

51506 (11590)

COHQHMI

**MATERIAL CERTIFICATION REPORT and  
CERTIFICATION OF QUALITY CONFORMANCE**



175 Main Street  
Oil City PA 16301  
I (800) 458-7273

**Customer Address**  
ASA ALLOYS INC  
20 CHALLENGER CRESCENT  
SHERWOOD PARK AB T8H2R1  
CANADA

**Shipping Address**  
ASA ALLOYS INC  
20 CHALLENGER CRESCENT  
SHERWOOD PARK AB T8H2R1  
CANADA

**Print Date Time**  
30-Jan-2012 13:49  
**Certification ID**  
116351-1  
**Customer Order**  
P02:5883  
**Ship Note**  
114831  
**Sales Order**  
112274

Grade: 316L  
Specification: Type 316/316L (UNS S31600/S31603) - ASTM A262 practice E, ASTM A182/A182M-11, AMS 5648L, AMS 5653G, ASTM A193/A193M-11, (316), ASTM A320/A320M-11 (316), ASTM A479/A479M-11, ASTM A314-08, ASTM A479-01, ASTM A 276-10, NACE Std-MR0175-03, QQ-S-763F, ASTM A336/A336M-10a, ASME SA-182/SA-182M, ASME SA-336/SA-336M, ASME SA - 320/SA-320M, (316)ASME SA-479/SA-479M, ASTM A4 84/A484M, SA-193/A193M 2010 Edition and any additional specifications which may be listed below.

Condition: HOT ROLLED / HOT FORGED, ANNEALED  
Finish: ROUGH TURNED

Sales Order	Quantity	Heat	Lot ID	Weight	Size	Customer Mark
112274-6	1	51506	51506-2B	4.478 LB	Diam: 11.1590 in; Length: 159.1200 in	

Lot	Test	Result	Low Limit	High Limit
<b>SPECIFICATION RESULTS</b>				
FINAL LADLE CHEMISTRY FOR AIRMELT				
51506	C	0.016	0.000	0.030
51506	Mn	1.76	1.25	2.00
51506	P	0.025	0.000	0.040
51506	S	0.022	0.020	0.025
51506	Si	0.52	0.00	1.00
51506	Cr	16.43	16.00	18.00
51506	Ni	10.36	10.00	14.00
51506	Mo	2.14	2.00	3.00
51506	Cu	0.37	0.00	0.75
51506	N	0.082	0.000	0.100
51506	Co	0.17	0.00	0.20
<b>PASS / FAIL TESTS</b>				
51506-2B	Carb Net	PASS		
51506-2B	Macro Etch	PASS		
<b>REDUCTION AREA</b>				
51506-2B	LT (%)	78.5	50	999
<b>TENSILE</b>				
51506-2B	LT (PSI)	86000	75000	400000
<b>% YIELD</b>				
51506-2B	LT (PSI)	47000	30000	400000
<b>ELONGATION 4D</b>				
51506-2B	LT (%)	58.8	45	999
<b>BRINELL</b>				
51506-2B				

The recording of false, fictitious, or fraudulent statements or entries on this document may be punishable as a felony under Federal Statute. The above are true and correct results of tests on samples of the material. Results conform to the specification(s) listed above and are on record.

C049441

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ELECTRALLOY  
G. O. CARLSON PLATE



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P025883

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**Quality Statements:**

ASTM E1019-08, ASTM E572-02a (2006)e2 and ASTM E1086-08 are methods used to determine the chemical analysis for Fe Base (High Alloy) alloys utilizing XRF, OES and Combustion and Fusion Methods.

At time of shipment, items and/or material produced under this order have not come in contact with Mercury or its compounds.

Material represented was melted and manufactured in the USA

Material represented was not weld repaired.

Material represented was produced in accordance with the Electralloy Quality Control Program dated 08/23/2010, which meets the requirements of ISO9001(2008), MIL-I-45208A and ASME Code Section 3, Subsection NCA 3800.

The reported results represent the actual attributes of the material furnished and indicate full compliance with all applicable specification and contract requirements.

Material represented was ultrasonically inspected in accordance with ASTM A388 and found acceptable using a 1/8" flat bottom hole as the acceptance criteria.

Melting and Refining Source - Electralloy

Material represented was solution annealed at 1925 degrees F +/-25 degrees F, held 30 minutes per inch of thickness and water quenched.

The mechanical tests have been performed at Modern Industries, Materials Research Division located at 613 West 11th Street Erie, PA 16512-0399

Stainless Steel Bar, electric arc furnace melted, A.O.D. refined.

Meets EU Electrical "RoHS". Contains NO "WEEE" relevant substances. Complies with DFARS-225. I-Buy American Act-Supplies. HWRR = Minimum Hot Working Reduction Ratio. Electralloy only accepts residual and trace elements to the limits invoked by the specification and or customer. This document shall not be reproduced, except in full, without the written approval of Electralloy / GOC Plate. We hereby affirm that the reported results on this certification are correct and accurate. All tests and results and operations performed by (Electralloy/G.O. Carlson Plate) or its subcontractors are in compliance with the applicable material/customer specification(s).

The parties agree that when title transfers for the products subject to this agreement, or when the products are delivered to purchaser, whichever occurs first, responsibility for the submission of any required export or re-export licenses or related export control approvals for these products also transfers to purchaser. Any export license requirement under any applicable export control statute, regulation, or practice, from any U.S. government agency, including but not limited to the Department of Commerce's Bureau of Industry and Security, the Department of Treasury, Office of Foreign Assets Control, the U.S. Department of State, Directorate of Defense Trade Controls, and the Nuclear Regulatory Commission, are solely the responsibility of the purchaser. Further, purchaser warrants that it will comply with all applicable export and re-export controls related to these products.

**Name:** William A. Deets

**Title:** QC Technician/Works Inspector

**By:**

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