

E71684

**OUTO
KUMPU**

Certificate of Test

* CERTIFICATION *

HEAT E71684 ORDER 0497746/001 SON D66382 BOL 0147187 TAG 1893898 01/11/08

SHIP TO:
A. M. CASTLE & CO.
26800 MILES ROAD
216-292-7600
BEDFORD HEIGHTS

OH 44146

----- YOUR ORDER & DATE -----
10-36955 1/11/08 CUST# CASTLE01 CUST TAG#IAC 48980

----- ITEM DESCRIPTION -----
GRADE 316L/316 Country of Melt: BRI
Size 316L HRART RND BAR 3-3/4 STD Country of Mfg.: SWE
Ship Condition A NAFTA Country of Origin is Country of Melt

Total Bundles 1 SON Weight 1855

----- 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 A182-06 CHEMISTRY ASTM A262 D2A 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 (152 HBW)
Hardness as shipped 80 HRB5
Grain size 5.0 Tensile strength, KSI (MPa) 87.6 (604)
Micro OK 0.2% Yield strength, KSI (MPa) 43.7 (301)
Intergranular corrosion OK
Macro OK Elongation % in 4D 57.0
Reduction of area % 75.0

----- CHEMICAL COMPOSITION -----
Carbon (C) .019 Manganese (Mn) 1.740
Phosphorus (P) .033 Sulphur (S) .026
Silicon (Si) .522 Chromium (Cr) 16.590
Nickel (Ni) 10.060 Cobalt (Co) .239
Copper (Cu) .404 Moly (Mo) 2.020
Nitrogen (N) .065 Columbium (Cb) .013
Titanium (Ti) .009 Aluminum (Al) .005
Tin (Sn) .010 Boron (B) .001
Tantalum (Ta) .005 Vanadium (V) .050
Columbium/
Tantalum (Cb+Ta) .018
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 Cranshaw Pkwy.
Highburg, SC 29729

M.F. Marcanio