



49699 / 49699-3C

MATERIAL CERTIFICATION REPORT and CERTIFICATION OF QUALITY CONFORMANCE  ELECTRALLOY G. O. CARLSON PLATE 	Customer Address COPPER & BRASS SALES ACCOUNTS PAYABLE P.O. BOX 5116 SOUTHFIELD, MI 48086-511	Shipping Address COPPER & BRASS SALES 10648 WEST LITTLE YORK SUITE 104 HOUSTON, TX 77041	Print Date Time 24-Nov-2010 13:29 Certification ID 108481-1 Customer Order 5400080783	Ship Note 108446 Sales Order 107732
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Grade: 316L
Specification: Type 316/316L(UNS S31600/S31603) - ASTM A262 practice E, ASTM A182/A182M-07, AMS 5 648K, AMS 5653F ASTM A193/A193M-07,(316), ASTM A320/A320M-07 (316), ASTM A479/A479M-06a ASTM A314-97 (Reapproved 2002) , ASTM A473-01, ASTM A 276-06, NACE Std-MR0175-99, QQ-S-763F , ASTM A336/A336M-07,ASME SA-182/SA-182M, ASME SA-336/SA-336 M, ASME SA - 320/SA-320MO2, (316)ASME SA-479/SA-479M,ASTM A4 84/A484M-06b,SA-193M-94 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
107732-1	1	49699	49699-3C	6,050 LB	Length: 157.2500 in; Diam: 13.0700 in	

Lot	Test	Result	Low Limit	High Limit	GRAIN SIZE
SPECIFICATION RESULTS					49699-3C Grain Size TT (GRS) 3 0 9999
FINAL LADLE CHEMISTRY FOR AIRMELT					ASTM PRACTICES - ASTM A262
49699	C	0.022	0.000	0.030	49699-3C Prac E LT PASS
49699	Mn	1.78	1.25	2.00	
49699	P	0.029	0.000	0.040	
49699	S	0.023	0.020	0.025	
49699	Si	0.50	0.00	1.00	
49699	Cr	16.34	16.00	18.00	
49699	Ni	10.24	10.00	14.00	
49699	Mo	2.10	2.00	3.00	
49699	Cu	0.40	0.00	0.75	
49699	N	0.079	0.000	0.100	
49699	Co	0.18	0.00	0.20	
PASS / FAIL TESTS					
49699-3C	Carb Net	PASS			
49699-3C	Macro Etch	PASS			
REDUCTION AREA					
49699-3C	LT (%)	75	50	999	
TENSILE					
49699-3C	LT (PSI)	87000	75000	400000	
.2% YIELD					
49699-3C	LT (PSI)	47000	30000	400000	
ELONGATION 4D					
49699-3C	LT (%)	53	45	999	
BRINELL					
49699-3C	(BHN)	143	140	200	

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



ELECTRALLOY
G. O. CARLSON PLATE



175 Main Street
Oil City PA 16301
1 (800) 458-7273

Customer Address
COPPER & BRASS SALES
ACCOUNTS PAYABLE
P.O. BOX 5116
SOUTHFIELD, MI 48086--511

Shipping Address
COPPER & BRASS SALES
10648 WEST LITTLE YORK
SUITE 104
HOUSTON, TX 77041

Print Date Time	Ship Note
24-Nov-2010 13:29	108446
Certification ID	
108481-1	
Customer Order	Sales Order
5400080783	107732

Quality Statements:

ASTM E1019-03, ASTM E572-02a, and ASTM E1086-94 are the methods used to determine the chemical analysis for Fe base (High Alloy), Ni base and Cu base alloys.
At time of shipment, items and/or material produced under this order have not come in contact with Mercury or its compounds.
Material Certification conforms to Certificate 3.1 as in EN 10204:2004
Material represented was melted and manufactured in the USA
Material represented was not weld repaired.
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 solution annealed at 1925 degrees F +/-25 degrees F, held 30 minutes per inch of thickness and water quenched.
Material represented was ultrasonically inspected in accordance with ASTM A388 and found acceptable using a 1/8" flat bottom hole as the acceptance criteria.
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 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-225.1-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).

Name: William A. Deets

Title: QC Technician/Works Inspector

By: