



PRODEC QUALITY

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HEAT E171011 ORDER 675152/ 01 BOL 0241022 \* CERTIFICATION \* 10/18/17

SHIP TO:  
COPPER AND BRASS SALES  
12321 CUTTEN ROAD

HOUSTON 770660000

----- YOUR ORDER & DATE -----  
5400356266 6/21/17 CUST# 0316001 CUST TAG#SSRD00268

----- ITEM DESCRIPTION -----  
GRADE 316L/316 PRODEC QUALITY Ship Condition CONDA  
Size 316L RND HRART CONDA 3.7500 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 1 Total Weight 3980 Approx. Hot Red. Ratio 15:1

WO 2077400 Bundles: 1D

----- SPECIFICATIONS -----  
AMS 5648M, 5653H SAE AMS-QQ-S-763D  
ASME SA479 2007-2015 Ed. ASTM A182/A182M 16a  
ASTM A262 15 Practice A/E ASTM A276-17  
ASTM A479/A479M 17 ASTM A484/A484M 16  
ASTM E112-13 ASTM A320 17a B8M Class 1  
ASTM A193 16 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  
NACE MR0103-10 UNS S31600, AISI 316  
UNS S31603, AISI 316L  
Solution Anneal 1850F minimum/ Air Cool

----- MECHANICAL & OTHER TESTS -----  
Hardness as shipped (157 HB )  
Hardness as shipped 81 HRB  
Grain size 6.0 Tensile strength, KSI (MPa) 89.5 ( 617)  
Micro OK 0.2% Yield Strength, KSI (MPa) 43.4 ( 299)  
Intergranular corrosion OK  
Elongation % in 4D 52.0  
Reduction of area % 74.0

----- CHEMICAL COMPOSITION -----  
Carbon (C) .016 Manganese (Mn) 1.650  
Phosphorus (P) .032 Sulphur (S) .024  
Silicon (Si) .410 Chromium (Cr) 16.710  
Nickel (Ni) 10.100 Cobalt (Co) .286  
Copper (Cu) .550 Moly (Mo) 2.040  
Nitrogen (N) .081  
Iron (Fe) Balance  
Melt Practice EAF  
Refining Practice AOD  
De-long Ferrite 1.1

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: TK Materials CA, Ltd.

Cust. M2M MACHINING

Del.: 2405550400

CstAr

CstOr 2017-822

Wgt.: 262 LB

Date 11/09/2017

*Tomas Sanchez*