

14700

03-31-'08 15:33 FROM-

E80023

T-676 P025/027 F-923

**OUTO  
KUMPU**

# Certificate of Test

\*\*\*\*\*  
\* CERTIFICATION \*  
\*\*\*\*\*

HEAT E80023

ORDER 0497662/001 SON D67186 BOL 0148583 TAG 1915856 03/27/08

SHIP TO:  
A. M. CASTLE METALS  
3400 NORTH WOLF ROAD

FRANKLIN PARK IL 60131

----- YOUR ORDER & DATE -----  
01-43116 3/27/08 CUST# CASTLE01 CUST TAG#IAC 6805

----- ITEM DESCRIPTION -----  
GRADE 316L/316  
Size 316L HRART RND BAR 5-1/4 STD Country of Melt: BRI  
Ship Condition A Country of Mfg.: SWE  
NAFTA Country of Origin is Country of Melt

Total Bundles 2 SON Weight 3800

----- SPECIFICATIONS -----  
AMS 5648K, 5653F SAE-AMS QQ-S-763B  
AMS-S-7720 ASME SA182 E04 A06 CHEM. ONLY  
ASME SA193 E04 A06 ASME SA479 E04 A06  
ASTM A182-07A CHEMISTRY ASTM A262 02A PRACTICE A/E  
ASTM A276 06 ASTM A479 06A  
ASTM E112 96 ASTM A193 07 B8M  
DIN 50049/EN 10204 3.1B UNS S31600, AISI 316  
UNS S31603, AISI 316L AM CASTLE 3316-98 REV 28  
SOLUTION ANNEALED CONDITION FREE OF CONT. CARBIDE NETWORK  
NO WELD REPAIR FREE OF MERCURY CONTAMINATION

----- MECHANICAL & OTHER TESTS -----  
Test Condition A  
Hardness as shipped (150 HBW )  
Hardness as shipped 79 HRBS  
Grain size 5.5 Tensile strength, KSI (MPa) 85.0 ( 586)  
Micro OK 0.2% Yield Strngth, KSI(MPa) 37.0 ( 255)  
Intergranular corrosion OK  
Macro OK Elongation % in 4D 59.0  
Reduction of area % 75.0

----- CHEMICAL COMPOSITION -----  
Carbon (C ) .019 Manganese (Mn) 1.630  
Phosphorus (P ) .025 Sulphur (S ) .026  
Silicon (Si) .303 Chromium (Cr) 17.350  
Nickel (Ni) 10.030 Cobalt (Co) .141  
Copper (Cu) .366 Moly (Mo) 2.030  
Nitrogen (N ) .077 Columbium (Cb) .017  
Titanium (Ti) .002 Aluminum (Al) .003  
Tin (Sn) .006 Boron (B ) .001  
Tantalum (Ta) .005 Vanadium (V ) .070  
Columbium/  
Tantalum (Cb+Ta) .022  
Iron (Fe) Balance  
Melt Practice EAF  
Refining Practice AOD  
De-long Ferrite

**CASTLE METALS CORP.**  
DATE RCVD 3/31/08  
IAC 6805  
APPROVED BY [Signature]

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*