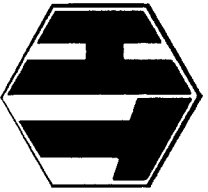


**Customer**  
 FLOW TECHNOLOGY LTD  
 HALF HOUSE LANE  
 HOVE EDGE  
 BRIGHOUSE  
 WEST YORKS. HD6 2PH

**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



**HI-TECH**  
 Special Steels Limited  
 Ruberham Road, Lougham Common,  
 Dringington, Sheffield S25 5PH  
 Tel: Dringington (01909) 564545  
 Fax No (01909) 550682

Report No. 042536      Our Ref. 103746      Date 21/03/18      Page 1 of 1  
 Test No. 326901      Customer PO No. 015001/JS      Specification BS EN 10088-3 1.4404  
 Despatch Note No. 056898

TEST CERTIFICATE

Item	Quantity	Weight Kg	Part No.	Heat No.	Batch No.
001	4	92.0		561638	P221387
		Total			


Description  
 1.1/2" X 1" FINISHED BAR  
 CONFORMING TO NACE MR0175  
 12 METRES

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

Tensile Tests				Units				Impact Tests				Hard-			
				MPa								ness			
Temp °C	* Result	0.20% Proof Spec-Min	Maximum Stress Result	%Elong 50MM Result	% Reduction of Area Result	Temp °C	* Result	ENERGY	SHEAR %	LATERAL EXPANSION	21.7				
20	L	541	200	721	500	36	30	64	50	1	2	3	MIN	AV	HRC


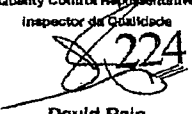
Component Hardness

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

Signature  
  
 Position  
 Certification Dept

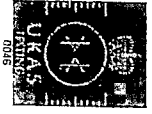
\* Test Direction: L = Longitudinal; T = Transverse  
 TEST CERTIFICATE in accordance with BS EN 10204 3.1 / ISO 10474 3.1  
 Certified that the whole of the supplied detailed hereon, unless otherwise stated, are covered by the Sources Certificate of Conformity/Test Certificate referenced hereon, and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

**F13652**  
**1/4" NPT F/F/F FXD TEE 10K 316L**

	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 TUV CERT No. 01 100 030458	Unsere Innere Verweisung / Our Int. Ref / N/ ref int		Datum / Date / Data					
	5600017332 000010		14.12.2012					
<b>Normen / Standards / Normas</b>								
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.								
<b>Kunde / Customer / Cliente</b>		<b>Endgültiger Kunde / Final Customer / Cliente Final</b>						
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						
<b>Prüfgegenstand / Product / Produto</b>		<b>Gewicht / Weight / Peso</b>		<b>Bunde / Bundle / Atados</b>				
AISI 316L FLAT 40 x 27 mm		3,419 kg		03				
<b>Werkstoff-Nr. / Material-no. / Qualidade</b> 1.4404		<b>Werkstoff-Normbezeichnung / Material standard grade / Norma do material</b> X 2 CrNiMo 17-12-2						
<b>Beschreibung / Description / Descrição</b>								
Stainless steel flat bars, hot rolled, annealed, pickled, straightened.								
<b>Schmelzen Nr. / Cast nr. / Fused no.</b>		<b>Chemische Analyse in % / Chemical composition in % / Análise química em %</b>						
561638		<b>C:</b> 0.019	<b>Si:</b> 0.540	<b>Mn:</b> 1.460	<b>P:</b> 0.035	<b>S:</b> 0.028	<b>Cr:</b> 16.920	<b>Ni:</b> 10.090
EAF		<b>Mo:</b> 2.040	<b>Co:</b> 0.272	<b>Cu:</b> 0.460	<b>N:</b> 0.058	<b>Ti:</b> 0.002	<b>W:</b> -	<b>V:</b> -
<b>Proben Nr. / Test no. / Amostra no.</b>	<b>DIN EN 10045</b>		<b>ISO 6892-1</b>					
	Kerbschlagarbeit Impact Test Resiliência {Charpy V}		Streckgrenze Yield point Tensão limite Rp 0,2 %	Dehngrenze - 1% point Limite de Rp 1,0%	Zugfestigkeit Tensile strength Tensão de rotura Rm	Dehnung Elongation Alongamento A (A50-50mm)	Einschränkung Reduction of area Coef. Estricção 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
<b>Visuelle Kontrolle / Visual inspection / Inspeção visual</b> <input checked="" type="checkbox"/> <b>OK</b>		<b>DIN EN 6506-1</b> Härte Hardness Dureza [ HB ]		<b>DIN 3851 - 2A</b> Korrosionsbeständigkeit IC Test Corrosão Intermetálica <input checked="" type="checkbox"/> <b>OK</b>		<b>Wärmebehandlung / Heat treatment / Tratamento térmico</b> Solution annealing 1050 °C (Water quenched)		
<b>EN 10058</b> Maßkontrolle Dimensional inspection Inspeção dimensional <input checked="" type="checkbox"/> <b>OK</b>		Korngröße Grain size Tamanho de grão		<b>Werkstoffschwerfmetallprüfer / Quality Control Representative / Inspector de Qualidade</b>  David Reis				
<b>Verwechslungsprüfung / Test of Identity / Teste de identificação</b> <input checked="" type="checkbox"/> <b>OK</b>		Mikroskopische Untersuchung Micrographic test Material free from segregation defects. <input checked="" type="checkbox"/> <b>OK</b>						
<b>Bemerkungen / Remarks / Observações</b> Country of origin: Portugal. No weld repair done. Material is free of mercury and radiation contamination. Certified acc. PED 97/23/EC-EN 784-5 and AD 2000 W0 Notified Body 0035 - TÜV Rheinland Industrie Service GmbH 01 202 8260-02 0040 129.A PP					<b>Böllinghaus Portugal - Aços Especiais, SA</b> 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.			



15/11/12



**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 065B9CA1642B  
 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 28 May 2016  
 TEST DATE 27 May 2016



CUSTOMER ORDER NO	PRD5674	TEST NUMBER	326901	IDENTITY	P41673	CAST	581638	ALL REQUIREMENTS MIN UNLESS STATED			
SPECIFICATION	BS EN 10088-3:2014 1.4404	TEST PIECE FROM	1.12" 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 <sup>2</sup> MPa		541		647		721		50mm	36.0	64.0	12.5mm below
HARDNESS: BS EN 1806908-1:2005		DESIGNATION	HRC	REQUIREMENTS		RESULTS					
ROCKWELL C (Mid Radial)						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](http://www.specialtesting.co.uk) with the code 065B9CA1642B

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.

Page 1 of 1  
 1287116