

Rolled Alloys  
PO 77071  
WO 5712

CPA  
2 FORN 40

E 101409

**OUTOKUMPU**

# Certificate of Test

HEAT E101409 ORDER 626792/ 03 BOL 0216710 \* CERTIFICATION \* 04/04/12

SHIP TO:  
ROLLED ALLOYS BAR CENTER  
711 PHOENIX LAKE AVENUE

STREAMWOOD 601070000

----- YOUR ORDER & DATE -----  
I03329 4/04/12 CUST# 0773001 CUST TAG#835045300001-03

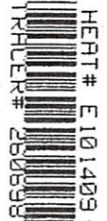
----- ITEM DESCRIPTION -----  
GRADE 316L/316 Ship Condition CONDA  
Size 316L RND HRART CONDA 3.7500 x 144.000 RL  
Country of Melt: SWEDEN Country of Mfg.: SWEDEN  
NAFTA Country of Origin is Country of Melt

No weld repair  
Free of mercury contamination, Free of radiation contamination  
No WEEE relevant substances; Meets EU electrical ROHS

Total Bundles 1 Total Weight 2538

WO 2031901 Bundles: 1F

AMS 5648L, 5653G	SAE AMS-QQ-S-763B
ASME SA182 E07-E10, Add. 11a	ASME SA193 E10 A11a
ASME SA479 E07-E10 A11	ASME SA320 B8M CL1 E10 A11a
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 252.225.7009 10/4/11
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



----- MECHANICAL & OTHER TESTS -----  
Hardness as shipped (148 HB )  
Hardness as shipped 78 HRB

Grain size	5.0	Hardness as tested	00
Micro	OK	Tensile strength, KSI (MPa)	80.2 ( 553)
Intergranular corrosion	OK	0.2% Yield Strngth, KSI (MPa)	38.3 ( 264)
		Elongation % in 4D	62.0
		Reduction of area %	76.0

----- CHEMICAL COMPOSITION -----			
Carbon (C)	.023	Manganese (Mn)	1.700
Phosphorus (P)	.034	Sulphur (S)	.027
Silicon (Si)	.392	Chromium (Cr)	16.830 ✓
Nickel (Ni)	10.080 ✓	Cobalt (Co)	.257 ✓
Copper (Cu)	.457	Moly (Mo)	2.060 ✓
Nitrogen (N)	.082	Columbium (Cb)	.018
Titanium (Ti)	.001	Alumirum (Al)	.004
Tin (Sn)	.009	Tantalum (Ta)	.003
Vanadium (V)	.060	Tungstem (W)	.060
Columbium/ Tantalum (Cb+Ta)	.021		
Iron (Fe)	Balance		
Melt Practice	EMF		
Refining Practice	AOD		
De-long Ferrite			

ROLLED ALLOYS QUALITY ASSURANCE  
APPROVED  
DATE 4/9/2012

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  
Scanned 7-8