



Certificate of Test

PRODEC QUALITY

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HEAT E161177 ORDER 670206/ 01 BOL 0237388 * CERTIFICATION * 10/31/16

SHIP TO:
COPPER AND BRASS SALES
5230 ASHLAND WAY

FRANKLIN 531320000

----- YOUR ORDER & DATE -----
5400326605 10/26/16 CUST# 0316001 CUST TAG#SSRD00252

----- ITEM DESCRIPTION -----
GRADE 316L/316 PRODEC QUALITY Ship Condition CONDA
Size 316L RND CFA CONDA 2.2500 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 2196 Approx. Hot Red. Ratio 8:1

WO 2072391 Bundles: 1K

----- SPECIFICATIONS -----
MFG TO FINISHED BAR IN THE USA FROM BILLETS IMPORTED UNITED KINGDOM
AMS 5648M, 5653H SAE AMS-QQ-S-763D
ASME SA479 2007-2015 Ed. ASTM A182 16a
ASTM A262 15 Practice A/E ASTM A276-16a
ASTM A479/A479M 16a ASTM A484 16
ASTM E112 96 ASTM A320 15a 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
Sol Anneal at 1900F min/ Water Quench

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped 160 HB
Hardness as shipped (85 HRB)
Grain size 7.5 Tensile strength, KSI (MPa) 88.3 (609)
Micro OK 0.2% Yield Strngth, KSI (MPa) 39.0 (269)
Intergranular corrosion OK
Elongation % in 4D 51.0
Reduction of area % 73.9

-- Continued --

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

From: TK Materials CA, Ltd.

Cust. ATLANTIS INDUSTRIES

Del.: 2405464471

CstAr

CstOr Bozo - Sept 25, 2017

Wgt.: 166.154 LB

Date 09/26/2017

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----- CHEMICAL COMPOSITION -----			
Carbon (C)	.017	Manganese (Mn)	1.720
Phosphorus (P)	.032	Sulphur (S)	.029
Silicon (Si)	.410	Chromium (Cr)	16.700
Nickel (Ni)	10.050	Cobalt (Co)	.256
Copper (Cu)	.440	Moly (Mo)	2.010
Nitrogen (N)	.076	Columbium (Cb)	.018
Titanium (Ti)	.006	Aluminum (Al)	.006
Tin (Sn)	.010	Tantalum (Ta)	.002
Vanadium (V)	.060	Tungsten (W)	.087
Columbium/			
Tantalum (Cb+Ta)	.020		
Iron (Fe)	Balance		
Melt Practice	EAF		
Refining Practice	AOD		
De-long Ferrite	1.5		

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

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Thomas Sanchez