

HEAT E141270 ORDER 655271/ 01 BOL 0229682 \* CERTIFICATION \* 10/24/14

SHIP TO:  
COPPER & BRASS SALES  
19044 95A AVE  
SURREY BC V4N 4P2  
SURREY 000000000

----- YOUR ORDER & DATE -----  
5400238931 10/20/14 CUST# 0316001 CUST TAG#SSRD00244

----- ITEM DESCRIPTION -----  
GRADE 316L/316 Ship Condition CONDA  
Size 316L RND HRART CONDA 11.0000 x 144.000 RL  
Country of Melt: UNITED KINGDOM Country of Mfg.: UNITED KINGDOM  
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 2 Total Weight 8649 Approx. Hot Red. Ratio 6:1

WO 2055563 Bundles: 1B, 1D

----- SPECIFICATIONS -----  
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

----- MECHANICAL & OTHER TESTS -----  
Hardness as shipped (149 HB )  
Hardness as shipped 78 HRB  
Grain size 3.0 Tensile strength, KSI (MPa) 79.0 ( 545)  
Micro OK 0.2% Yield Strngth, KSI (MPa) 38.9 ( 268)  
Intergranular corrosion OK  
Elongation % in 4D 59.6  
Reduction of area % 77.0

----- CHEMICAL COMPOSITION -----  
Carbon (C) .020 Manganese (Mn) 1.620  
Phosphorus (P) .034 Sulphur (S) .025  
Silicon (Si) .480 Chromium (Cr) 16.740  
Nickel (Ni) 10.150 Cobalt (Co) .190  
Copper (Cu) .350 Moly (Mo) 2.040  
Nitrogen (N) .080 Columbium (Cb) .017  
Titanium (Ti) .002 Aluminum (Al) .006  
Tin (Sn) .009 Vanadium (V) .050  
Tungsten (W) .051  
Columbium/  
Tantalum (Cb+Ta) .017  
Iron (Fe) Balance  
Melt Practice EAF  
Refining Practice AOD  
De-long Ferrite 1.6

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

Outokumpu Stainless Bar, LLC  
3043 Crenshaw Pkwy  
Richburg, SC 29729

*M.F. Marcanio*

From:  
Cust. Del.: 2404492879  
CstAr CstOr 2016-640  
Wgt.: 86 LB Date 04/20/2016

*Tomas Sanchez*