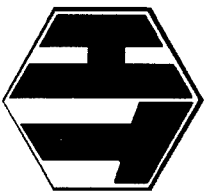


Customer
 FLOW TECHNOLOGY LTD
 HALF HOUSE LANE
 HOVE EDGE
 BRIGHOUSE
 WEST YORKS. HD6 2PH

Delivery Address
 FLOW TECHNOLOGY LTD
 HALF HOUSE LANE
 HOVE EDGE
 BRIGHOUSE
 WEST YORKS. HD6 2PH

FLOW TECHNOLOGY LTD
 TEST CERTIFICATE
 VERIFIED TRUE
 COPY OF ORIGINAL



HT-TECH
 Special Steels Limited
 Rotherham Road, Loughborough Common,
 Drimington, Sheffield S25 3HF
 Tel: Drimington (01909) 564545
 Fax No: (01909) 550682

Report No. 041416 Our Ref. 103021 Date 13/11/17 Page 1 of 1
 Test No. 326901 Customer PO No. 014498/JS Specification BS EN 10088-3 1.4404 TEST CERTIFICATE
 Dispatch Note No. 055906

Item	Quantity	Weight Kg	Part No.	Heat No.	Batch No.	Description
001	3	73.0		561638	P220087	1.1/2" X 1" FINISHED BAR CONFORMING TO NACE MR0175
		Total				

A. HEAT TREATMENT SUPPLY CONDITION
 B. TEST PIECE TREATMENT CONDITION
 MELTING PRACTICE ADD TEST COUPON SIZE


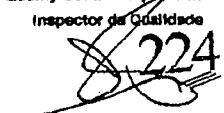
Tensile Tests				Units MPa		Impact Tests			Hard- ness								
Temp °C	* L	0.20% Proof Result Spec-Min	Maximum Stress Result Spec-Min	%Elong 50MM Result Spec-Min	% Reduction of Area Result Spec-Min	Temp °C	ENERGY			SHEAR %	LATERAL EXPANSION	21.7					
		541	721	36	64	*	1	2	3	MIN	AV	1	2	3	MIN	AV	HRC
20	L	541	721	36	64	*	1	2	3	MIN	AV	1	2	3	MIN	AV	HRC

Component Hardness

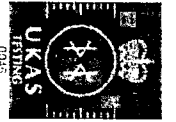
Heat No.	C	Si	Mn	S	P	Cr	Ni	Mo	Cu	Ti	Co	N
561638	0.019	0.540	1.460	0.028	0.035	16.920	10.090	2.040	0.460	0.002	0.272	0.058

* Test Direction: L = Longitudinal; T = Transverse
 TEST CERTIFICATE in accordance with BS EN 10204 3.1 / ISO 10474 3.1
 Certified that the whole of the supplied detailed hereon, unless otherwise stated, are covered
 by the Sources Certificate of Conformity/Test Certificate referenced hereon, and has been
 supplied to the Quality System requirements in accordance with the conditions of our
 BS EN ISO 9001 registration for lot traceable products.
 Signature _____ Position Certification Dept

F13680
 T BLOCK G 1/4" CMS DRG 509501785

	Abnahmeprüfzeugnis/Mill Test Certificate/Certif. de Qualidade		No.: / Nr.: / Nr.:					
	EN 10204:2004 / 3.1		0000085381					
Böllinghaus Portugal Aços Especiais, SA DIN EN ISO 9001:2008 TÜV CERT No. 01 100 030458	Unsere Innere Verweisung /Our Int. Ref/ N/ ref int		Datum / Date / Data					
	5600017332 000010		14.12.2012					
Normen / Standards / Normas								
1.4401/1.4404 acc. to BS EN 10088-3:2005 "Improved Machinability" I.C.C. Tested to ASTM A262-10 Practice E, valid in dual certified as AISI 316/316L acc. to ASTM 276-10, ASTM A479/A479M-11, NACE MR 0175, NACE MR 0103.								
Kunde / Customer / Cliente			Endgültiger Kunde / Final Customer / Cliente Final					
Hi-Tech Special Steels Limited Rotherham Road S25 3RF Sheffield			Hi-Tech Special Steels Limited Rotherham Road S25 3RF Sheffield					
Bestell Nr./Order Nr./ Enc.Nr. 004234			Bestell Nr./ Order Nr./ Enc.Nr. 004234.04					
Prüfgegenstand / Product / Produto		Gewicht / Weight / Peso		Bunde / Bundle / Atados				
AISI 316L FLAT 40 x 27 mm		3,419 kg		03				
Werkstoff-Nr. / Material-no. / Qualidade		Werkstoff-Normbezeichnung / Material standard grade / Norma do material						
1.4404		X 2 CrNiMo 17-12-2						
Beschreibung / Description / Descrição								
Stainless steel flat bars, hot rolled, annealed, pickled, straightened.								
Schmelzen Nr. / Cast nr. / Fusedo nr.		Chemische Analyse in % / Chemical composition in % / Análise química em %						
561638		C: 0.019	Si: 0.540	Mn: 1.460	P: 0.035	S: 0.028	Cr: 16.920	Ni: 10.090
EAF		Mo: 2.040	Co: 0.272	Cu: 0.460	N: 0.058	Ti: 0.002	W:	V:
Proben Nr. / Test no. / Amostra no.	DIN EN 10045		ISO 6892-1					
	Kerbschlagarbeit Impact Test Resiliência		Streckgrenze Yield point Tensão limite	Dehngrenze 1% point Limite de	Zugfestigkeit Tensile strength Tensão de rotura	Dehnung Elongation Alongamento	Einschnürung Reduction of area Coef. Estricção	
	(Charpy V)		Rp 0,2 %	Rp 1,0%	Rm	A (A50-50mm)	Z (A50-50mm)	
	[J]		[MPa]	[MPa]	[MPa]	[%]	[%]	
3030585.01.01	226	291	325	632	64.9	79.4		
3030585.01.02	224	296	331	638	64.6	78.8		
Visuelle Kontrolle / Visual inspection / Inspeção visual		DIN EN 6506-1		DIN 3851 - 2A		Wärmebehandlung / Heat treatment / Tratamento térmico		
<input checked="" type="checkbox"/> OK		Härte Hardness Dureza		Korrosionsbeständigkeit IC Test Corrosão Intermetálica		Solution annealing 1050 °C (Water quenched)		
EN 10058		153		<input checked="" type="checkbox"/> OK				
Maßkontrolle Dimensional inspection Inspeção dimensional		[HB]		Werkstoffverständiger Quality Control Representative Inspector de Qualidade				
<input checked="" type="checkbox"/> OK		Korngröße Grain size Tamanho de grão		 David Reis				
Verwechslungsprüfung Test of Identity Teste de identificação		Mikroskopische Untersuchung Micrographic test						
<input checked="" type="checkbox"/> OK		Material free from segregation defects.						
Bemerkungen / Remarks / Observações				Böllinghaus Portugal - Aços Especiais, SA				
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 I29.A PP				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 respeita as especificações de acordo com as normas referidas.				


 15/12/12



Special Testing Ltd
 Bacon Lane, Sheffield S9 3NH
 Tel: 0114 244 1061
 Fax: 0114 244 0444 Works
 Fax: 0114 244 5566 Acc/Admin
 www.specialtesting.co.uk

Test Certificate 326901

AUTHENTICATION CODE 055E9CA1642B
 ROLLS ROYCE APPROVED LABORATORY
 Approval No. 11191

CUSTOMER
 HI-TECH SPECIAL STEELS LTD
 ALLOY & METAL WORKS, ROTHERHAM RD
 LAUGHTON COMMON, DUNNINGTON
 SHEFFIELD S25 3RF
 DATE RECEIVED 26 May 2016
 TEST DATE 27 May 2016



CUSTOMER ORDER NO	PRD5574	TEST NUMBER	326901	IDENTITY	P41673	CAST	561638	ALL REQUIREMENTS MIN UNLESS STATED	
SPECIFICATION	BS EN 10088-3:2014 1.404	TEST PIECE FROM*	1.1/2" X 1"						
TENSILE: BS EN ISO 6892-1:2009 A224		0.2% PROOF	1.0% PROOF	UTS	ELONG ON	%	R OF A %	COMMENTS	
OR TEMP SECTION AREA SQ	UNIT REQUIREMENTS								
L RT 10.02mm	78.78mm ² MPa	RESULTS	541	647	721	50mm	36.0	64.0	12.5mm below
HARDNESS: BS EN ISO6508-1 2005		DESIGNATION	REQUIREMENTS	RESULTS					
ROCKWELL C (Mid Radial)		HRC		21.7					

END OF CERTIFICATE

REPRESENTING*		No copy is authentic without the embossed seal and signature. This certificate can be authenticated at www.specialtesting.co.uk with the code 055E9CA1642B
		This certificate shall not be reproduced, except in full, without the written approval of the laboratory.
	For and on behalf of SPECIAL TESTING LTD A Member of the Special Steel Group of Companies	Kath Elliott Certification Officer

Test results do not in any way confer approval of the quality of manufacture of the material. All results are subject to uncertainty of measurement budgets, details available upon request.
 Information marked * is supplied by the customer.

