 0000116443				
	Unsere innere Verweisung /Our Int. Ref/ NI/ ref int 5600030360 000010					Datum / Date / Data 17.06.2016									
Normen / Standards / Normas W.Nr. 1.4401/1.4404 acc. to BS EN 10088-3:2014, BS EN 10272:2008-01, AISI 316/316L, acc. to ASTM A479/A479M-16, A182/A182M-15, A320/A320M-15, A276/A276M-16, but with size tolerances of -0 / +1 mm, "Improved Machinability", I.C.C. Tested to ASTM A262-15 Practice E, NACE MR0175, NACE MR0103, DIN 17440, ASME SA182/SA 182M, SA276, SA479/SA479M, EN 10058:2003, EN 10163-2 class B, Sulphur Content 0.020% - 0.030%, Max. Hardness 180 HB Heat treatment soaking time 3h															
Kunde / Customer / Cliente Offshore Stainless Supplies Ltd. Toll Point, Lichfield Road WS8 6JZ West Midlands							Endgültiger Kunde / Final Customer / Cliente Final Offshore Stainless Supplies Ltd. Toll Point, Lichfield Road WS8 6JZ West Midlands								
Bestell Nr./Order Nr./ Enc.Nr. 009999							Bestell Nr./ Order Nr./ Enc.Nr. 009999.19								
Produktgruppe / Product Group / Grupo Produto AISI 316/L FLAT 78 X 39,75 MM					Gewicht / Weight / Peso 3.253 kg				Bunde / Bundle / Atados 03						
Werkstoff-Nr. Material-no. Qualidade 1.4404				Werkstoff-Normbezeichnung / Material standard grade / Norma do material X 2 CrNiMo 17-12-2											
Beschreibung / Description / Descrição Stainless steel flat bars, hot rolled, annealed, pickled, straightened.															
Schmelzen Nr. Cast nr. / Fusão nr.		Chemische Analyse in % / Chemical composition in % / Análise química em %													
56160593		C	0.019	Si	0.480	Mn	1.500	P	0.033	S	0.027	Cr	16.740	Ni	10.100
EAF+AOD		Mo	2.030	Co	0.338	Cu	0.440	N	0.051	Ti	0.003	Nb	0.044	Al	0.005
DIN EN 10045 Kerbschlagarbeit Impact Test Resiliência {Charpy V} [J]				DIN EN ISO 6892-1 Streckgrenze Yield point Tensão limite Rp 0,2 % [MPa]		Dehngrenze 1% point Limite de extensão Rp 1,0% [MPa]		Zugfestigkeit Tensile strength Tensão de rotura Rm [MPa]		Dehnung Elongation Alongamento A (A5/4D) [%]		Einschnürung Reduction of area Coef. Estricção Z [%]			
3053811.03.01				220		312		374		644		60.1		75.9	
3053811.03.02				222		305		370		637		62.2		77.0	
Visuelle Kontrolle Visual inspection Inspeção visual <input checked="" type="checkbox"/> OK		DIN EN ISO 6506-1 Härte Hardness Dureza 157 [HB]				DIN EN ISO 3651 - 2A Korrosionsbeständigkeit IC Test Corrosão Intermetálica <input checked="" type="checkbox"/> OK				Wärmebehandlung Heat treatment Tratamento térmico Solution annealing 1050 °C (Water quenched)					
DIN EN 10058 Maßkontrolle Dimensional inspection Inspeção dimensional <input checked="" type="checkbox"/> OK		Korngröße Grain size Tamanho de grão				Werkstoffverständiger Quality Control Representative Inspector da Qualidade  Nuno Silva (Q - NS)									
Verwechslungsprüfung Test of Identity Teste de identificação <input checked="" type="checkbox"/> OK		Makroskopische Untersuchung Macrographic test Material free from segregation defects. <input checked="" type="checkbox"/> OK													
Bemerkungen / Remarks / Observações Country of origin: Portugal. No weld repair done. Material is free of mercury and radiation contamination. Certified acc. PED 97/23/EC-EN 764-5 and AD 2000 W0 Notified Body 0035 - TÜV Rheinland Industrie Service GmbH 01 202 926/Q-02 0040															
Hiermit bestätigen wir, dass das Material der oben genannten Spezifikation entspricht. We confirm that this material meets the specification according to the mentioned standards. Confirmamos que este material respeta as especificações de acordo com as normas referidas.															
Bollinghaus Steel, SA															

ROTECH

LABORATORIES

LABORATORY :- MOXLEY INDUSTRIAL CENTRE, WESTERN WAY,
WEDNESBURY, WEST MIDLANDS, WS10 7BG
ADDRESS
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Test Report



ITEM	DESCRIPTION	SIZE	SPECIFICATION	REPORT NUMBER	ISSUE	PAGE	1 OF	1
1	Test Bar Cast No: 56160593	3" x 1.1/2"	Material: 316 Customer Requirements.	168895	This report replaces report 168895 issue 1 24/04/2017	SAMPLE RECEIPT DATE	24/04/2017	
CUSTOMER				Offshore Stainless Supplies Ltd Toll Point Lichfield Road Brownhills West Midlands WS8 6JZ				
ACCOUNT NO.				0009				
DATE TESTED.				24/04/2017				
YOUR ORDER NO.				E006639				

MECHANICAL TESTS In accordance with : ASTM A370-14													
ITEM	DIMENSIONS OF TEST PIECE	YIELD STRESS	TENSILE STRENGTH	Lo 4D	Lo 5D	EL 4D	EL 5D	REDUCTION IN AREA	HARDNESS BRINELL	DIM IMPACT TEST PIECE	TEST TEMP	CHARPY	AV.
UNIT	mm Dia	MPa	MPa	mm	mm	%	%	%	HBW 10/3000	mm	°C	Joules	
1	12.56	500	646	50	62.5	43.0	38.5	66	206	-	-	-	-
	Requirements.	345 Min	560 Min	-	-	30 Min	25 Min	45 Min	235 Max				

Comments:- Test results satisfy the specification requirements supplied by the customer.

TESTED IN THE PRESENCE OF

Report Approved By D. Skeldon - Manager - Mechanical & Product Testing

TESTS MARKED 'NOT UKAS ACCREDITED' IN THIS REPORT/CERTIFICATE ARE NOT INCLUDED IN THE UKAS ACCREDITATION SCHEDULE FOR OUR LABORATORY
TESTS 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 THE ITEMS TESTED
TESTING CONDUCTED IN ACCORDANCE WITH MANAGEMENT SYSTEM MANUAL ISSUE 14