

E110863

**OUTOKUMPU**

# Certificate of Test

*Rolled Alloys* PO 76585 W05544 C/A 2-40

HEAT E110863

ORDER 623527/02 BOL 0213624 \* CERTIFICATION \* 08/30/11

SHIP TO:  
ROLLED ALLOYS BAR CENTER  
711 PHOENIX LAKE AVENUE

STREAMWOOD

601070000

*11/15/11*

I03027

YOUR ORDER & DATE 8/30/11 CUST# 0773001 CUST TAG#835045300001-02

ITEM DESCRIPTION  
Ship Condition CONDA  
GRADE 316L/316  
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 2 Total Weight 2882

WO 2021960 Bundles: 1A, 1B

AMS 5648K, 5653F  
ASME SA182 E07-E10, Add. 11a  
ASME SA479 E07-E10 11a  
ASTM A182 10a  
ASTM A276 10  
ASTM A479/A479M 11  
ASTM A320 11 B8M Class 1  
NACE MR0175-03, ISO 15156:03  
Federal Spec QQ-S-763F  
UNS S31603, AISI 316L  
EN 10204 Type 3.1 Document  
EN 10272 GR 1.4404 chemistry

### SPECIFICATIONS

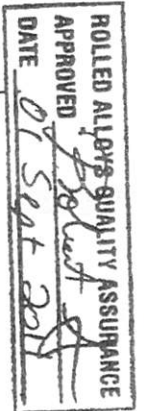
SAE AMS-QQ-S-763B  
ASME SA193 E10 11a  
ASME SA320 B8M CL1 E10 11a  
ASTM A262 10 Practice A/E  
ASTM A314 97  
ASTM A484 11  
ASTM A193 11 B8M  
DFARS 252.225.7014 6/05  
UNS S31600, AISI 316  
Prodec Quality  
RA-53 RAM 316L  
Process Annealed 1750F min

### MECHANICAL & OTHER TESTS

Hardness as shipped (160 HB)  
Hardness as shipped 82 HRB  
Grain size 6.0  
Micro OK  
Intergranular corrosion OK  
Hardness as tested 00  
Tensile strength, KSI (MPa) 88.9 (613)  
0.2% Yield Strength, KSI (MPa) 43.9 (303)  
Elongation % in 4D 50.0  
Reduction of area % 74.0

### CHEMICAL COMPOSITION

Carbon (C)	.020	Manganese (Mn)	1.590
Phosphorus (P)	.027	Sulphur (S)	.027
Silicon (Si)	.340	Chromium (Cr)	17.180 ✓
Nickel (Ni)	10.050 ✓	Cobalt (Co)	.365
Copper (Cu)	.429	Moly (Mo)	2.040 ✓
Nitrogen (N)	.082	Columbium (Cb)	.024
Titanium (Ti)	.002	Aluminum (Al)	.004
Tin (Sn)	.006	Aluminum (Al)	.007
Vanadium (V)	.080	Boron (B)	.000
Columbium/ Tantalum (Cb+Ta)	.024		
Iron (Fe)	Balance		
Melt Practice	EAF		
Refining Practice	AOD		
De-long Ferrite			



*5 ✓*  
*100*

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

*M.F. Marcanio*