

**E70831**

**OUTO  
KUMPU**

**Certificate of Test**

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\* CERTIFICATION \*  
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**HEAT E70831**

ORDER 0494604/001 SON D65071 BOL 0146724 TAG 1882585 12/10/07

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

FRANKLIN PARK IL 60131

----- YOUR ORDER & DATE -----  
01-37892 12/10/07 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.: SWB  
NAFTA Country of Origin is Country of Melt

Total Bundles 1 SON Weight 1900

----- SPECIFICATIONS -----  
AMS 5648K, 5653F SAE-AMS QQ-S-763B  
AMS-8-7720 ASME SA182 E04 A06 CHEM. ONLY  
ASME SA193 E04 A06 ASME SA479 E04 A06  
ASTM A182-06 CHEMISTRY ASTM A262 02A PRACTICE A/E  
ASTM A276 06 ASTM A479 06A  
ASTM E112 96 ASTM A193 06A 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 (140 HBW )  
Hardness as shipped 75 HRBS  
Grain size 5.0  
Micro OK Tensile strength, KSI (MPa) 84.3 ( 581)  
Intergranular corrosion OK 0.2% Yield Strngth, KSI (MPa) 36.7 ( 253)  
Macro OK Elongation % in 4D 60.0  
Reduction of area % 75.0

----- CHEMICAL COMPOSITION -----  
Carbon (C) .018 Manganese (Mn) 1.770  
Phosphorus (P) .030 Sulphur (S) .026  
Silicon (Si) .541 Chromium (Cr) 16.570  
Nickel (Ni) 10.140 Cobalt (Co) .279  
Copper (Cu) .485 Moly (Mo) 2.040  
Nitrogen (N) .064 Columbium (Cb) .017  
Titanium (Ti) .003 Aluminum (Al) .004  
Tin (Sn) .011 Boron (B) .001  
Vanadium (V) .060  
Columbium/  
Tantalum (Cb+Ta) .017  
Iron (Fe) Balance  
Melt Practice EAF  
Refining Practice AOD  
De-long Ferrite

**CASTLE METALS CORP.**  
DATE RCVD 12/12/07  
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*