



# Certificate of Test

## E130927

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HEAT E130927 ORDER 644700/ 02 BOL 0224455 \* CERTIFICATION \* 10/03/13

SHIP TO:  
COPPER AND BRASS SALES  
12321 CUTTEN ROAD

HOUSTON 770660000

----- YOUR ORDER & DATE -----  
5400198303 10/03/13 CUST# 0316001 CUST TAG#SSRD00372

----- ITEM DESCRIPTION -----  
GRADE 316L/316 Ship Condition CONDA  
Size 316L RND HEART CONDA 6.2500 x 144.000 RL  
Country of Melt: UNITED KINGDOM Country of Mfg.: SWEDEN  
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 3 Total Weight 7935

NO 2042147 Bundles: 1E, 1F, 1G

----- SPECIFICATIONS -----  
AMS 5648L, 5653H SAE AMS-QQ-S-763B  
ASME SA479 E07-E10 All ASTM A182 13  
ASTM A262 10 Practice A/E ASTM A276 13  
ASTM A479/A479M 13 ASTM A484 13  
ASTM E112 96 ASTM A320 11 B8M Class 1  
ASTM A193 12b B8M DIN 50049/EN 10204 Type 3.1  
EPARS 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 (141 HB )  
Hardness as shipped 76 HRB  
Grain size 5.0 Tensile strength, KSI (MPa) 82.2 ( 567)  
Micro OK 0.2% Yield Strngth, KSI (MPa) 34.4 ( 237)  
Intergranular corrosion OK  
Elongation % in 4D 59.0  
Reduction of area % 76.0

----- CHEMICAL COMPOSITION -----  
Carbon (C) .017 Manganese (Mn) 1.660  
Phosphorus (P) .039 Sulphur (S) .024  
Silicon (Si) .270 Chromium (Cr) 17.450  
Nickel (Ni) 10.140 Cobalt (Co) .237  
Copper (Cu) .480 Moly (Mo) 2.100  
Nitrogen (N) .084 Columbium (Cb) .010  
Titanium (Ti) .002 Aluminum (Al) .004  
Tin (Sn) .011 Boron (B) .001  
Tantalum (Ta) .012 Vanadium (V) .060  
Tungstem (W) .060  
Columbium/  
Tantalum (Cb-Ta) .022  
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