

# Certificate of Test

## E140906

HEAT E140906 ORDER 651697/ 01 BOL 0229053 \* CERTIFICATION \* 09/11/14

SHIP TO:  
COPPER & BRASS SALES  
19044 95A AVE  
SURREY BC V4N 4P2  
SURREY

000000000

----- YOUR ORDER & DATE -----  
5400225414 6/03/14 CUST# 0316001 CUST TAG#SSRD00252

----- ITEM DESCRIPTION -----  
GRADE (316L/316) Ship Condition CONDA  
Size 316L RND CFA CONDA (2.2500 x 144.000 RL  
Country of Melt: UNITED KINGDOM Country of Mfg.: (UNITED STATES)  
NAFTA Country of Origin is Country of Melt

No weld repair  
Free of mercury contamination, Free of radiation contamination  
No WEEE relevant substances; Meets EU electrical ROHS

Total Bundles 1 Total Weight 1632 Approx. Hot Red. Ratio 8:1

WO 2052900 Bundles: 1K

----- SPECIFICATIONS -----  
MEG TO FINISHED BAR IN THE USA FROM BILLETS IMPORTED UNITED KINGDOM  
AMS 5648L, 5653H SAE AMS-QQ-S-763C  
ASME SA479 2007-2013 Ed. ASTM A182 13a  
ASTM A262 13 Practice A/E ASTM A276 13a  
ASTM A479/A479M 14 ASTM A484 14  
ASTM E112 96 ASTM A320 11 B8M Class 1  
ASTM A193 12b B8M DIN 50049/EN 10204 Type 3.1  
DFARS 252.225.7009 10/4/11 Federal Spec QQ-S-763F  
Copper & Brass 316L MAXX NACE MR0175-09, mid-rad hard  
Solution Anneal at 1900F minimum/ Water Quench

----- MECHANICAL & OTHER TESTS -----  
Hardness as shipped 160 HB  
Hardness as shipped ( 82 HRB )  
Grain size 7.0 Tensile strength, KSI (MPa) 89.2 ( 615 )  
Micro OK 0.2% Yield Strngth, KSI (MPa) 38.4 ( 265 )  
Intergranular corrosion OK  
Elongation % in 4D 61.7  
Reduction of area % 77.7

----- CHEMICAL COMPOSITION -----  
Carbon (C) .017 Manganese (Mn) 1.680  
Phosphorus (P) .030 Sulphur (S) .025  
Silicon (Si) .360 Chromium (Cr) 16.730 ✓  
Nickel (Ni) 10.050 ✓ Cobalt (Co) .194  
Copper (Cu) .370 Moly (Mo) 2.020 ✓  
Nitrogen (N) .074 Columbium (Cb) .008  
Titanium (Ti) .002 Aluminum (Al) .005  
Tin (Sn) .009 Tantalum (Ta) .001  
Vanadium (V) .040 Tungsten (W) .064  
Columbium/  
Tantalum (Cb+Ta) .009  
Iron (Fe) Balance  
Melt Practice EAF  
Refining Practice AOD  
De-long Ferrite 1.7

Knowingly & willfully falsifying or concealing a material act on this form, or making false, fictitious or fraudulent statements or representations herein could constitute a felony punishable under federal statutes. We hereby certify that the test results shown in this report are correct and accurate as contained in the records of the company and are in compliance with the specifications, codes, and standards listed above.

M.F. Marcanio, Quality Manager

