73878

OUTOKUMPU

Certificate of Test

****
* CERTIFICATION *
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HEAT E82101 ORDER 606389/ 02 BOL 0203642 BUNDLE 2001423/1B 08/25/09

SHIP TO:
COPPER & BRASS SALES
5 STERLING DRIVE

WALLINGFORD 064921843

E82101

---------- YOUR ORDER & DATE ----------
5400031546 8/25/09 CUST# 0316001 CUST TAG#SSRD00268

---------- 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 Bundle Weight 2326

---------- SPECIFICATIONS ----------

AMS 5648K, 5653F	SAE AMS-QQ-S-763B
ASME SA479 E07, A07 & A08	ASTM A182 09
ASTM A262 02A PRACTICE A/E	ASTM A276 08A
ASTM A479/A479M 08	ASTM A484 08
ASTM E112 96	ASTM A320 08 B8M CLASS 1
ASTM A193 09 B8M	DIN 50049/EN 10204 3.1B
DFARS 252.225.7014 6/05	FEDERAL SPEC. QQ-S-763F

---------- MECHANICAL & OTHER TESTS ----------

Hardness as shipped	(159 HB)		
Hardness as shipped	82 HRB		
Grain size	6.5	Tensile strength,KSI (MPa)	88.5 (610)
Micro	OK	0.2% Yield Strngth,KSI(MPa)	42.2 (291)
Intergranular corrosion	OK		
Macro	OK	Elongation % in 4D	57.0
		Reduction of area %	75.0
		Charpy (ft lb) 0 0 0 Avg	71

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

Carbon	(C)	.017	Manganese	(Mn)	1.620
Phosphorus	(P)	.035	Sulphur	(S)	.025
Silicon	(Si)	.300	Chromium	(Cr)	17.300
Nickel	(Ni)	10.170	Cobalt	(Co)	.198
Copper	(Cu)	.464	Moly	(Mo)	2.030
Nitrogen	(N)	.083	Columbium	(Cb)	.016
Titanium	(Ti)	.003	Aluminum	(Al)	.005
Tin	(Sn)	.010	Tantalum	(Ta)	.005
Vanadium	(V)	.070			.000
Columbium/ Tantalum	(Cb+Ta)	.021			
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. Marcanio, Quality Manager

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

M.F. Marcanio