

RA 0077422 Inventory CPA 3-40/80

166.375"

**OUTOKUMPU**

**Certificate of Test**  
**E120541**

HEAT E120541 ORDER 633242/ 01 BOL 0218612 \* CERTIFICATION \* 08/15/12

SHIP TO:  
ROLLED ALLOYS BAR CENTER  
711 PHOENIX LAKE AVENUE

STREAMWOOD 601070000

*OK*  
*9/17/12*

----- YOUR ORDER & DATE -----  
104127 8/15/12 CUST# 0773001 CUST TAG#835045701001-01

----- ITEM DESCRIPTION -----  
GRADE 316L/316 Ship Condition CONDA  
Size 316L RND HRART CONDA 5.2500 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 2 Total Weight 6390

WO 2031716 Bundles: 1S, 1T

AMS 5648L, 5653G	SPECIFICATIONS	SAE AMS-QQ-S-763B
ASME SA182 E07-E10, Add. 11a		ASME SA193 E10 A11a
ASME SA479 E07-E10 All		ASME SA320 B8M CL1 E10 A11a
ASTM A182 12		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 MR0175-09 ISO 15156:09		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

ROLLED ALLOYS QUALITY ASSURANCE  
APPROVED  
DATE Aug 21, 2012

----- MECHANICAL & OTHER TESTS -----			
Hardness as shipped (150 HB )		Hardness as tested	00
Hardness as shipped 79 HRB		Tensile strength, KSI (MPa)	86.0 ( 593)
Grain size 6.0		0.2% Yield Strngth, KSI (MPa)	38.6 ( 266)
Micro OK		Elongation % in 4D	53.0
Intergranular corrosion OK		Reduction of area %	75.0

----- CHEMICAL COMPOSITION -----			
Carbon (C) .021		Manganese (Mn) 1.610	
Phosphorus (P) .038		Sulphur (S) .024	
Silicon (Si) .330		Chromium (Cr) 17.350 ✓	
Nickel (Ni) 10.140 ✓		Cobalt (Co) .253	
Copper (Cu) .470		Moly (Mo) 2.030 ✓	
Nitrogen (N) .077		Columbium (Cb) .020	
Titanium (Ti) .001		Aluminum (Al) .002	
Tin (Sn) .009		Boron (B) .001	
Tantalum (Ta) .004		Vanadium (V) .070	
Tungstem (W) .070			.000
Columbium/			
Tantalum (Cb+Ta) .024			
Iron (Fe) Balance			
Melt Practice EAF			
Refining Practice AOD			
De-long Ferrite			

HEAT # E120541  
ROLLED # 2031716

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.

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

M.F. Marcanio, Quality Manager

*M.F. Marcanio*