



Certificate of Test

HEAT E121906 ORDER 636956/ 17 BOL 0221086 * CERTIFICATION * 02/11/13

SHIP TO:
COPPER AND BRASS SALES
8001 THYSSENKRUPP PARKWAY

NORTHWOOD 436190000

----- YOUR ORDER & DATE -----
5400168540 2/11/13 CUST# 0316001 CUST TAG#SSRD00476

----- ITEM DESCRIPTION -----
GRADE 316L/316 Ship Condition CONDA
Size 316L RND CFA CONDA .8750 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 2186

WO 2039033 Bundles: 1D

----- SPECIFICATIONS -----
MFG TO FINISHED BAR IN THE USA FROM BILLETS IMPORTED UNITED KINGDOM
AMS 5648L, 5653H SAE AMS-QQ-S-763B
ASME SA479 E07-E10 A11 ASTM A182 12
ASTM A262 10 Practice A/E ASTM A276 10
ASTM A479/A479M 12 ASTM A484 12
ASTM E112 96 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

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped 167 HB
Hardness as shipped (84 HRB)
Hardness as tested 00
Grain size 7.0 Tensile strength,KSI (MPa) 85.8 (592)
Micro OK 0.2% Yield Strngth,KSI (MPa) 36.8 (254)
Interganular corrosion OK
Elongation % in 4D 53.5
Reduction of area % 52.2

----- CHEMICAL COMPOSITION -----
Carbon (C) .017 Manganese (Mn) 1.710
Phosphorus (P) .032 Sulphur (S) .025
Silicon (Si) .370 Chromium (Cr) 16.740
Nickel (Ni) 10.060 Cobalt (Co) .290
Copper (Cu) .530 Moly (Mo) 2.020
Nitrogen (N) .073 Columbium (Cb) .013
Titanium (Ti) .002 Aluminum (Al) .004
Tin (Sn) .008 Boron (B) .001
Tantalum (Ta) .003 Vanadium (V) .040
Tungstem (W) .066 .000
Columbium/
Tantalum (Cb+Ta) .016
Iron (Fe) Balance
Melt Practice EAF
Refining Practice AOD
De-long Ferrite

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