

P.O. Number 5334
 Part Number:
 3 F08E 40 5T0. 770-D9V10



Certificate of Test

PRODEC QUALITY Page: 1

HEAT E180310 ORDER 681451/ 10 BOL 0244579 * CERTIFICATION * 09/04/18

SHIP TO:
 COPPER AND BRASS SALES
 800 THYSSENKRUPP PARKWAY

NORTHWOOD 436190000

----- YOUR ORDER & DATE -----
 5400398808 4/19/18 CUST# 0316001 CUST TAG#SSRD00628

----- ITEM DESCRIPTION -----
 GRADE 304L/304 PRODEC QUALITY Ship Condition CONDA
 Size 304L RND HRART CONDA 5.2500 x 144.000 RL
 Country of Melt: UNITED KINGDOM Country of Mfg.: SWEDEN
 No weld repair
 Free of mercury contamination, Free of radiation contamination
 No WEEE relevant substances; Meets RoHS-2011/65/EU and 2015/863

Total Bundles 1 Total Weight 2655 Approx. Hot Red. Ratio 8:1

WO 2086068 Bundles: 1A

----- SPECIFICATIONS -----
 AMS 5639J, 5647K SAE AMS-QQ-S-763D
 UNS S30400, AISI 304 ASME SA479 2017 Ed.
 UNS S30403, AISI 304L ASTM A276/A276M 17
 ASTM A479/A479M 18 ASTM A484/A484M 16
 DIN 50049/EN 10204 Type 3.1 Solution Annealed Condition
 Federal Spec QQ-S-763F Copper & Brass 304L MAXX
 ASTM A182/A182M 18 ASTM F899 12b
 NACE MR0103-10 NACE MR0175-09, ISO 15156:09

----- MECHANICAL & OTHER TESTS -----
 Hardness as shipped (169 HB)
 Hardness as shipped 86 HRB
 Grain size 6.0 Tensile strength, KSI (MPa) 90.6 (625)
 Micro OK 0.2% Yield Strngth, KSI (MPa) 40.9 (282)
 Intergranular corrosion OK
 Elongation % in 4D 56.0
 Reduction of area % 73.0

----- CHEMICAL COMPOSITION -----

Carbon (C)	.018	Manganese (Mn)	1.600
Phosphorus (P)	.032	Sulphur (S)	.027
Silicon (Si)	.420	Chromium (Cr)	18.660
Nickel (Ni)	8.090	Cobalt (Co)	.184
Copper (Cu)	.470	Moly (Mo)	.430
Nitrogen (N)	.084	Columbium (Cb)	.030
Titanium (Ti)	.004	Aluminum (Al)	.005
Tin (Sn)	.011	Boron (B)	.001
Tantalum (Ta)	.006	Vanadium (V)	.070
Tungsten (W)	.070		
Columbium/ Tantalum (Cb+Ta)	.036		
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. Marcano, Quality Manager

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

M.F. Marcano

From: TK Materials CA, Ltd.

Cust. LIBERTAS INDUSTRIES INC

Del.: 2407208003

CstAr

CstOr PO#CPASN3740

Tomas Sanchez