E81048

OUTOKUMPU

Certificate of Test

****
* CERTIFICATION *
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HEAT E81048 ORDER 0501799/001 SON D68756 BOL 0151471 TAG 2008817 09/16/08

SHIP TO:
COPPER & BRASS SALES
415 STATE PARKWAY

SCHAUMBURG IL 60173

---------- YOUR ORDER & DATE ----------

CY2267	9/16/08	CUST# COPBRA01	CUST TAG#399422-5

---------- ITEM DESCRIPTION ----------

GRADE 316L/316
Size 316L HRART RND BAR 6-1/4 STD
Ship Condition A

Country of Melt: BRI
Country of Mfg.: SWE
NAFTA Country of Origin is Country of Melt

Total Bundles 2 SON Weight 5130

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

AMS 5648K, 5653F
ASME SA479 E07
ASTM A262 02A PRACTICE A/E
ASTM A479 06A
ASTM E112 96
DFARS 252.225.7014 6/05
SOLUTION ANNEALED CONDITION
NO WELD REPAIR
SAE-AMS QQ-S-763B
ASTM A182-07A CHEMISTRY
ASTM A276 08
ASTM A484 06B
DIN 50049/EN 10204 3.1B
FEDERAL SPEC. QQ-S-763F
FREE OF CONT. CARBIDE NETWORK
FREE OF MERCURY CONTAMINATION

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

Test Condition	A		
Hardness as shipped	(146 HBW)		
Hardness as shipped	78 HRBS		
Grain size	5.0	Tensile strength,KSI (MPa)	84.8 (585)
Micro	OK	0.2% Yield Strngth,KSI(MPa)	36.8 (254)
Intergranular corrosion	OK		
Macro	OK	Elongation % in 4D	58.0
		Reduction of area %	73.0

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

Carbon	(C)	.018	Manganese	(Mn)	1.650
Phosphorus	(P)	.030	Sulphur	(S)	.026
Silicon	(Si)	.325	Chromium	(Cr)	17.170
Nickel	(Ni)	10.090	Cobalt	(Co)	.169
Copper	(Cu)	.505	Moly	(Mo)	2.040
Nitrogen	(N)	.081	Columbium	(Cb)	.034
Titanium	(Ti)	.001	Aluminum	(Al)	.005
Tin	(Sn)	.011	Boron	(B)	.001
Tantalum	(Ta)	.002	Vanadium	(V)	.060
Columbium/ Tantalum	(Cb+Ta)	.036			
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