



Firth Rixson Metals Limited  
Johnson Lane  
Ecclesfield  
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England  
S35 9XH  
Tel: +44 (0)114 219 3002  
Fax: +44 (0)114 219 1145  
VAT Reg No: 173 7004 76

FLOW TECHNOLOGY LTD

TEST CERTIFICATE  
VERIFIED TRUE  
COPY OF ORIGINAL

Co Reg No : 138691

**Certificate Of Conformity**

First/Last Print date: 23-JAN-14/23-JAN-14

AMODIL SUPPLIES LTD FOREST PARK RURAL IND EST CLEDBURY MORTIMER KIDDERMINSTER WORCESTERSHIRE DY14 9BD United Kingdom	Customer Order No.	HW1025	Certificate Number	K 000054541
	Customer Part No.		Sales Order	EN044340 / 001
	Customer Part Desc		Qty / Unit of measure	2678 KG
	Spec		Lot / Order no.	B000076336 P162073
	F316L/1.4404		Part Number	EBB14404-HTF-FHT
			SQUARE BAR EBB14404 SOLUTION TREATED & DESCALED GFM HEAT TREATMENT TESTED	

Cast E131250	Melt Pract.	Supp Melt AMODIL SUPPLIES LTD	Inwd Cert HW1025
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**Chemistry (% unless otherwise stated)**

C	Mn	P	S	SI	NI	Cr	Mo	N	Al	Cu	Sn	V	Ti	Nb
0.02	1.60	0.036	0.025	0.26	10.11	17.43	2.03	0.075	0.005	0.52	0.012	0.05	0.005	0.009

**Chemistry (% unless otherwise stated)**

B	W	Ta	Co	As										
0.0003	0.06	0.001	0.22	0.016										

**Heat Treatment Material**

SAMPLE	TRACE	CYCLE	TEMP	SOAK	COOL	HEAT NO
01		SOLUTION	1050DegC	2.0CHR		3.782

**Hardness Material**

SAMPLE	TRACE	HARDNESS1				
01		149HB				

**Mechanical Tests Tensile**

SAMPLE	TRACE	Rp0.2%	Rp1.0%	Rm	A (4D)	Z
01		288MPa	321MPa	574MPa	63.4%	79.4%

**Hardness Test Piece**

SAMPLE	TRACE	HARDNESS				
01		150HB				

**Non Destructive Test**

VISUAL INSPECTION SATISFACTORY

**Documentation**

MECH TEST REPORT NUMBER 21631  
MECH TESTS CARRIED OUT BY FRT  
START SIZE 150 MM SQUARE  
FINISH SIZE 4" SQUARE  
CUSTOMER BATCH No 426389

**Release Specifications Sales**

F316L/L4404

**Text remarks**

RECEIVED FROM AMODIL SUPPLIES LTD  
HIREWORK FORGED, HEAT TREATED AND TESTED  
9 BARS = 2678 KGS  
3 BAGS SCRAP 63 KGS



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Cast E131250 Melt Pract.

Supp Melt AMODIL SUPPLIES LTD Inwd Cert HW1025

### Text std remarks

\* ISO9001 - We hereby certify that the whole of the supplies detailed hereon, unless otherwise stated, have been subjected to quality assurance procedures in accordance with the conditions of our registration to BS EN ISO9001:2008. Approval certificate number LRQ 4005079.

Signed



23-JAN-14

A. Earnshaw D. Buchanan D. Webster G. Berry  
G. Glaves-Robinson K.J. Sommefeldt M. Clark M. Luckham

Position in Firm: Approved Signatory



DEGERFORS STAINLESS  
S-693 81 DEGERFORS, SWEDEN  
Ref. QC-Dept. Jörgen Johansson

Date-Datum-Date Your order-Ihre Bestellung-Votre commande  
2013-10-01 OOU653

No. LP 1422-13

Product-Erzeugnisform-Produit Stainless steel, hot rolled billet. Intended for further hot working. No mechanical tests performed. Not heat treated.	Our order Unsere Auftrag Notre commande 48914	Advice of delivery Lieferschein Avis d'expédition
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Requirements-Prüfgrundlagen-Exigences Amodil Supplies spec. QAD 40a Rev.1 ASTM A 182, 314, 276, 479, 484 (latest editions) EN 10082-3:2006	Purchaser-Besteller-Acheteur AMODIL SUPPLIES LTD FOREST PARK, CLEOBURY MORTIMER NR KIDDERMINSTER, WORCS DY14 9BD GREAT BRITAIN
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Marking-Kennzeichnung-Marquage Type of steel Werkstoff Nr Nuance F 316L F 316, F 316L, S31603, 1.4401, 1.4404 17-11-2L	Brand mark Herstellerzeichen Signe du producteur 	Inspectors stamp Abnahmestempel Poinçon de l'expert 	Melting process Erschmelzungsart Procédé de fusion EAF+AOD-Converter refining CC to bloom 400 x 300
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Extent of delivery-Lieferumfang-Étendue de livraison						
Item Pos.	Quantity Anzahl	Dimensions, mm Abmessungen, mm	Cast No. Schmelze Nr.	Lot No. Los Nr.	Weight Kg Gewicht Kg	Reduction ratio
03-01	6	160x160	E131250	89450	5 560	5.33

Chemical composition-Chemische Zusammensetzung-Composition Chimique (weight %)												
Cast No. Schmelze Nr. Coulée no	C	Si	Mn	P	S	Cr	Ni	Mo	Ti	Nb	Cu	Co
E131250	0.020	0.26	1.60	0.036	0.028	17.43	10.11	2.03	0.006	0.008	0.52	0.22
	N	Sn	W	V	Al	Ta	B	As				
	0.075	0.012	0.06	0.06	0.006	0.001	0.0003	0.016				

Mechanical tests - Mechanische Prüfungen - Essais mécaniques									
Test results-Prüfergebnisse-Résultats d'essais(L=longitudinal/längs/long. T=transversal/quer/travers)									
Test No./L/T	Rp 0,2	Rp 1,0	Rm	A50	Z	HB	Impact test-Kerbschlagbiegeversuch- Résilience		Temp
Probe Nr./L/T				%	%		J		°C
Eprouvette n./L/T	MPa	MPa	MPa	%	%				
Requirements min Sollwerte Exigences	205	-	515	30	50	-	(ASTM A 182/A 182M/ F 316)		

Typical statistical values for Degerfors Stainless process annealed 316L.						
Rp 0,2	Rp 1,0	Rm	A5	Z	HB	
268	312	593	57	75	149	

Other tests-Sonstige Prüfungen-Autres essais US-tested according to DS OFP-228 = ASTM A 388, 3-6 mm FBH. PMI-test has been performed on every bar/billet with X-ray spectro, without remarks.	Inspection and gauge measurement-Ausmessung und Besichtigung-Contrôle visuel et dimensionel
The order requirements stipulated are satisfied	No remarks-Ohne Beanstandung-Pas de remarque Free from Mercury contamination at time of shipment. No weld repair performed. Radioactivity < 0.1 Bq/g (equivalent to Co <sup>60</sup> ). Measured on samples of the material using analysis techniques in accordance with guidelines issued by the IAEA.

The material is manufactured according to a Quality System, registered to ISO 9001:2008 and approved by TÜV Nord. Certificate Registration Number: 44 100 115412.	Outokumpu Stainless AB Degerfors Stainless   JÖRGEN JOHANSSON Section Manager Quality Control
Approved acc. to AD2000-Merkblatt W0 by TÜV Nord Systems "Certified acc. to Pressure Equipment Directive (97/23/EC) by TÜV CERT-Certification body for pressure equipment of the TÜV NORD ; notified body, reg.-no. 0045."	
Reg.No.: 666001-8748 V.A.T.No.: SE5560011874801 Registered office: Stockholm, Sweden	

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