

Rolled Alloys PO 76731 WO 5576/2 CPA 2 FOEL 40/80

**OUTO
KUMPU**

**Certificate of Test
E110695**

HEAT E110695 ORDER 622194/ 01 BOL 0213064 * CERTIFICATION * 07/26/11

SHIP TO:
ROLLED ALLOYS INC.
30 BAKER HOLLOW RD
(860)687-2157 MUST MAKE APPT
WINDSOR 060950000

----- YOUR ORDER & DATE -----
H20502 7/26/11 CUST# 0773001 CUST TAG#335045300001-01

----- ITEM DESCRIPTION -----
GRADE 316L/316 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 1444

WO 2020784 Bundles: 1C

----- SPECIFICATIONS -----
AMS 5648K, 5653F SAE AMS-QQ-S-763B
ASME SA182 E07, A07-09, E10 ASME SA193 E10
ASME SA479 E07-E10 ASME SA320 B8M CL1 E10
ASTM A182 10a ASTM A262 10 Practice A/E
ASTM A276 10 ASTM A314 97
ASTM A479/A479M 11 ASTM A484 11
ASTM A320 11 B8M Class 1 ASTM A193 11 B8M
NACE MR0175-03, ISO 15156:03 DFARS 252.225.7014 6/05
Federal Spec QQ-S-763F UNS S31600, AISI 316
UNS S31603, AISI 316L Prodec Quality
EN 10204 Type 3.1 Document RA-53 RAM 316L
EN 10272 GR 1.4404 chemistry Process Annealed 1750F min

*ok
12/20/11*

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped (160 HB)
Hardness as shipped 82 HRB
Grain size 6.5
Micro OK
Intergranular corrosion OK
Hardness as tested 00
Tensile strength, KSI (MPa) 88.9 (613)
0.2% Yield Strngth, KSI (MPa) 44.1 (304)
Elongation % in 4D 51.0
Reduction of area % 76.0

----- CHEMICAL COMPOSITION -----
Carbon (C) .018
Phosphorus (P) .034
Silicon (Si) .331
Nickel (Ni) 10.070 ✓
Copper (Cu) .495
Nitrogen (N) .078
Titanium (Ti) .002
Tin (Sn) .011
Vanadium (V) .060
Columbium/ Tantalum (Cb+Ta) .011
Iron (Fe) Balance
Melt Practice EAF
Refining Practice AOD
De-long Ferrite
Manganese (Mn) 1.610
Sulphur (S) .022
Chromium (Cr) 17.250 ✓
Cobalt (Co) .154
Moly (Mo) 2.040 ✓
Columbium (Cb) .011
Aluminum (Al) .005
Boron (B) .005
Boron (B) .000
HEAT# E110695
TRACER# 240840

ROLLED ALLOYS QUALITY ASSURANCE
Approved G. SALTER
Date: 8-1-11

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, Inc.
3043 Crenshaw Pkwy.
Richburg, SC 29729

M.F. Marcanio