



Certificate of Test E121318

HEAT E121318 ORDER 634143/ 12 BOL 0219540 * CERTIFICATION * 10/18/12

SHIP TO:
COPPER AND BRASS SALES
8001 THYSSENKRUPP PARKWAY

NORTHWOOD 436190000

----- YOUR ORDER & DATE -----
5400156573 10/18/12 CUST# 0316001 CUST TAG#SSRD00634

----- ITEM DESCRIPTION -----
GRADE 316L/316 Ship Condition CONDA
Size 316L RND CFA CONDA 2.1250 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 2232

WO 2036602 Bundles: 1E

----- SPECIFICATIONS -----
MFG TO FINISHED BAR IN THE USA FROM BILLETS IMPORTED UNITED KINGDOM
AMS 5648L, 5653G 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 11 ASTM A484 11
ASTM E112 96 ASTM A320 11 B8M Class 1
ASTM A193 11 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

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped 153 HB
Hardness as shipped (80 HRB)
Grain size 6.0 Tensile strength, KSI (MPa) 84.3 (581)
Micro OK 0.2% Yield Strngth, KSI (MPa) 35.6 (245)
Intergranular corrosion OK
Elongation % in 4D 57.0
Reduction of area % 76.3

----- CHEMICAL COMPOSITION -----
Carbon (C) .016 Manganese (Mn) 1.640
Phosphorus (P) .031 Sulphur (S) .027
Silicon (Si) .380 Chromium (Cr) 16.640
Nickel (Ni) 10.060 Cobalt (Co) .305
Copper (Cu) .350 Moly (Mo) 2.050
Nitrogen (N) .077 Columbium (Cb) .012
Titanium (Ti) .002 Aluminum (Al) .004
Tin (Sn) .007 Boron (B) .001
Tantalum (Ta) .006 Vanadium (V) .070
Tungstem (W) .102
Columbium/ Tantalum (Cb+Ta) .018
Iron (Fe) Balance
Melt Practice EAF
Refining Practice AOD
De-long Ferrite

These certifications are for:
Delivery #: 2402133714
Date: 10-31-12
Qty: 3pc
By: *Vicki Jeyra*
Quality check

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

M.F. Marcanio